COMPENSATION INSURANCE PROBLEMS IN RELATION TO LOGGING AND LUMBERING INDUSTRIES OF THE STATE OF OREGON

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Appreciation for the gracious co-operation of the librarians in the Portland Public Library, the Oregon State Library at Salem, and the Oregon State College Library in Corvallis is also made.

TABLES:

GRAPHS;

ILLUSTRATIONS;

ILLUSTRATIONS; (continued)

NOTE; Due to the nature of the following illustrations, it has been necessary to enclose them within the envelope on the inside of the back of the binder.

Exhibit A;

Schedule of Rates for the State of Oregon Workmen's Compensation Law

Exhibit B;

Logging Safety Code (Effective August 16, 1937, but Being Revised at Present Time)

Exhibit C ;

State of Oregon --Workmen's Compensation Law

COMPENSATION INSURANCE PROBLEMS IN RELATION TO LOGGING AND LUMBERING INDUSTRIES OF THE STATE OF OREGON

INTRODUCTION

The high basic compensation insurance rates for the logging and lumbering industries--among the highest rates for any major industry in the Pacific Northwest--are indicative of the high costs accrued from paying claims for those accidentally injured or killed while gainfully employed within these industries. It is the purpose of this paper to delve into the underlying causes of the high accident frequency and corresponding high compensation insurance rates, and to point the way, if possible, to some practical means of reducing the number and severity of occupational accidents. Obviously the workmen will be the principal beneficiaries from any decrease in injuries. Beyond this, the employers will benefit through reduced premium costs in direct proportion to their efforts to reduce accident frequency in the industry.

Upon examination of the experience summary of the State Industrial Accident Commission (Table 1) from July 1, 1937 to July 1, 1938, it is found that 12,308 time loss claims--an average of about 45 a day--totaled in lost

time 1,104,040 man days, as well as some 86 fatal and permanent disabilities--an average of 1.6 each week--the cost of which to employers and workmen amounted to $4,327,967.31 in premiums. From this it is possible to more nearly visualize the importance of the question at hand. Ironically, perhaps, at the foot of this summary appears the statement "This industry continues to overshadow all others in the number of preventable accidents."

The subject of compensation insurance has been approached through legislative, administrative, and industrial actions, and much has been done toward improving conditions; however, there is yet much to be desired. Previous studies have been attempts to determine reasonably just benefits and rates for all concerned, and although accident prevention has been practiced to a degree, it has not until recently received the consideration which it properly deserves.

It has been the author's intention and plan to obtain reliable and unbiased data which could be secured through personal interviews, state or company files, and printed sources such as industrial pamphlets, magazine articles, and newspapers. This material has been carefully studied and analyzed, and the resulting conclusions have been incorporated within this paper.

RELATED STUDIES

Under the present workman's compensation laws of the State of Oregon, an employer of labor in hazardous occupations has three possible means of dealing with the compensation problem.(6) He may accept the State Industrial Accident Commission's Compensation Insurance, or he may file a rejection notice with the Commission and purchase compensation insurance through other sources, or assume the liability risk himself. This last method is generally considered within the area as being far from satisfactory, due to the legal liability to which the employer exposes himself. Only the largest employers have the financial stability necessary for assuming so great a responsibility, and consequently with these few exceptions all compensation insurance is placed either with the state or with old established insurance carriers.

The old established insurance carriers, or underwriters, obtained their foothold through the failure of legislative action to make compensation insurance a compulsory monopolistic state insurance. As a timely article in the Oregon Voter expressed an argument against such action, it stated that

> "It is argued that the state fund is cheaper for industry. The employer is interested in prompt payment to the injured workman, in prompt and satisfactory medical attention, and in the prevention of accidents by systematic inspection of safety equipment,--

> time reducing labor turnover. If he wants to pay more for what he gets with a private institution and his injured workmen are lessened and those who are maimed get the same benefits, in the name of justice, let him enjoy that privilege." (3)

The Oregon State Law provides that "It is necessary that private insurance company policies, although contracting to pay the compensation rate without question as to fault, must also insure the employer against payment of damages in excess of state compensation." (6) Thus we find private insurance companies free to write compensation insurance within the state, and other than fulfilling contracted obligations to the employer and employees, they must also restrict their operations to a degree stipulated by state law.

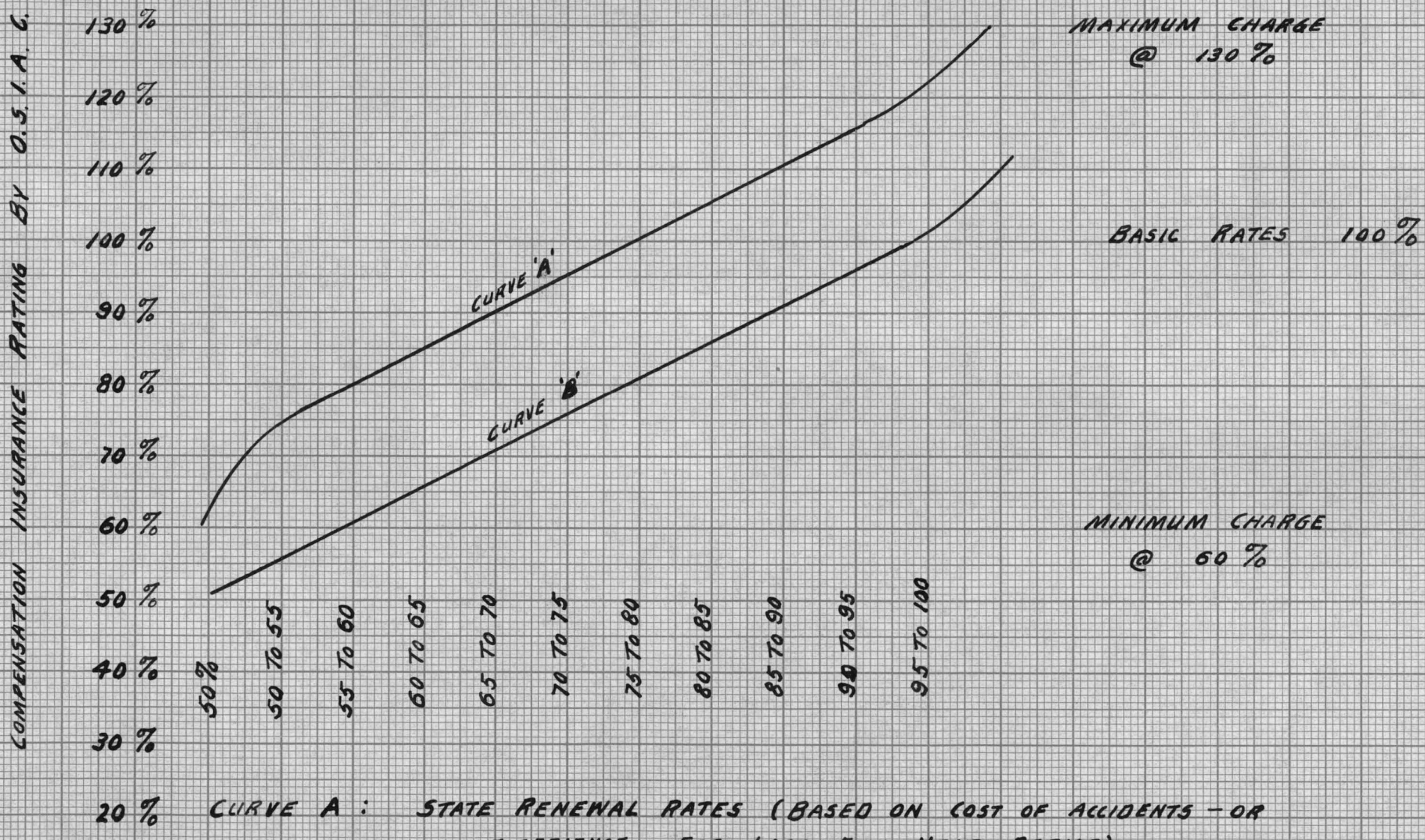
Of recent years there apparently has been a tendency for some of the larger and better risks to swing toward the purchase of their insurance through other than state agencies. There have been several reasons for this. Primarily, the state is at a disadvantage in that it must accept those applying for compensation insurance, regardless of the size of the operation, as long as certain regulations concerning equipment, etc., are not so poor as to be ruled out of service by the State Industrial Accident Safety Commission. Thus the state so-called "basic rates" must be high enough to cover the comparatively poor risks, such as many of the small or "gypo" operations which pay small sums into the funds because of small wages and short

or intermittent periods of operation, and yet who are by their very nature more hazardous than the average well-managed operation.

The state methods of rating take into account the experience costs charged to each employer and allow up to a maximum of 40 per cent reduction from base rates for those operators enjoying low accident costs over the last five-year period. This method of experience rating also penalizes employers with higher loss ratios by charging them increases up to 30 per cent of state base rates. This gives a possible "spread" in rates and premiums from 60 per cent of state base rates for the safety-minded operator to 130 per cent of the state base rates for the luckless or haphazard operation where safe working conditions are not considered important. The attached graph (Graph 1) clearly shows the possibility for direct savings for the employer who is successful in keeping his accident frequency and experience costs below the average for his classification.

For purposes of practical comparison, state base rates for logging west of the Cascade Range is $7.75 for each hundred dollars of payroll.[5] Assuming an average daily wage of $6.00 and twenty working days per month, we find the premium paid by the employer amounts to $9.30 per month for each man. Applying this to an average woods operation employing 100 men, it is found that the

EXPERIENCE RATING BY STATE of OREGON



CURVE A : STATE RENEWAL RATES (BASED ON COST OF ACCIDENTS – OR EXPERIENCE – FOR LAST FIVE YEAR PERIOD).

CURVE B : LOSS RATIO (BASED ON EXPERIENCE COSTS TO NORMAL PREMIUMS)

GRAPH #I.

monthly bill for compensation insurance amounts to $930.00 Whenever this operator has attained a favorable record for safe operation resulting in the maximum credit rating of 40 per cent reduction, the employer has produced an out and out saving of $372.00 per month from his so-called fixed overhead, or normal compensation cost at true state base rate. Going to the other extreme and applying the penalty rating of 30 per cent increase above normal state base rates for poor experience, it is found there is an increase of $276.00 per month above a normal or state base rate premium. Then by adding the results of the savings under minimum rates and the extra cost involved under maximum rates, the visible reward for the safety-minded operator is $372.00 plus $276.00, or a total of $648.00 each month. Thus there is "gold in them thar hills" for immediate delivery to every safe employer, on demand.

STATE AND OUTSIDE INSURANCE FACTORS

It is difficult at best to extensively and intensively enforce strict regulations furthering safety practices and thereby reducing the risk and in turn the premium rates for all operators throughout the state. Especially is this true when all types and sizes of operations are carried, with many of them necessarily of the smaller, poorer, or more hazardous classifications, including those comparatively short time or intermittently operated industrial units.

The underwriters handling compensation insurance, on the other hand, operate under conditions unusually favorable to their doing a successful business in the compensation insurance field. For example, they are not obligated to insure any risk they may not desire, and prospective clients desiring to withdraw from state compensation insurance because of the high premium rates which were established for them through poor experience ratings during the previous five year period are often turned down. If the underwriters feel that the risk is not capable of sufficient improvement to warrant acceptance of the risk, they will refuse to carry the liability involved. Therefore, by selecting the more modern, well-equipped, and regularly operating plants which have the higher experience ratings and the largest annual payrolls,

the underwriters are literally taking only the "cream" of the risks and are in turn able to offer compensation insurance at much reduced premium rates--so much reduced, in fact, that even under 40 per cent reduction from state base rates (the maximum reduction allowable), many operators find it difficult to obtain comparable reduced premium rates. Further discussion of the advantages and methods employed by each, and of the experience ratings which have resulted from the different techniques used will be made later in this paper.

In breaking down the logging and lumbering data, the state has found it advantageous to make the main division between pine logging and milling on the eastern side of the Cascades and the fir logging and milling on the western side of the Cascades. (Table II) This division was made because of the extreme variances existing between the types of operations, and experience has proven that it has been essential to assign different rates to the two main divisions of operations.[5] Insurance carriers other than the state follow the same practice.

During a typical twelve-months period from June, 1937 to July, 1938, some 21,000 men were employed within the state of Oregon in the logging and lumbering industries. During this period workmen and employers paid $4,327,967.31 in premiums to the state compensation insurance funds. The following data was obtained from the Oregon State Industrial Accident Commission, and it concisely presents the picture of the state-wide experience based upon the lumber industry during the fiscal year from June, 1937 to July, 1938. (Table I)

If we desire to obtain a comparison between the pine and fir experiences, we may further break down the state averages and analyze them somewhat as follows: (Table I)

ON LOST TIME BASIS

Fir:

Fir logging lost 1 day for each 2.7 days worked.

Fir sawmills and yards lost 1 day for each 6.1 days worked.

This makes the comparative experience ratio 6.1 : 2.7, or logging 2.26 to sawmill 1.00, and shows that the logging risk is slightly more than two and one-quarter times a poorer liability than the sawmill risk in the fir area.

Pine:

Pine logging lost 1 day for each 5.5 days worked.

Pine sawmills and yards lost 1 day for each 12.8 days worked.

This makes the comparative experience rating ratio 12.8 : 5.5, or logging 2.32 to 1.00 sawmill, and shows that the logging risk is slightly more than two and three-tenths times a poorer liability than the sawmill risk within the fir area.

ON A FATALITY BASIS

Fir:

Fir logging killed 1 man for each 28,080 man days worked.

Fir milling and yards killed 1 man for each 136,616 man days.

This makes the comparative experience ratio 136,616 : 28,080 or approximately five logging fatals to each fatal in the mill. This ratio indicates the comparative degrees of liability involved between fir logging and fir milling operations.

Pine:

Pine logging killed 1 man for each 63,334 man days.
Pine milling and yards killed 1 man for each 360,658 man days.

This makes the comparative experience ratio 360,658 : 63,334 or approximately 5.7 fatals in the logging to each fatal in the milling. Thus pine logging is 5.7 times a poorer liability than the pine milling operation.

Logging Experience Comparisons:

Further analyses of the experience figures reveals that by comparing the pine logging to the fir logging experiences on a lost time basis, we have 5.5 : 2.7 or 2.0 which indicates that the fir logging operations have approximately twice the number of lost time accidents as the

pine operations.

If the pine logging and fir logging experiences are compared on a fatality basis, we have 63,334 : 28,080 or 2.2, which indicates that the fir logging operations are approximately 2.2 times as hazardous as the pine logging operations. (Table I)

Milling Experience Comparisons:

The milling ratios determined on a lost time basis will be pine 12.8 : fir 6.1 or 2.1, which indicates fir milling operations are 2.1 times more hazardous than pine milling operations.

Milling ratios determined on a fatality basis will be pine 360,658 : fir 136,616 or 2.64, indicating that fir milling is approximately 2.64 times more hazardous than pine milling operations. (Table I)

It is not difficult, then, to understand the reasons underlying the reduced logging and milling state base rates for compensation insurance in the pine operations.

It is interesting to note that even though the logging state base rates are much higher than the milling rates for the same types of operations, in the majority of cases the premiums paid on logging risks seldom pay for the costs involved, and that the sawmill premiums

more than pay for their costs involved.[5] Thus we find the milling operations paying more than their share--however, the mills could not operate without the logging operations, and the premiums on the logging operations are already nearly as high as the traffic will bear. Therefore the present premium rates have been established.

There are several reasons for experience being generally better in the mills than in the woods. In the mills the operations are standardized, the materials handled are generally of smaller sizes and of lesser weight, the employees generally of a more permanent class, and the relationships between the management and the employees much more closely knit. In the woods the equipment is large and heavy and generally in motion. The materials used are large and unwieldy, and the crew is often made up of comparatively short-time workers--due to the very nature of the intermittent logging seasons.

We have been unable to secure a like summary of experience data for a five-year period from other than state insurance carriers; however, it has been possible to obtain the following comparative data which may be considered as from a typical plant employing about 500 people for similar six-month periods in two consecutive years--the first without proper and intensive accident prevention work, and the second after intensive safety inspection and organization work had been done through one of the various

groups of insurance underwriters who have done much to bring about notable improvements in conditions throughout industry with consequent reduction in accidents and accident costs. (Table III)

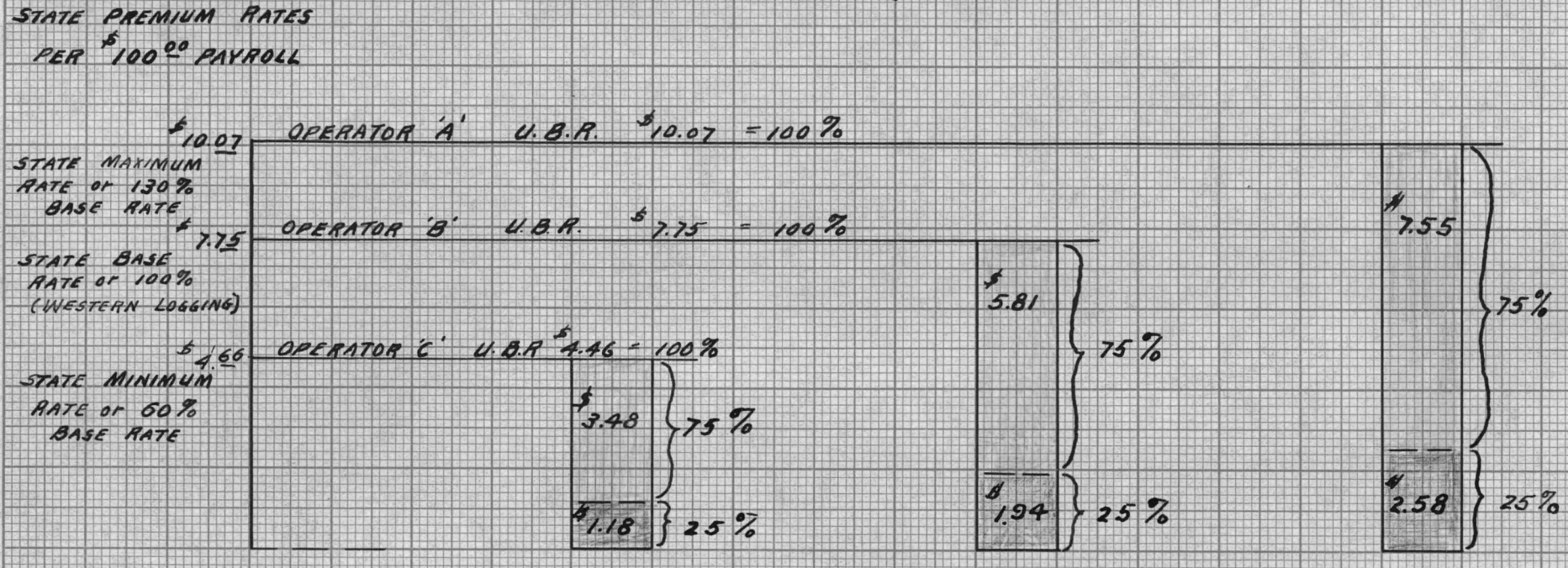
Thus we see that the intensive safety organization plan decreased the number of accidents sixty per cent and the accident costs some fifty-nine per cent. This is not an extreme case where proper supervision and co-operation is secured from the management of the plant in question. It should be stated that safety improvements, such as guards for mechanical equipment, guard rails, and general repairs on docks, etc., did require investments of labor and materials. However, they are of a permanent nature and will continue to repay large dividends each succeeding year through reduced premium rates.

The underwriters establish their base or 100 per cent rate at the existing state premium rate for the individual operation--no matter whether the existing state premium rate is above or below the normal or 100 per cent state base rate. It is from this underwriters' established base rate that the underwriters raise or lower their premium rate upon contract renewals as dictated by the increase or decrease of experience costs while they are assuming the risk for the given operator.

Once the underwriter establishes his base rate for the individual operation he will, under the "self-insured"

UNDERWRITERS RATE BASIS
AND
PREMIUM DISTRIBUTION

VERTICAL SCALE : $\frac{1}{2}$" REPRESENTS $2.00



U.B.R. $10.07 = 100% : UNDERWRITERS BASE RATE ESTABLISHES $10.07 AS 100%

DARK BLUE : REPRESENTS UNDERWRITERS FEE of 25% PREMIUM FOR ASSUMING LIABILITY IN EXCESS of ACCUMULATED 'STOP-LOSS' FUND.

GREEN : INDICATES AMOUNT of PAID PREMIUM PLACED IN OPERATOR'S 'STOP-LOSS' FUND.

GRAPH #2

or "stop-loss" plan, collect 100 per cent of the established monthly premium. Twenty-five per cent of this premium is kept by the underwriters for service fee and the remaining seventy-five per cent is placed in a "stop-loss" fund for the insured operator. This fund rapidly builds itself up as the monthly premiums are collected. All accident costs of the operator are paid out of his "stop-loss" fund, and any balance becomes his property at the duration of his contract with the underwriters. Thus, if the operator keeps his accident costs low, he has the opportunity of regaining a sizeable sum of money from his "stop-loss" fund. Under this plan the operator is greatly induced to co-operate in organizing and enforcing an intensive safety educational plan. He knows that each accident cost must virtually be paid from his own pocket, and the fewer accident costs he has, the more he can save for himself out of his "stop-loss" fund. Should the operator have no accident costs whatever during the period of his contract, he would be able to regain 75 per cent of his total premiums paid. The operator is given the opportunity of regaining for himself more money than he could possibly regain under other types of compensation insurance plans. (Graph II)

The underwriter, being liable only for the exess--or for accident costs in excess of the operator's "stop-loss" fund--is deeply concerned in keeping the accident

costs below the amount of the operator's accumulated "stop-loss" fund. With both the operator and the underwriters in position to gain materially through lowering accident frequency and corresponding costs, there exists every favorable opportunity for the mutual co-operation in organizing and enforcing intensive safety measures and campaigns for the individual operation.

It is interesting to note that the underwriters operate entirely through the name of the individual operators. That is, they stress the fact that the operator is "self-insured," never making it known that "self-insured" is simply a term applied to the type of insurance and not actually that which it implies, viz: that the operator is assuming the entire responsibility himself. There is sound psychological reasoning behind this method of operation. Primarily, the operator proper is given credit by the employees for doing intensive safety instruction and organization work, and they feel that it is much in the interest of retaining their jobs that they give a good safety performance. Also, it is basically sound in that with employees' feeling the operator personally is paying for claims due to accident losses, it is much easier to settle disputes as to the costs involved in case of court procedures, etc. The above are especially true in cases of employees who have worked for long periods of time for the employer. It is a recognized fact that an employer

being sued for damages under compensation case losses will not be at as great a disadvantage as a defending insurance company publicized as a large insurance company. In other words, members of court juries are very likely to be more lenient with a local employer than with an insurance company.

ORGANIZATION TECHNIQUES

In determining the eligibility of a prospective client, the underwriter will examine past experience records, analyzing the causes, types, and costs of the accidents which have determined the operator's existing rates. A complete inspection of the plant will be made, as well as thorough investigations concerning the plant supervision and organization, types of employees hired, and other factors relating to the degree of risk which might reasonably be expected from the plant as a whole. Should it be found that due consideration, organization and co-operation could be expected from the plant management committee, and other factors appear capable of improvement sufficiently to be considered a good risk, the underwriters will recommend safety improvements and accept the risk involved on a basis of state rates which exist for the given operation.

Should we look into the methods of organizing a large plant, we find not a haphazard nor uncertain method of organization in use, but rather a tried and proven system whereby an increase in experience rating may be practically insured every operator who will cooperate and truly attempt to reduce his costs. The National Safety Council, Inc. in a pamphlet on "Organizing a Complete Industrial Safety Program" outlines the steps by which successful

safety programs have been launched and maintained.[4] Briefly, the steps are as follows:

1. Securing management leadership.
2. Securing the cooperation of superintendents.
3. The appointment of a safety director.
4. Analyzation of accident records by the safety director.
5. To hold a meeting of all operating executives periodically.
6. Make inspections of operations in all departments.
7. Mechanical safeguarding should be developed and carried out.
8. Provide ample facilities for first aid, and attendants.
9. Make general announcement of safety drive, etc. to employees.
10. To make a program for organizing safety educational work.
11. To study and consider well, methods for engineering revision, of plant machinery, equipment, and processes to eliminate hazards and increase production efficiency.

In order that we may more readily understand methods and techniques employed by the underwriters to produce the

results which have been possible, let us assume a typical lumbering operator as a prospective client, is considering changing the placement of his compensation insurance.

Fundamentally, the prospective client hopes to save money on compensation costs--either at the present time or in the future. Apparently state experience costs are computed for the preceding five-year period and compared with the premium income to determine the renewal rate each July first for the ensuing twelve-month period. The graphical chart (Graph II) illustrates the methods whereby the underwriters establish their base rates and the possibilities which are open to the operator for decreasing his net costs from existing premium costs. It is readily observed the underwriters 100 per cent or base rate is identically the same amount as the existing state premiums. The purpose for establishing this new base rate of 100 per cent is to provide a basis upon which to increase or decrease the operators premium rates when his contract comes up for renewal.

All accident costs are paid from the accumulated "stop-loss" funds of each operator as an individual, and any balance that may be left in this fund at the duration of the contract becomes the property of the operator. If more than the accumulated fund is consumed in paying the accident costs, the underwriters are liable for the excess costs involved. The operator cannot lose more than the

premiums paid under this plan, and yet he has the opportunity of theoretically regaining up to a maximum of 75 per cent of the paid premiums. This is the amount paid into the "stop-loss" fund, and should there be no accident costs whatever, the operator would be entitled to the entire accumulated "stop-loss" fund. If we examine graph II we find that, ideally, the operator under existing minimum state rates of 60 per cent or $4.66 has the opportunity of regaining $3.88 per $100.00 payroll. Likewise, an operator under existing normal or 100 per cent state base rates has the opportunity of regaining up to $5.81, and under the state maximum or 130 per cent rate the operator has the opportunity of regaining up to $7.75 from the entire $10.07 premium paid on each $100.00 payroll. If experience obtained under the preceding contract warrants, the new contract will be written by the underwriters at less than the underwriters' existing base rate of 100 per cent. On the other hand, if the experience of the preceding contract was poor, the underwriters may offer to renew the contract at more than the original base rate of 100 per cent.

SUMMARY

Briefly, we find both state and private insurance agencies writing compensation insurance for logging and lumbering operations within the state of Oregon. State base rates comprise some 5 per cent of logging payrolls in the pine and some 7-3/4 per cent of the logging payrolls in the fir. These costs are direct costs to the employers and employees, and ultimately to the consumers of the goods, and hence are of great importance to society.

The acuteness of the compensation problem was accentuated by Mr. A. C. Smith, Oregon State Industrial Accident Commission Safety Engineer, in introducing the new logging code at the Willamette Valley Logging Congress, held in Eugene, Oregon, May 17, 1940. He told of an indicated increase of western Oregon logging rates to over ten dollars--more than ten per cent of the logging operator's payrolls--the change to be made in 1941 unless there is a marked decrease in existing accident numbers and costs.

Many large operators are becoming interested in benefits to be derived from safety educational work in their respective organizations for both the financial and humanitarian benefits as well. This new trend of intensive safety organization in the lumbering industry indicates a virgin field for development by which every large operator and most small ones can save handsome dividends by reducing accidents and attending costs through intelligent safety

supervision of their crews through properly trained safety engineers.

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5. Schedule of Rates, State Printing Department, 1939.*

6. Workmen's Compensation Law, State Industrial Accident Commission, Salem, Oregon, 1939.*

Table I, State Industrial Accident Commission, Digest of a Claim Study Made by the Statistical Division.

Table II, SIAC, Special Memorandum of Payroll, Man Days, and Number of Accidents.

Table III, Accident and Injury Comparison.

* Appendix

APPENDIX

TABLE I

STATE INDUSTRIAL ACCIDENT COMMISSION

Digest of a claim study made by the Statistical Division for the Safety Department for the fiscal year July 1 1937 to June 1938

LUMBER INDUSTRY

Classification	Number of Time Loss Claims	Days Lost	*Fatals and Permanent Total Disability	Work Days	Frequency Rate Per 1,000,000 Man Hours	Severity Rate Per 1,000 Man Hours	Estimated Number Men Engaged
LOGGING (Other Than Pine)	5,138	571,767	55	1,544,427	415.9	73.0	5,145
LOGGING (Pine)	848	80,904	7	443,436	239.1	34.6	1,478
SAWMILLS (Other Than Pine)	3,746	269,155	12	1,639,389	285.6	26.0	5,464
SAWMILLS (Pine)	825	56,267	2	721,317	143.0	11.8	3,404
BOX FACTORIES ETC.	822	46,578	4	1,030,543	99.7	8.6	3,433
VENEER MFG.	299	18,044	--	218,062	171.4	10.3	727
ALL OTHER CLASSES	630	60,325	4	485,716	162.1	21.7	1,619
TOTAL FOR THE INDUSTRY	12,308	1,104,040	86	6,080,890	253.0	33.3	21,270

Note * 6,000 additional days lost time is estimated for each fatal or P.T.D. claim. This industry files 236 loss time claims a week with the Commission. 1.6 are fatal (During the six years previous to this report period, an average of 91,949 full time workers were under the Oregon Compensation Law. 17,175 of these, or 19 per cent, were lumbermen. However, 30 percent of all time loss claims in all industries and 46 percent of the fatals were in the lumber industry.)

STATE INDUSTRIAL ACCIDENT COMMISSION

Special memorandum of Payroll, Man Days, and Number of Accidents Reported for Pine and Fir Logging as prepared for Howard Taylor, Cauthorn Hall, Box 128, Corvallis.

Calendar Year	Payroll	Man Days	Average Daily Wage	Number Accidents Reported
PINE LOGGING (Eastern Oregon)				
1935	1,546,058.48	326,663	4.73	380
1936	1,653,731.01	333,005	4.97	637
1937	2,728,022.64	500,585	5.44	790
1938	1,891,022.15	340,758	5.54	817
1939	2,096,150.39	390,435	5.37	715
Five-year total	$9,914,984.67	1,891,446	5.24	3,339
FIR LOGGING (Western Oregon)				
1935	5,074,610.95	1,131,141	4.49	2,591
1936	7,168,809.43	1,543,209	4.65	3,790
1937	8,685,254.02	1,661,339	5.23	4,578
1938	6,774,635.72	1,287,333	5.26	4,754
1939	8,720,191.28	1,597,554	5.45	4,399
Five-year total	$36,423,501.40	7,220,576	5.04	20,112
	$46,338,486.07	9,112,022	5.09	23,451
COMBINED TOTALS FOR PINE AND FIR LOGGING ONLY				
1935	6,620,669.43	1,457,804	4.54	2,971
1936	8,822,540.44	1,876,214	4.70	4,427
1937	11,413,276.66	2,161,924	5.28	5,368
1938	8,665,657.87	1,628,091	5.32	5,571
1939	10,816,341.67	1,987,989	5.44	5,114
Five-year total	$46,338,486.07	9,112,022	5.09	23,451
SUMMARY OF ALL CLASSIFICATIONS OF INDUSTRY				
1935	114,462,374.68	30,495,270	3.75	28,920
1936	131,065,613.46	32,881,588	3.99	35,165
1937	154,245,454.99	35,576,528	4.34	37,907
1938	147,685,128.83	33,565,471	4.40	38,432
1939	158,357,520.00	36,408,434	4.35	36,200*
	$705,816,091.96	168,927,291	4.18	176,624

*The number of man days of employment during 1939 increased 8.47% over 1938. During the same period the number of accidents decreased 5.81% below 1938 thus admirably reflecting the effect of this commission's safety campaign to reduce and eliminate accidents.

TABLE III

ACCIDENT & INJURY COMPARISON
July to Dec. 1937 with July to December, 1938

Department	Year	Disabling Inj.	1st Aid	Tot. Inj.	Days Lost	Compensation Cost	Medical Cost	Hours Worked	Freq. Rate	Severity Rate	% Accid. Decr.	% Cost Decr.
Mill A,Ced.	1937	27	41	68		$ 985.73	$496.06					
" ",Swml.	1938	4	4	8	53	143.47	76.55	32,289	123	16.4	89	85
									*143	*11.8		
Mill B,Fir	1937	67	83	150		3083,29	1136.59					
" ",Swml.	1938	27	31	58	360½	1054.46	889.75	93,834	287	33.4	61	54
									*285.6	*34.6		
Plywood	1937	46	92	138		1920.92	1064.43					
"	1938	18	62	80	187	456.95	705.96	204,682	88	9.14	41	61
									*171.4	*10.3		
Factory	1937	24	41	65		652.31	403.54					
"	1938	8	29	37	31½	140.59	240.50	122,114	65	2.58	41	63
									* 99.7	*8.6		
River & Booms)												
Car Ldrs.Pwr.)	'37	45	107	152		2924.81	1315.27					
Shops,Yd.&Plnr.)												
Rvr.&Bms.,Car	'38	3	4	7	97	338.04	703.00	27,992	107	3.47)		
Car Ldrs.	'38	3	3	6	5½	12.38	40.00	13,886	223	.40)		
Pwr, Shops,Etc.	'38	3	4	7	9½	23.87	31.50	41,845	72	.23)	72	60
Yd. & Planer	'38	5	17	22	106	342.16	179.10	98,757	50	1.07)		
									*162.			
Hosp.Sup&Dr.	1938						253.00					
Total Entire Plant	1937	209	364	573		9567.06	4415.89					
Tot.Ent.Plt.	1938	71	154	225	850	2511.92	3119.36	653,399	111.7	13.4		
Decr.(for six months)		138	210	348		$7055.14	$1296.53				60%	59%

Payroll 1937 $469,000
" 1938 477,000 for 653,399 Hours Worked.

Note: No records of lost time or hours worked were kept in 1937. Therefore frequency and severity rates are not available. However, based on approximately same payroll they would be much higher.

INDEX

ILLUSTRATIONS

Organizing a Complete Industrial Safety Program

Safe Practices Pamphlet No. 42

Published by National Safety Council, Inc.
Civic Opera Building, 20 North Wacker Drive, Chicago

This pamphlet is a compilation of experience in accident prevention. It must not be confused with Federal, state, or insurance requirements, or with National Safety Codes.

1. Thousands of executives have undertaken the prevention of industrial accidents and have proved to their own satisfaction and to that of their boards of directors that it is not only good morals and good ethics, but also good business. Every day additional far-sighted business men are becoming convinced that they must make an organized effort to prevent accidents to their workers. So many executives, however, have asked the National Safety Council just how to go about it, that the Council has prepared this pamphlet, condensing the experience of others into a brief outline of procedure.

2. Many elaborate plans have been formulated for the prevention of accidents in industry. Regardless of the type of work performed, however, and regardless of the size of the concerns, all of these plans are based on a few fundamental principles, and they all started with the eleven simple steps outlined in the center of this page. Carrying out these steps involves comparatively little expense, and assures the success of the plan to make safety an integral part of the operating organization.

The Manager

3. Safety must start at the top. First, the manager must do his part, and his part is to "put safety on the map," make it a necessary part of the process of production, get back of it and keep back of it so actively that every foreman and worker will know just what the company proposes to do to help make the plant safe. Any safety organization without an enthusiastic manager back of it is bound to fail.

4. The manager must convince his men by visible signs, in the form of mechanical guards, good lighting, etc., that he is doing his full part, before he can expect his men to take safety seriously or give any genuine cooperation. It is especially important that the manager bring his superintendents and foremen to believe in safety just as they believe in avoiding wasteful methods, and give it their whole-hearted and intelligent cooperation. This can be brought about by exacting from the organization the same degree of attention to safety as is required in production methods, by frequent conferences, and by placing before the foremen the accident experiences of other companies that are confronted with similar accident problems.

Eleven steps are necessary in starting a plan to prevent accidents from which real results may be expected. These steps are usually followed in the order listed below:

1. MANAGEMENT LEADERSHIP. Manager must do his part in helping to "put safety on the map." See paragraphs 3 and 4.

2. COOPERATION OF SUPERINTENDENT. Superintendent must make safety an integral part of the operating organization. See paragraphs 5 and 6.

3. APPOINT SAFETY DIRECTOR. One man should be designated to represent the manager in directing the safety program. See paragraphs 7 to 11.

4. ANALYZE ACCIDENT RECORDS. After his appointment, the Safety Director should analyze the accident reports for the past year or two to learn, if possible, the how, who, where, when and why of each accident. See paragraphs 12 to 17.

5. HOLD MEETING OF OPERATING EXECUTIVES. All supervisors, foremen, superintendents, and operating heads should then be summoned to a general meeting presided over by the manager or general superintendent. See paragraphs 18 and 19.

6. MAKE INSPECTION OF OPERATIONS. Following this meeting each foreman should make a complete inspection of his department. See paragraphs 20 to 24.

7. START MECHANICAL SAFEGUARDING. The safeguarding program should then be developed and carried out, making sure that the most serious conditions are corrected first. See paragraphs 25 to 27.

8. PROVIDE FACILITIES FOR RENDERING FIRST AID. First-aid attendants can help to prevent accidents in addition to caring for injured workers. See paragraphs 28 and 29.

9. MAKE GENERAL ANNOUNCEMENT. Then the workers should be acquainted with the accident prevention plan. See paragraphs 30 and 31.

10. ORGANIZE EDUCATIONAL WORK. Formulate program to maintain interest and increase safety knowledge of management, foremen, and workers. See paragraphs 32 to 53.

11. CONSIDER ENGINEERING REVISION. Consider methods for improving machinery, equipment, and processes to eliminate hazards and increase production efficiency. See paragraphs 54 to 56.

The Superintendent

5. What applies to the manager applies equally well to the superintendent; he must be the field marshal in the safety campaign, and by his own faith and enthusiasm he must win for it the respect and support of his fore-

men. If he treats it as a side issue, his foremen will treat it likewise. It must be made a vital part of the operating department.

6. The superintendent should keep in close touch with the safety director and actively participate in planning activities that will bring the best results.

Safety Director

7. One man must be made responsible for the safety work in every plant, regardless of its size. In a small plant it may be advisable or necessary for the manager himself to carry this responsibility. In a medium-sized or large plant, he may give this responsibility to an assistant whose duties and qualifications will determine whether he should be known as safety engineer, safety director, safety inspector, or by some other equally significant title. (For the sake of uniformity, he is referred to in this pamphlet as the safety director.) In the medium-sized company he need not devote his entire time to accident prevention, but under no circumstances should this responsibility be given as a side-line to an already-overworked individual.

8. **Qualifications.** In addition to a knowledge of safety, the successful safety director must have nearly every personal qualification that is to be found in successful men in all walks of life. He should have vision, initiative, persistency, judgment, diplomacy, leadership and, above all, sympathy. He need not necessarily have been graduated from an engineering college, though such an educational background may be a definite asset. Just as no one is perfect in any walk of life, so there are successful safety directors who do not have all of the personal qualifications listed; others may have most of the personal qualifications but not a technical training. In safety engineering as in every other branch of work, special training may be necessary in highly specialized industries. However, the safety director can generally secure from others such special information as he requires.

9. **Handling Men.** An important feature of accident prevention work is that the safety director should know the men he is working for and with, for much of his success will depend upon the manner of his contact. The accident prevention work which is most constructive and most lasting is often accomplished by getting other men to do the work. Sometimes this is brought about by suggestion; perhaps, by a direct request or as a personal favor, and again by an order from the manager or superintendent. Whatever the means, the result will be that the man who does the work is interested to a greater degree than he would be otherwise and he feels a personal responsibility for his share of the work. If handled tactfully, this principle will work with the plant engineering department and the plant executives, as well as with the workers.

10. **Position in Organization.** The safety director's actual position in the plant organization varies with the general organization of the individual plant. In some plants the safety director will have charge of practically all employees' relations, including employment, safety, sanitation, health service, general welfare work, employees' activities, etc. In any event, the safety director should be in close touch with the department handling the employees' relations throughout, so that his work may be definitely coupled with the other branches of the work of that department. It is now generally accepted that practically every phase of an employee's life has a bearing on accident prevention and it is for this reason that, if the safety director has no direct control over the company's relations with its employees, he should be connected with the department handling such relations. The educational side of accident prevention is very definitely an employees' relations proposition.

11. **Duties.** Chart No. 1 outlines in a general way many of the activities which the safety director will want to initiate. The numbers shown in this chart refer to pamphlets in the National Safety Council Safe Practices series. These pamphlets should be referred to for detailed information; copies are available upon request.

Analysis of Accident Records

12. Let us sketch briefly the duties of a safety director in a company in which no safety work has been attempted other than safeguarding required by an insurance company or the state factory inspector. In accepting the position the safety director has satisfied himself that the management is sincere in its desire to prevent accidents and that it proposes to follow every reasonable and practicable plan for securing the cooperation of its employees in safety work. The first step which he should take after his appointment is to start an analysis of the company's accident reports for the past two or more years.

13. Detailed directions how to go about this work are found in the Council's Safe Practices Pamphlet No. 21 on "Industrial Injury Records—How to Keep and Use Them." This suggests that all accidents be classified at least by departments; by agency (lathe, grinding wheel, hammer, etc.); part of agency (belt, gear, pulley, etc.); by manner of performance (operating, cleaning, oiling, etc.); by method of contact (falls, caught in or between, struck against, etc.); and finally by proximate cause (defective equipment, unsafe conditions, physical handicaps, lack of knowledge or skill, etc.).

14. It is only natural for many foremen and others to take the attitude, "We have never had any accidents." Unless the safety director, therefore, has facts and figures to prove that accidents have occurred, he at once is placed at a disadvantage.

15. In addition, these statistical analyses will enable the safety director to prove to skeptical foremen and workers that accidents do not simply *happen*—that they are *caused*—and that accidents are preventable. These analyses, furthermore, point out the causes—and also indicate what must be done, and how to do it to eliminate these causes so that accidents will not occur in the future.

16. Other things which may be accomplished by these analyses include:

a. They point to the departments with the worst records so more effort can be concentrated right where it will do the most good.

b. They point to those conditions, agencies, and practices which need to be improved if accidents are to be stopped.

c. They indicate the weak and strong points of individual foremen in such matters as leadership, teaching ability, follow-up, and discipline, and encourage them to strengthen their weaknesses.

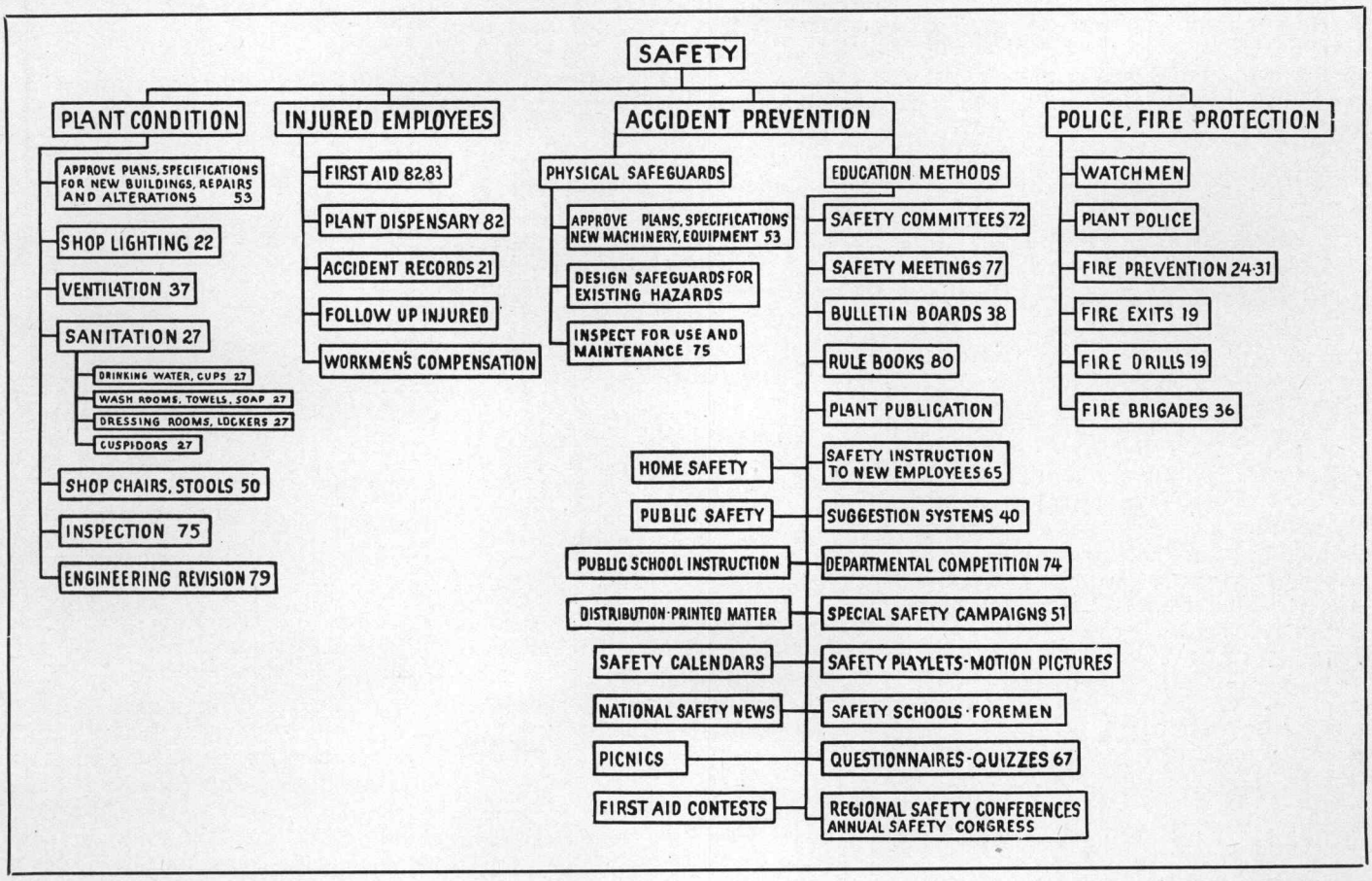
d. They can be used to stimulate friendly rivalry between departments for improvement of accident records.

e. They help to spot those workers, as revealed by repeated accidents, who suffer from physical handicaps, wrong mental attitudes, and lack of knowledge or skill—and enable those in authority to adopt suitable corrective measures.

17. While making these analyses of accident records, the safety direc-

CHART I

Outline of activities of typical safety department. The numbers refer to Safe Practices Pamphlets of the National Safety Council. No pamphlets are available on subjects without number references, but the Council will gladly furnish interesting and valuable data on these subjects upon request.



tor should take advantage of every opportunity to establish personal and intimate relations with the superintendent, foremen, and other plant executives. Doing this may prevent unpleasant misunderstandings later on.

Meeting of Operating Executives

18. The next step is to call a meeting of all foremen and department heads, at which the works manager, general superintendent or some executive of the company should preside. The things to be accomplished at this meeting include:

a. The operating executives, and particularly the foremen who are acknowledged the lieutenants of industry—should be notified of the accident prevention plan in advance of the workers.

b. The safety director should be officially introduced and his duties outlined.

c. The attitude of the company toward accident prevention should be definitely outlined, emphasizing the willingness of the management to back up the operating executives—by discipline, if necessary.

d. The operating executives should be notified that they will be held responsible for the accident records of their departments, and impressed with the fact that the success of the safety effort depends upon their leadership and good example.

e. The benefits of safety work can be proved by giving records of other companies.

f. Each foreman should be asked to prepare a report describing conditions in his department and listing the points of danger which need safeguarding.

g. Acquaint these men with the past accident experience of the company.

h. Point out the bearing accidents have on labor turnover and production costs.

i. Emphasize the point that the dollar side of safety means more to the workers than it does to the company, and that the workers suffer all the physical pain resulting from accidents.

j. By referring to past experience, prove that practically all accidents are preventable and are the result of ignorance, carelessness, faulty supervision, etc.

k. Have the safety director (and possibly one from another plant or an insurance company) acquaint these men with the methods used and results obtained by other companies.

19. It is the custom in many companies to hold weekly, biweekly, or monthly meetings of foremen and other operating executives to discuss production and operating problems. In such cases, a special meeting need not be called. One of the regular meetings can simply be extended fifteen minutes or half an hour to carry out the plan suggested above.

Plant Inspection

20. Following this meeting a complete inspection of each department should be made. (Safe Practices Pamphlet No. 75 on "Safety Inspections" contains interesting and valuable ideas.) This inspection is made to:

a. Help the foreman in each department prepare his report as requested at the foremen's meeting.

b. Determine the physical condition of the plant and to check all dangers that need to be safeguarded.

c. Prepare for the guarding program.

d. Improve general housekeeping, sanitation, etc.

21. In making these inspections, the safety director should accompany the foreman of each department—but—the inspections should be made, and the reports written, by the foremen—not by the safety director. The safety director's duty is simply to help—by suggesting ideas to the foreman—by making sure that the most important things are not overlooked—by encouraging the foreman to correct many of the conditions within his control without referring them to other departments or to persons of higher authority.

22. The safety director should not worry if the foremen fail to note *all* of the unsafe conditions that should be corrected. If none of the serious conditions are overlooked, many of the minor items can be "caught" at later dates.

23. The following list is typical of the things to be looked for when making inspections:

a. Fire hazards (oily rags, flammable liquids, etc.)

b. Fire protection (fire escapes, fire extinguishers, etc.)

c. Ice and snow hazards (icicles, slippery walks, etc.)

d. Yard hazards (open pits, railroad crossings, etc.)

e. Electrical hazards (open switches, defective portable lights, etc.)

f. Hazards at machine point of operation (saws, power presses, grinding wheels, etc.)

g. Power transmission hazards (unguarded belts, pulleys, etc.)

h. Material handling hazards (defective trucks, conveyors, etc.)

i. Chemical hazards (acids, caustics, etc.)

j. Lighting.

k. Ventilation.

l. Housekeeping.

24. When making an inspection it may help to know just where accidents have occurred in the past. Nevertheless, the inspectors should also ask themselves the question, "*Can* an accident occur here?"

Mechanical Safeguarding

25. After all inspection reports are turned in, the safety director should help the superintendent to determine just which recommendations made by the foremen should be carried out and in what order. Many recommendations should be referred right back to the foremen from whom they originated with orders to "go ahead." Others may have to be referred to the master mechanic or to some other person or department for necessary action. Other recommendations which seem impracticable or on which favorable action cannot be taken, should be discussed either at another meeting of all foremen or with the individual foremen by whom they were submitted.

26. Carrying out this part of the program satisfactorily will not only eliminate the majority of the accident hazards which are within the control of the management, but it will also impress upon the minds of the workers the fact that the company is sincere in promoting safety and willing to do its full part.

27. All safeguards should be installed in accordance with the specifications of the state and insurance company standards, many of which are discussed in detail in the Council's Safe Practices Pamphlets.

First Aid

28. When formulating his accident-prevention plans, the manager should give special consideration to the provision of first aid facilities, so that injured workers may be given instant care. Otherwise, through neglect or for other reasons, minor injuries may become serious ones, possibly resulting in infection and long periods of disability.

29. In the smallest companies it may be sufficient to provide a first aid kit. In addition at least one of the regular employees should be trained to render first aid. In larger companies a special first aid dispensary should be provided and one or more graduate nurses employed to care for injured workers. First aid attendants can render valuable assistance in preventing accidents as well as in caring for accident victims. The details of first aid organization and equipment are discussed in the Council's Safe Practices Pamphlet No. 82, "Caring for Injured Workers."

General Announcement

30. After the company has made a real start in its plan to correct unsafe conditions, an effort should be made to secure the active cooperation of the workers. The first step in this direction is to acquaint the workers with the fact that the company is starting an organized effort to prevent accidents—that most accidents result either from unsafe conditions or from unsafe practices—that since the company is primarily responsible for conditions in the plant, the company will do everything in its power to make those conditions safe—on the other hand, since the workers are primarily responsible for unsafe practices, they, the workers, will be expected to do everything in their power to perform their work safely to prevent accidents not only to themselves, but also to their fellow-workers. In addition, the workers should be encouraged to suggest ways and means of preventing accidents.

31. These facts may be communicated to the workers either through personal letters from the management, through announcements posted on the bulletin boards, through the plant publication, at departmental meetings, or at a general mass meeting. This is necessary to give publicity to the plan and to arouse enthusiasm for carrying it out. Without the cooperation of the workers, the plan will fail.

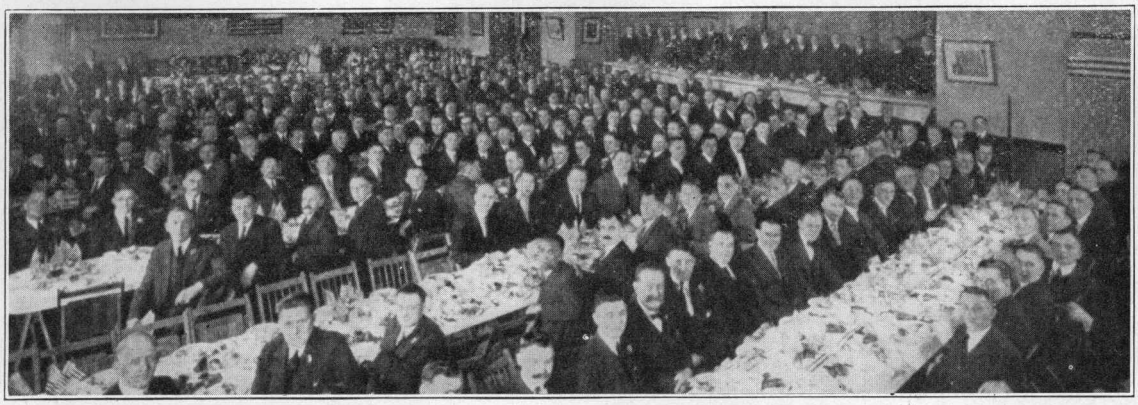
Educational Program

32. After the steps outlined in the preceding paragraphs have been taken, the problem becomes one of maintaining the interest and increasing the safety knowledge of the management, the foremen and the workers. Such a variety of methods have been created to accomplish these objectives that the safety director must use considerable discretion in selecting those methods which can best be adapted to the personalities of the individuals with whom he is working. This part of the work requires unlimited imagination, leadership, ingenuity, and stick-to-it-iveness.

33. **Educating the Management.** It is extremely important for the safety director to prepare a sufficient number of brief, concise reports at proper intervals to keep the management acquainted with the progress being made. Furthermore, it is highly advisable for the chief executives to attend safety meetings from time to time, not only to encourage others by their presence, but also keep in touch with the routine work. Another sure way to retain the interest of executives is to bring to their attention *all* of the details of a *few* important accident cases, describing family and home conditions of the injured workers, thus arous-

ing their sympathy and emphasizing the good that can be accomplished through effective thoroughgoing accident prevention work.

34. **Educating Foremen.** Foremen and department heads are usually so busy on production and other problems that they fail to see that safety can easily be made an integral part of the production job. Thus, special plans are frequently necessary to secure the desired results.



Quarterly dinner for safety committees. Many companies give dinners at regular intervals for all foremen and members of all safety committees. These dinners and the discussions following are often big factors in preventing accidents.

35. In many companies, safety committees are organized not only to educate the committee members, but also to give them certain legislative and executive responsibilities such as:

a. To determine standards for guarding machinery and equipment.

b. To formulate safety rules.

c. To investigate all accidents and decide what must be done to prevent their recurrence.

d. To review all safety suggestions and recommendations, and decide upon their practicability.

36. The size of the company and nature of its business are usually the determining factors in selecting the personnel of the safety committee. A typical committee might include such men as:

Manager	**Employment Manager**
Superintendent	**Company Physician**
Plant Engineer	**One or more foremen**
Master Mechanic	**One or more Workers**
Safety Director	
Purchasing Agent	

37. The committee might include all of these men, but not necessarily so, but in no case should it be composed of less than three members. The chairman of the committee should be the member who holds the position of greatest authority in the plant, and the safety director should serve as secretary and adviser. All members, except the chairman and secretary, often rotate in office.

38. In some companies where regular meetings of foremen and other operating executives are held, the safety director becomes a member of the conference, and the functions of the safety committee may be undertaken by this larger group. In such cases, all foremen receive the educative influence of attending these meetings and participating in the discussions, and safety thus becomes an integral part of their regular activities.

39. Further details are presented in the Council's Safe Practices Pamphlet No. 72 on "Safety Committees."

40. There has been a long-felt need in industry for specific material which can be used not only to give foremen a broader knowledge of the fundamental principles of accident prevention, but also to instruct or remind foremen of the definite things they must do in safety, as well as to give them ideas for discussion with workers either singly or in groups. This need has now been filled by the Council's series of booklets called "Safety in Foremanship" which have been prepared primarily for emphasis through meetings of the conference type under the guidance of a good discussion leader.

41. Other ways to keep safety in its proper place in the minds of the foremen include:

a. Sending the NATIONAL SAFETY NEWS to the home address of each foreman is an excellent method of giving them safety ideas and inspiration not available from any other source. (67)

b. Interplant and interdepartment safety contests foster friendly competition and always have a beneficial effect. (74)

c. Selected individuals should be sent to the Council's Annual Safety Congress and to nearby regional safety conferences. (67)

d. A complete set of Safe Practices Pamphlets and Congress Transactions should be made available to all foremen and others in positions of authority for reference purposes. (67)

e. Managers may write regular monthly letters on safety to all foremen. (A folder entitled "Personalized Safety," containing a dozen or more typical letters, has been published by the Council and is available upon request).

42. **Educating Workers.** Many ideas have been originated and worked out successfully to educate the workers in accident prevention.

43. **Safety Posters.** As soon as the general announcement (discussed in paragraphs 30-31) has been made, or simultaneously with it, the safety director should start the use of safety posters which have come to be recognized as one of the most effective methods for arousing and maintaining the interest of workers in accident prevention. Posters usually give instructions or information concerning specific hazards and practices—or they are of an inspirational character to promote thought of safety. Both types should be used to give variety to the appeal.

44. Posters obtained from the National Safety Council, insurance companies, and other sources should be supplemented by home-made posters and information about local affairs. Other interesting displays may include statistical reports, goggles broken in service, and awards for safety contests.

45. Bulletin board displays should be changed frequently—at least twice a week—every day if possible. The best results are secured if one bulletin board is located in each department — with several general boards at strategic points in the plants, such as at the entrance, in lunch rooms, and in the first-aid dispensary.

46. For further details see Safe Practices Pamphlet No. 38 on "Safety Posters and Bulletin Boards."

47. **Pay Envelope Enclosures; Calendars; Magazines.** Many companies carry safety direct to their workers and even into their homes through the distribution of the Safety Calendar, and through monthly house-organs or syndicated magazines such as "The Safe Worker," also published by the National Safety Council.

48. Pay envelope enclosures or safety messages attached to pay checks are often used effectively on the theory that workers are usually open-minded on pay day and ready to "listen" to suggestions that accidents automatically take big slices out of regular pay checks.

49. **Safety Contests.** Competition in accident prevention as in many other worth while undertakings is a valuable means of arousing and holding the interest of the contestants. Success in accident prevention depends to a great extent upon the ability of the safety director to sell the idea of safety to every person in the organization. Unfortunately, the average organization is so large that it is impossible for one man to care for all the necessary details of his work and at the same time interview and really convince every individual of his personal responsibility in the accident prevention program. It thus becomes necessary for the safety director to devise some method for getting others to help him in this individual selling campaign. This is one reason for favoring such activities as safety committees. In a similar way, safety competitions tend to increase still further the number of "safety salesmen" in a plant.

50. A contest between departments makes a "game" of accident prevention; it gives the workers an idea about which they can talk to anyone in the company, and about which they can develop and display enthusiasm.

51. Recognizing these facts, the National Safety Council through its "Complete Industrial Membership" service, presents annually a bronze trophy to the first-prize winning unit in each intra-company safety contest.

52. **General.** Other activities might include:

a. Special safety instruction to new employees. (65)
b. Warning signs. (81)
c. Rule books. (80)
d. Posting safety rules pertaining to particular departments.
e. Suggestion systems. (40)
f. Classes in safety and first-aid. (67)
g. Fire drills and fire brigades. (19-36)
h. Mass meetings or meetings by departments. (67)
i. Motion pictures and stereopticon slides. (62)
j. Prizes or bonuses for safety. (74)
k. Safety playlets. (67)
l. Questionnaires and quizzes. (67)
m. First-aid contests between departments or plants. (51)
n. Reaching the homes of workers through public schools — awarding prizes on best essays on safety, etc.
o. Attending community safety council schools for foremen and supervisors.
p. Workmen's safety committees. (72)
q. Special campaigns such as "No Accident Week," "Clean Up Week," etc. (67)

53. Of course, it is not advisable for any safety director to attempt to carry on too many of these activities at the same time. The educational program must give variety, for one stunt that works well for several months or a year may then get stale and need changing to make any impression upon the plant workers.

Engineering Revision

54. Engineering revision means the improvement or redesign of machinery, equipment, and processes so as not merely to *cover up* hazards but to *eliminate* them and at the same time to increase efficiency and production. This engineering phase of safety is often neglected, but it can well be made a major activity that will pay unusually large returns on all of the time and effort that may be invested.

55. Safeguards are usually only temporary expedients awaiting the development of more fundamental means of eliminating accident hazards. For instance, several years ago numerous gates and guards were installed on power presses to sweep away the operator's hand when the ram descended. These safeguards have now become more or less obsolete because of the development of mechanical methods of feeding. These feeding devices make it difficult and in most cases impossible for the operator to get his hand into the danger zone.

56. One of the companies that pioneered in engineering revision as applied to power presses, has practically eliminated all power press accidents, whereas they used to cut off an average of 36 fingers a year. Not only that, but the production of these presses has been increased 60 per cent. What has been accomplished in this particular operation can and should be accomplished in many other industrial operations, and the safety director is often looked to for leadership in this work that is so fundamental and yet so far-reaching in its effect.

General

57. It is unnecessary to discuss further the majority of the items mentioned in this pamphlet, for most of them are covered in detail in other pamphlets of this series. Several points, however, need additional emphasis; particularly the foreman's place in accident prevention; suggestions for a talk on safety by the company president or general manager; and suggestions for a safety talk by the plant superintendent.

The Foreman's Place in Accident Prevention

58. The most successful foreman is the one whose department shows the largest production at the lowest relative cost. All foremen want to be successful and therefore strive to maintain a high standard of production and to keep the cost within a fixed estimate.

59. Accidents reduce production and increase its cost. It is obvious, then, that to be most successful you must eliminate accidents in your department. Each accident has a direct effect upon the efficiency of your organization. In a small department, say of 10 men, if one man is disabled on account of injury, the production may be reduced by one-tenth. Even with a new worker in his place—and it often takes several days to secure another worker—the production may not reach normal for several days or weeks. If this is true of a small department, it is likewise true of a large department in the same ratio as the number of men disabled bears to the number of men employed.

60. Progressive employers have come to realize that in every department the foreman is the "key-man." In the eyes of the workers, the foreman represents the company. Plans and policies formulated by the manager or superintendent are ineffectual and useless unless carried out wholeheartedly by each foreman in his department.

Foremen the Determining Factor

61. The worker's attitude toward safety depends to a great extent upon the attitude of the foreman. If you are indifferent, the men will

CHART II

Typical Records of Accident Reductions—Two-Year Period

Company	% Reduction Frequency	Av. No. of Employees
General Motors Chevrolet (Janesville Plant)	38	634
L. C. Smith and Corona Typewriter Co.	58	1,255
Victor Chemical Works (Acid Plant)	83	226
Mathieson Alkali Works	40	450
E. Winters Co.	48	490
Koss Construction Co.	37	336
Corn Products Refining Co. (Kansas City Plant)	46	368
Item Biscuit Co.	47	416
Deere & Co. (East Moline)	55	1,450
Jones & Laughlin Steel Co. (Aliquippa Works)	65	10,016
Graton & Knight Mfg. Co.	45	1,075
Fred Rueping Leather Co.	40	721
Northern Paper Mills	60	596
Brown Paper Mill Co.	85	400
Skelley Oil Co.	31	2,040
Humble Oil & Refining Co.	27	11,175
Wagner Electric Corp.	57	1,790
Addressograph Co.	39	1,000
Chicago, So. Shore & So. Bend R. R.	29	690
Arkansas Power & Light (Miss. M. P. & L. Co.)	67	790
Cleveland Stone Co. (No. 7)	64	129
Mountain Ice Co.	45	170
Pennsylvania Rubber Co.	53	1,187
Dolphin Jute Mill	55	537
Eddystone Mfg. Co.	67	709
Long Bell Lumber Co.	41	729
Brunswick-Balke-Collender Co. (Muskegon)	71	1,643

be indifferent. But if you believe in safety, if by what you say and do each day you convince your men that you are in earnest and are doing everything in your power to protect them, you will get your men with you. Just as the captain of each company more than the colonel determines the morale of the men in an army, so you and your sub-foremen determine the spirit of safety in your department.

62. Discipline has a place in safety work, but in the long run a foreman must lead his men into safety, not drive them.

Qualifications of a Safe Foreman

63. What qualifications must you have to get results in safety? First, you must believe in accident prevention just as you believe in anything else that prevents waste and increases the efficiency of your department. Second, you must really care for your men as human beings, be sincerely interested in their welfare and feel your moral responsibility to protect them. You must be a leader, capable of winning the confidence of your men, so they will pull with you. You must be a "regular fellow," the kind of man the workers instinctively respect. If you secure the wholehearted support of your men, you will succeed; if not, you will fail and nothing can save you.

64. You must know safety — must inform yourself, with the assistance of the safety director, regarding the best methods developed in other companies where conditions are similar to those in your own department.

65. Backbone is one indispensable part of the structure of a safe foreman. When you announce that, beginning today, safety is to be first and production second, you must convince your men that you mean just that; you must leave no room for doubt.

66. Finally, you must be square with your men, and must be sincerely appreciative of every effort or suggestion they make, and you must show your appreciation. In other words, you must win your men to safety.

What a Foreman Can Do

67. To get your men intelligently interested in safety, you must keep close to them—watch their habits, study their jobs, make them feel that you understand their problems. You must carefully and constantly instruct your men in accident prevention, especially the new men; not simply tell them to "be careful," but warn them in regard to the particular hazards of their jobs and give them specific directions as to the safe methods of work.

68. You can take a new man and in a few minutes, with tact and a friendly attitude, impress that man with the fact that here is a shop where everybody is pulling together to keep people from being injured; the company is spending money to make the buildings and machines safe, you are doing your part, and the workers are doing their part. This gives the new man a splendid start in the right direction.

69. From the beginning, the foreman should understand and present safety to the workers as a business proposition—not as a frill or a fad. The reduction in accidents and the saving in money for both the employer and the employees of many of the companies actively engaged in this work, prove that it is an indispensable part of every efficient shop organization.

Inspection

70. You should know your department. Through regular inspection and constant daily watchfulness you should know every dangerous place or practice.

71. Do not wait for the recommendations of someone else. The responsibility of seeing that guards are provided for dangerous places is placed squarely on you, and you should act promptly. Delay often destroys the workers' confidence in safety. You should see that the guards are kept in repair and are used by the men.

72. Keeping tools and machines in proper repair and adjustment is clearly another one of your duties. You can render most valuable service to safety by vigilance in this work.

73. The effectiveness of the first-aid department in caring for the workers and preventing infection depends largely on your cooperation in instructing and disciplining them. You must make them understand that minor injuries must receive prompt attention, and explain why a slight break of the skin, if neglected, may cause blood poisoning and death.

74. If you have a safety committee of workers or special safety representatives in your department, their success depends wholly upon you— whether you properly instruct

and encourage them from day to day.

Meetings

75. Department safety meetings for workers conducted by the foreman once a month have proved most valuable in keeping up interest and enthusiasm in safety. These meetings give you an opportunity to place yourself on record as to what you are willing to do to protect your men, and what they should do. The workers should also be encouraged to talk and a friendly get-together spirit should be fostered.

Suggestions For Talk By Factory Manager At a Safety Meeting For Employees

76. The officers of the company are determined to stop accidents and to make this shop a safe and healthy place in which to work.

77. This meeting is called for the purpose of discussing the plans we have developed for preventing accidents.

78. We have studied the records of accidents which have happened in our plant, and this analysis, combined with what we have learned of the experiences of other companies, proves that a certain percentage of our accidents could have been prevented by the company if proper safeguards had been provided. The remainder of our accidents resulted from unsafe acts of the men injured or because of the wrong methods they employed.

79. You can thus see that neither the officers of the company nor the workers have done their full part, and both are therefore to blame for the accidents which have occurred.

80. We have decided now, however, to turn over a new leaf; the company from now on will provide any practical guard which you may suggest and our officers will go the limit in this work of preventing accidents.

81. It is now up to you men to do your part. You should be a thousand times more interested in safety than the officers, because you and your families are the ones who suffer most when you are injured or killed. The company may be able to stand its share of the loss, because that share is only measured by money; but can you afford to stand your share if it means the loss of an eye, an arm, or a leg? You can not estimate in money these losses nor what it would mean to your family if you were killed.

82. This safety movement is nationwide. Remarkable results have been secured in many factories where everybody has pulled together to prevent accidents. Here are the typical reports of several companies which have done real effective safety work. (Here quote records from Chart II.)

83. Each of these companies attributes a considerable portion of its success to the splendid cooperation by the workers. Likewise, we want every worker to report to his foreman any dangerous condition or dangerous practice which he may find. The more suggestions made the better the officers will like it, because we want to learn immediately of every dangerous place and practice in the shop and then we can go to work to eliminate dangerous places and practices as soon as possible.

84. Tomorrow morning we are going to start a real effort to prevent accidents in this shop. Other shops are practically eliminating serious injuries and deaths from accidents. We can accomplish just as much. Let every man come to the shop tomorrow morning with the determination that each will do his part in this worthy cause, and not only avoid doing those things which will endanger his own life and limbs, but also avoid doing anything which will endanger the lives and limbs of others.

Suggestions For Talk By Superintendent At Safety Meeting For Foremen

85. The officers of this company have decided to do everything in their power to prevent accidents in this shop. Hundreds of companies all over the country are taking up this proposition of safety and are organizing and promoting it as an integral part of the operating organization. In every company where the work is being done efficiently, large reductions in accidents are being made and large savings in money are being realized, not only for the owners but also for the workers.

86. We should look upon safety not as an outside matter, but as an inside proposition—an indispensable part of an efficient organization. An efficient shop means a safe shop. It is bad, bungling business to maim or kill workers.

87. The officers of the company are willing to spend the money necessary to equip the plant with effective safeguards.

88. In laying out the work of guard building one of the first things which must be done is to decide upon the points of danger which are most hazardous and which should be guarded first. I shall expect each foreman to prepare a written report, giving a list of the points which he considers most important. A week from today we will meet again to consider these reports. Out of the lists thus submitted will be made up a revised list, which will constitute the guarding schedule according to which we shall all be expected to work.

89. The experience of a large number of companies which have done good safety work has demonstrated beyond a doubt that deaths and serious injuries can be prevented. The experience of these companies has also demonstrated that to reduce accidents we must not only install all necessary safeguards, but also do everything possible to reach the workers and really interest them by giving them an active part in the work of safety.

90. Let me give you figures showing what several other companies have accomplished in preventing accidents. (Here quote records shown in Chart II.)

91. Every foreman should realize that he has a very important place in this safety work. A foreman who is interested, enthusiastic, and determined to make a record in his own department, can do much to interest his men by carefully instructing every man who comes into his department, and constantly watching for dangerous practices. In the great majority of cases a friendly word of advice to your men is all that is necessary. There are extreme cases where discipline must be applied, and in rare instances the punishment must be discharge. The same leadership and the same disciplinary measures should be employed in handling men from an accident prevention point of view as in handling them when other production problems are involved.

92. From now on the officers of the company propose to hold each foreman responsible for the accidents in his department. He will be expected to study the conditions of his department, to study every accident which occurs, and to do everything in his power to eliminate dangerous places and dangerous practices.

93. A safety director has been appointed whose chief duty will be to look after the details of safety which the manager and superintendent have not the time to look after. He will keep in touch with the foremen, follow up work which has been planned, and keep the detailed records of inspection reports, etc. Every foreman is expected to do everything in his power to prevent accidents to the men working under his supervision. The safety director will help in every possible way.

94. This safety program which we are now starting, will succeed or fail, depending upon whether or not you foremen take hold of it with vim, with confidence, and with enthusiasm; showing by your words and acts that you have faith in it; that you believe it is a practical thing, and that you are going to do everything in your power to protect your men from being injured or killed. If the foremen are cold, indifferent, and skeptical, the workers will be careless and the effort will fail. The attitude of the men will very largely reflect the attitude of the foremen. Remember that an enthusiastic start—all of us pulling together during the first weeks—will do more to arouse the workers, win their confidence, and make them take this movement seriously, than many months of humdrum, plodding effort.

ACKNOWLEDGMENT

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Maintaining Interest in Safety

Safe Practices Pamphlet No. 67

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This is one of a series of more than 150 Safe Practices and Health Practices Pamphlets. It is a compilation of experience in accident prevention. It should not be assumed, however, that it includes every acceptable procedure in the field covered and it must not be confused with federal, state or insurance requirements, or with American Standard safety codes.

1. Some companies have become members of the National Safety Council, have installed a few mechanical safeguards, have put up a safety bulletin board, and then have sat back with a sigh of relief, fully expecting that their accidents automatically would decrease to some irreducible minimum, or perhaps be eliminated entirely. They have inevitably been disappointed. Every company that has been successful in cutting down its accident record realizes that such an accomplishment is attained only as the result of a carefully planned program, properly supported by the management, and well carried out through the hearty co-operation of everyone in the plant.

2. To start an accident prevention campaign from which real results may be expected, ten steps are necessary. These steps are usually followed in the order listed below. The importance of completing each step before going on to the succeeding items is discussed in detail in Safe Practices Pamphlet No. 42, "Organizing a Complete Industrial Safety Program."

(a) Obtain Cooperation of Manager.
(b) Obtain Cooperation of Superintendent.
(c) Appoint Safety Director.
(d) Analyze Accident Records.
(e) Hold meeting of Operating Executives.
(f) Make Inspection of Operations.
(g) Start Mechanical Safeguarding.
(h) Make General Announcement.
(i) Organize Educational Work.
(j) Consider Engineering Revision.

3. These ten steps, however, do not comprise all of the activites that can and should be carried out to secure the maximum of success. They represent merely the start of the campaign to prevent accidents. When they are completed (or in conjunction with step "(i) —Organize Educational Work"), the safety director will want to make definite plans for maintaining the safety interest which he has aroused among the plant personnel, without a continu-

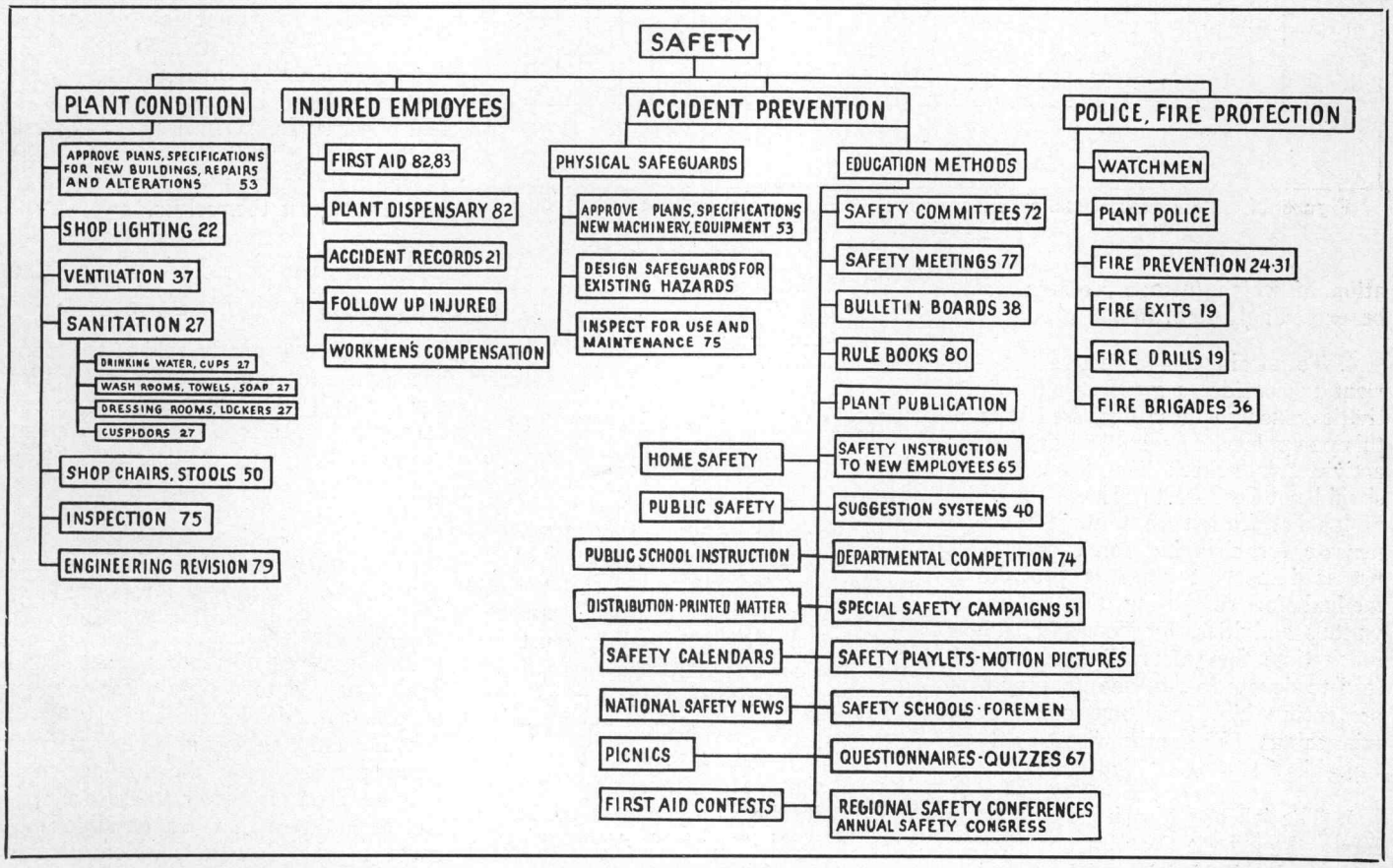


Figure I. This chart is referred to in paragraph 4. The numbers refer to National Safety Council Safe Practices Pamphlets The Council will gladly furnish, upon request, interesting and valuable data on subjects without number references.

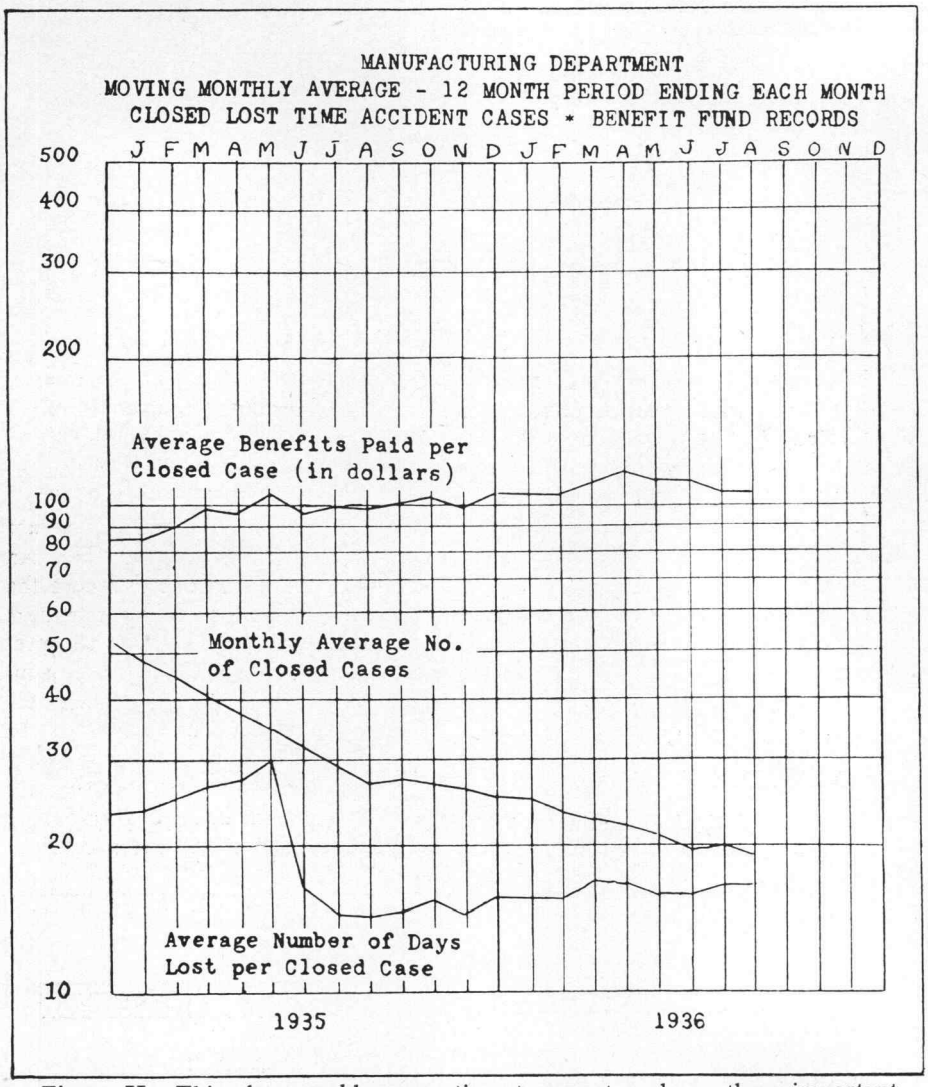


Figure II. This chart enables executives to see at a glance three important factors.

ation of which further progress would be exceedingly difficult.

4. To attain this objective, he will want to consider a great variety of activities, such as those discussed later in this pamphlet. He should arrange these activities in "check list" form, but he should not hesitate to change the order of his list from time to time to compensate for changing conditions. This list is important since it provides a method for comparing the values of various activities, for determining how much time the safety director can afford to devote to any one item, and for preventing him from overlooking certain things which otherwise might escape his attention. (Figure 1.)

5. The job of maintaining interest in safety throughout the company personnel may be divided into three parts:

(a) Maintaining Interest of the Management.

(b) Maintaining Interest of the Supervisory Forces.

(c) Maintaining Interest of the Workers.

Maintaining the Interest of Management

6. Successful safety directors soon form the habit of submitting reports to the managers and other executives at regularly stated intervals. It must be remembered, however, that these reports, to be of any value, must be brief and to-the-point. Executives have many other important reports to consider and therefore should not be given too much detail to review at any one time. (Figure II.) In considering what to submit, the safety man should also keep in mind items such as:

(a) Analysis of the company trend in injury frequency and severity.

(b) Analysis of the cost of accidents.

(c) Analysis of the various cost-elements in accidents.

(d) Monthly average number of closed cases.

(e) Average number of days lost per closed case.

(f) Average benefits paid per closed case.

(g) Comparison of lost-time injuries sustained in course of employment with those occurring outside of employment.

(h) Comparison of the plant records with those of other companies in similar industries.

(i) Reports of unusual and fatal cases.

7. In summarizing these data, simple charts and graphs should be used as frequently as it is practicable to do so. In addition, managers should not be allowed to lose sight of the human element in safety work. It therefore is often advisable to acquaint them, either through reports or verbally, with the histories of certain individual cases, especially where wives and children of injured employees are important factors. Annual reports of the safety activities are valuable in keeping boards of directors, stockholders and others informed concerning the progress made and work performed. Managers should also be urged to attend safety committee meetings and other group activities from time to time. This not only gives them an opportunity to obtain first-hand information about how safety work is being carried on, but also has an excellent effect on the supervisory forces and workers. Men, noting the interest displayed by managers, are encouraged to greater interest themselves.

Maintaining the Interest of the Supervisory Forces

8. Much that can be said of the management's interest in safety applies equally well to the supervisory forces. Meetings and reports are excellent media in keeping the "bosses" sold on accident prevention. By emphasizing, at every opportunity, the relation between safety, efficiency, labor turn-over and operating costs, the safety man can impress the supervisory forces with the importance of accident prevention.

9. The types of reports, charts and graphs needed to maintain the interest of foremen and other supervisory forces does not differ to any great extent from those prepared for the management. (Figure III.) However, there are several other items that can be added because of the close association of this group with actual operating conditions and practices. These added items include:

(a) Attendance at Community Safety Council Foremen's Schools.
(b) Attendance at Regional Safety Conferences and Safety Congress.
(c) Foremen's Training Classes in Safety.
(d) Neighborhood luncheon meetings of superintendents and foremen.
(e) Attendance at Safety Committee meetings of the workers.
(f) Comparative reports of departmental operating costs to which are added the compensation and medical costs.

The Workers and Their Interest

10. The job of keeping workers interested in safety is sure to test the tactfulness and ingenuity of the best safety men. However, since the experience of members of the National Safety Council shows that a considerable percentage of all injuries result from causes within the control of the workers themselves, the safety director should make use of stunts and ideas that will help to emphasize this point. It is not possible to incorporate in this pamphlet a detailed account of all the numerous activities developed by members of the Council to "sell" safety to the workers; so only a few are selected because of their importance and applicability to all industries and conditions. These are discussed under the section headed "Activities," starting with paragraph 12.

11. No attempt is made to recommend the consecutive order in which these activities should be undertaken; the order varies in different plants, depending upon such factors as existing conditions, personalities and desires of managers, needs of the moment, and ability of the safety directors themselves. Included among these activities will be found such items as:

Safety Inspection Charts (see paragraph 12).

Accident Record Charts (see paragraph 13).

Safety Posters and Bulletin Boards (see paragraph 17).

Mass Meetings (see paragraph 18).

Outings (see paragraph 22).

Safety Playlets (see paragraph 23).

Distribution of Letters and Printed Matter (see paragraph 24).

Safety Instruction Cards (see paragraph 26).

Suggestion Systems (see paragraph 27).

Safety Schools (see paragraph 31).

Safety in Foremanship (see paragraph 32).

Safety Commitees (see paragraph 33).

Investigation of Accidents (see paragraph 34).

Safety Contests and Campaigns (see paragraph 36).

Rule Books (see paragraph 42).

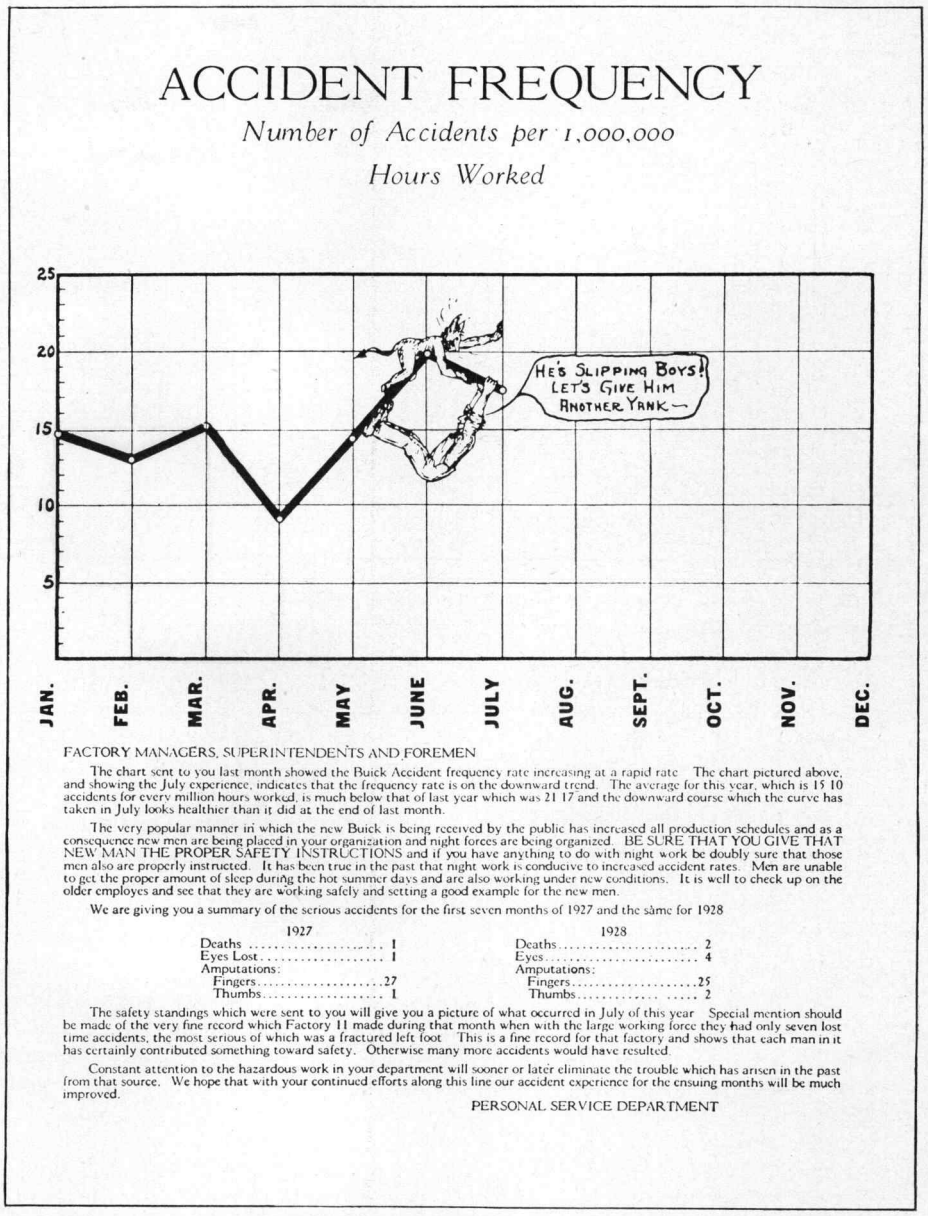


Figure III. This chart differs from that shown in Figure II in that only the accident frequency rate is plotted. Note that it is addressed to managers, superintendents and foremen.

"Shop Safety—Illustrated" and "Safety Pays" (see paragraph 44).

Questions and Answers (see paragraph 45).

Safety Literature and the Annual Safety Congress (see paragraph 46).

Sharing Ideas (see paragraph 48).

The Plant Magazine (see paragraph 49).

"The Safe Worker" and "The Safe Driver" (see paragraph 50).

Activities

12. **Safety Inspection Charts.** It may be well to chart the regular intervals at which all equipment should be inspected. This will serve as a guide in "feeding" ideas to the various committees and at the same time enable the safety director to keep a close check on departmental housekeeping as well as on mechanical problems. One member of the National Safety Council uses a table of inspections as illustrated in Figure IV. Others use the same general outline but specify shorter or longer intervals between inspections.

13. **Accident Record Charts.** While the charts and reports prepared for the management and supervisory forces furnish the nucleus for reports to the workers, it usually is not advisable to use the same data without modification. They generally are difficult for the workers to interpret. Furthermore if an attempt were made to explain them to the workers, the explanation would be

Table of Inspection Periods

Items	*Interval between Inspections*
Electrical shop hazards	6 months
Hand trucks	6 months
Ladders—portable and stationary	6 months
Window cleaner's belts and window eyes	6 months
Food handlers (physical exam.)	6 months
Hand tools (mushroom head, broken handles, etc.)	6 months
Emery wheels (guards and water supply)	6 months
Tools and equipment (mechanical guarding)	In case of rearrangement of dept. or plant
Crane chains and hooks	Constantly
Cranes	Constantly
Elevators	Constantly
Bulletin boards	As bulletins are posted
First-aid cabinets	Weekly
Safety meetings	1 to 3 months
Stair treads and railings	3 months
Goggles—sterilizing outfits	3 months
Stretcher cabinets	12 months
Crane operators (physical exam.)	12 months
Gas masks	12 months
Hydraulic elevator tanks	12 months
Warnings signs	12 months

Figure IV. See paragraph 12 for suggested variations in this Table of Inspection Periods.

so complicated and long that it would lose practically all of its effectiveness.

14. Special charts, graphs and statistical reports can and should be used, however, in giving the workers facts about accidents. Such data must, of course, be simple and easily understood. One chart may be used to show the number of disabling injuries, another the number of days lost, another injury causes, another accident causes, another body location of injuries, etc. Such charts, however, should be kept up-to-date to maintain continuous interest. (Figure V.)

15. The methods of presenting these data should be varied from time to time. If the same set of forms or tables is used over long periods of time, employees may fail to recognize recent changes. (Figure VI.) For a complete discussion of many other methods see Safe Practices Pamphlets No. 100 "Safety Stunts"—Part I, and No. 101 "Safety Stunts"—Part II.

16. Many simple and attractive methods of presenting statistical data to the workers have been devised. One is a safety clock, the face of which is marked off to indicate the frequency of disabling injuries. (Figure VII.) Twin clocks or dials are often used; one recording the present rate and the other the rate for the corresponding period of the past month or year. A detailed discussion of the industrial statistical plan, is given in Safe Practices Pamphlet No. 21 on "Standard Industrial Injury Reporting System."

17. **Safety Posters and Bulletin Boards.** The use of pictures and stories is one of the most effective means of getting results and maintaining interest. In view of the fact that it is virtually impossible to carry on this educational work with each man personally there is no doubt that a live bulletin board offers one of the most practical solutions to the problem. Frequent changes of safety posters have been found necessary, and National Safety Council posters should be supplemented by the use of home-made posters such as, cartoons, photographs, exhibits of unsafe tools, and short notes from the management. It is assumed that all safety men will realize the importance of maintaining neat, attractive, well illuminated, and conveniently placed bulletin boards. (Figure VIII.) These points as well as detailed information on layout of attractive posters and boards will be found in Safe Practices Pamphlet No. 38 on "Safety Posters and Bulletin Boards." Many members also erect large outdoor boards and use the Council's "Jumbo" poster service for monthly changes.

18. **Mass Meetings.** Mass meetings, called and conducted by the management, have definitely proved their value in many organizations. This type of meeting affords an excellent opportunity for the management to acquaint the entire personnel with the purpose and scope of the safety program (if a start is just being made), or to inform everyone of the progress made in the campaign under way. At such meetings it is often advisable to use some outside speaker who can talk authoritatively and convincingly on the general phases of accident prevention work. It should not be difficult to secure such a speaker from some nearby plant, insurance company, automobile club, or community safety council. If requested and supplied with the details of meeting arrangements, the National Safety Council will gladly suggest the names of possible speakers.

19. In all such meetings care should be exercised in developing the program. It is at such meetings that the workers often get their first impressions of the importance of accident prevention work and since "first impressions" are usually lasting ones, no stone should be left unturned to make the meeting most attractive and comprehensive. Safe Practices Pamphlet No. 77 on "Safety Meetings" furnishes a program outline as well as a discussion of other important details.

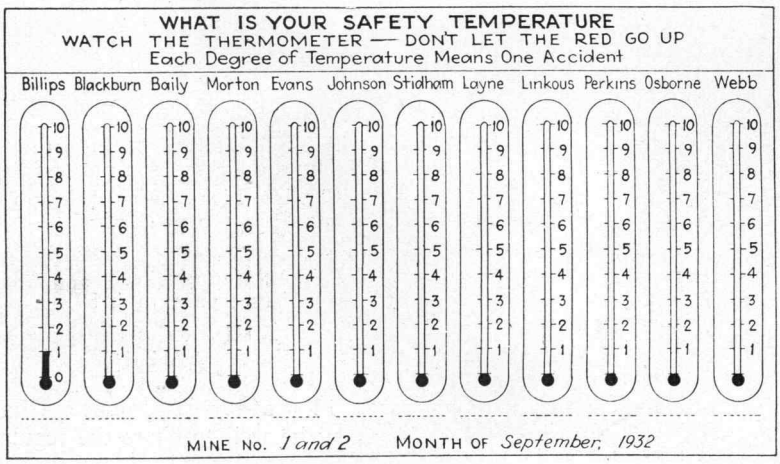


Figure V. This thermometer chart, devised at the Wheelwright Mines, employs a novel method of comparing the month's accidents by mine sections and by their assistant foreman. The chart is reproduced from "Coal Age", December, 1932.

20. One large cement plant has held meetings of this kind at monthly intervals, during which operations were shut down for an hour. One-half the time was devoted to entertainment and the remainder to a serious safety talk. The entertainment consisted of safety films (such as furnished by the National Safety Council and others), safety songs, and other features. A short talk by the manager (such as outlined in Safe Practices Pamphlet No. 42) was scheduled each time to convey the idea that the company took an active part in the accident prevention program and was doing everything in its power to improve working conditions and the safety of workers.

21. Other members have divided their plant workers into teams and these teams have held regular mass meetings. Each team developed its own program including speakers, musical numbers, one-act plays, and other features by employees from the plant. Thus, everyone was benefited rather than just a select few. All were given a chance to obtain information about safety that would be difficult to get otherwise.

22. **Outings.** Picnics and outings afford another vehicle in stimulating interest. Some members capitalize on these events by scheduling safety and first-aid stunts. Inter-plant or intra-plant first-aid teams compete for company trophies as well as for prizes for individual members of the winning team. At one company picnic safety movies were, through an ingenius arrangement, shown on a day-light screen. Thus they were able to reach the families of the workers who play such an important part in the mental attitude of most individuals.

23. **Safety Playlets** often afford an opportunity to put over phases of the safety program that are difficult to "sell" in any other manner. Some members companies use to advantage the many playlets available from the National Safety Council. Some playlets deal with the foremen's responsibility, others with the carelessness of workers, with unsafe conditions, and management's responsibility. It is not always necessary that the actors speak. One large company used a pantomime playlet with the scene laid in a factory. The characters portrayed unsafe working practices and the thoughtlessness of some employees. During an inter-works entertainment contest, this playlet was awarded first prize. (Figure IX.)

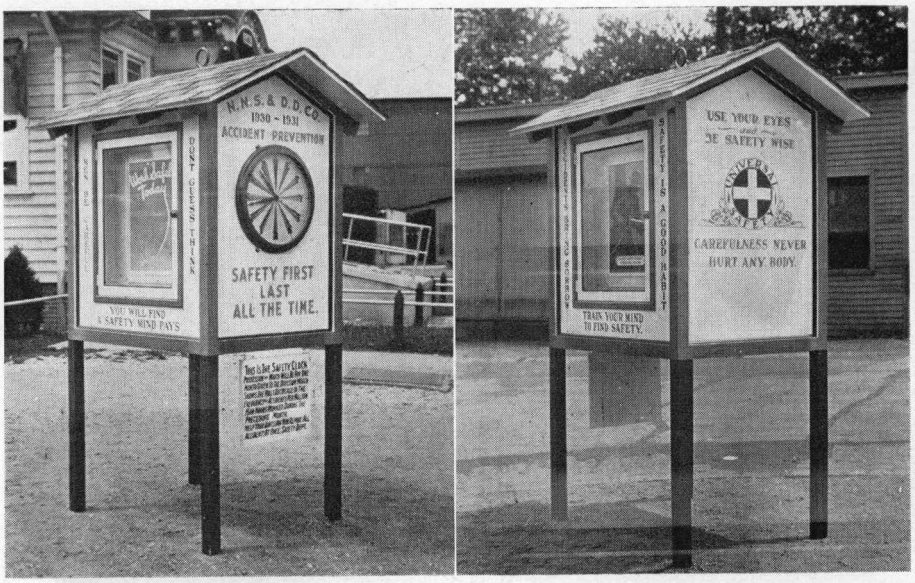


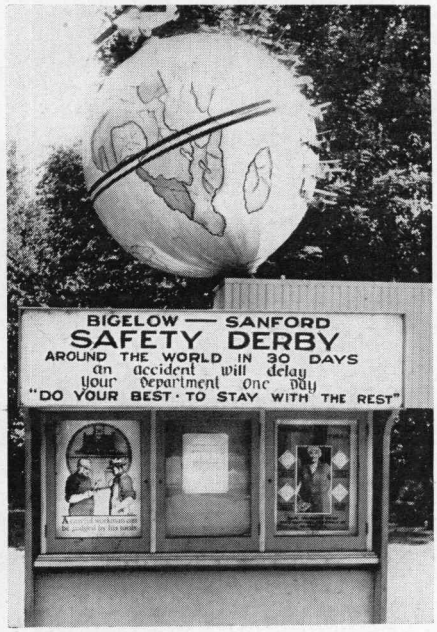
Figure VII. These two views show the four sides of an interesting safety clock. It is the reward in an inter-departmental competition. The department having the lowest rate during the greatest number of months, at the end of the year is awarded the clock.

23a. Many playlets have been staged during National Safety Congresses which proves to some extent the value of this activity in stimulating and maintaining interest in safety. Copies of all playlets are available upon written request to the National Safety Council.

Figure VI. This board is 3 x 8 feet. Circular tags are of aluminum. Light sockets are wired for each day. A blinker red light is used for the day a disabling injury occurs and continues to blink until the month's end. Odometer wheels give attractive and instantaneous changes in the statistics

24. **Distribution of Letters and Printed Matter.** Safety messages can be conveyed directly to the workers by printing safety slogans on pay envelopes and pay checks. (Figure X.) Small folders or cards containing slogans, or form letters, or safety messages such as are obtainable from the National Safety Council, can be inserted in these envelopes. Rubber stamps may also be used to "print" safety messages for such use. The bottom of all inter-department correspondence can also be used to convey safety messages. Letters signed by the manager and addressed to individuals for meritorious service have enormous value and make an excellent impression upon the workers. Safety calendars, published by the National Safety Council, together with Christmas letters from the manager have an appeal that is direct and reaches the workers' homes. Every employee should be included in this mailing list.

25. Monthly issues of the NATIONAL SAFETY NEWS, PUBLIC SAFETY and THE INDUSTRIAL SUPERVISOR can be scheduled through the plant. Many companies secure a sufficient number of extra copies of Council publications to have one mailed each month to the home addresses of the key men who have the time and inclination to go through the magazine from cover to cover. Buttons, blotters and other small novelties, all conveying a safety message may also be used. Some companies paint safety slogans on their buildings and vehicles. These may be varied from time to time,



Courtesy, Bigelow Sanford Carpet Co.

Figure VIII. This attractive and well placed board serves a dual purpose. Not only are posters and notices effectively displayed, but the globe records each department's safety progress. A miniature aeroplane is attached for each department.

just as posters are changed on bulletin boards. Other features used in "advertising" the safety program and in further creating interest are discussed in Safe Practices Pamphlet No. 51 on "Planning an Industrial Safety Campaign."

26. **Safety Instruction Cards.** Through a series of 3 x 5 inch cards, as published by the National Safety Council, it is also possible to reach individual employees. These cards are designed for distribution to operating executives, foremen, safety committeemen, engineering departments, and workers on the job. They are technical or semi-technical treatments of specific accident hazards or brief suggestions on the safe ways of performing particular jobs. These may be used not only to maintain interest but also to encourage similar suggestions from those to whom they are distributed. (Figure XI.)

27. **Suggestion Systems.** One of the first methods employed in many industries to encourage interest, thought, and co-operation for safety among workmen was the adoption of a suggestion system. Safety men as a rule appreciate the fact that machine operators know the operation and condition of their machines better than any one else and that they are often better able to suggest practical improvements in these schools. The subjects usually deal guards and safe practices than are inspectors, superintendents, or even foremen. What is true of machine operators is also true of most of the other workers in any industry and it requires only a little encouragement from the management to secure from them valuable suggestions, the adoption of which will prevent many accidents.

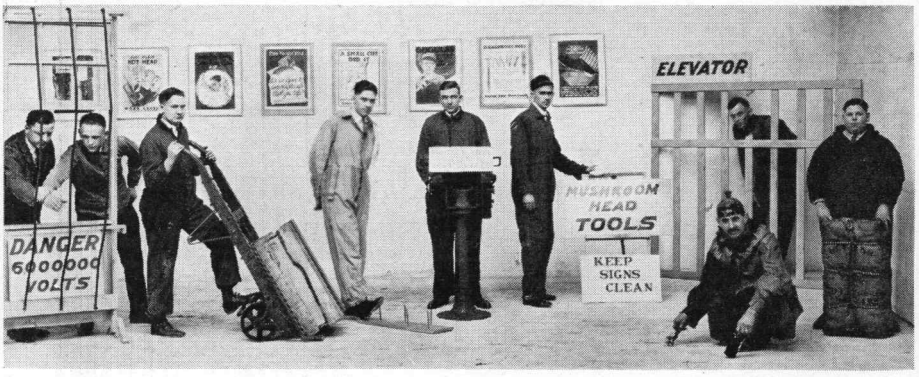
28. Accident prevention is closely associated with efficiency. It is not strange, therefore, that many of the suggestions received are valuable not only in preventing accidents but also in lowering the cost of production, improving manufacturing conditions and methods, bettering the health and increasing the happiness of the workers. Many suggestion systems which were started for the purpose of securing the assistance of the workmen in preventing accidents were later enlarged, and the announcement made that suggestions on other subjects would be equally desirable. In many plants, therefore, employees are encouraged to submit all suggestions which in their estimation will—

(a) Decrease the danger of accidents to themselves or their fellow workers;
(b) Eliminate fire hazards or increase the effectiveness of fire extinguishment methods and equipment;
(c) Result in better working conditions;
(d) Decrease waste of:
  (1) materials,
  (2) power,
  (3) space,
  (4) labor;
(e) Improve methods or processes;
(f) Improve machines or products;
(g) Make possible new products.

29. Suggestion boxes, attractive and well placed, may be used. (Figure XII.) Many companies have found this activity of exceptional value in stimulating thought about accident prevention. Special blank forms can be provided for the convenience of all workers. It is essential that the management acknowledge all suggestions, as this increases the interest of the employee in his work and establishes a spirit of co-operation. Suitable awards may be made, in accordance with the merit of the suggestions. Some companies give cash prizes, useful articles, certificates of merit, medals, or a trip to the National Safety Congress. Many companies exclude from receiving prizes, their superintendents, foremen, designers, and other high salaried employees, in order to provide all other workers with someone to whom they can go for assistance. This preferred group is usually given special consideration based on the department records.

30. As in all such activities, supervision and follow-up play important parts. It is essential that any such plan be well organized before being put into effect. Methods of handling the suggestions, location and style of boxes, acknowledgment of suggestions, awards, and many other features of the plan are discussed in detail in Safe Practices Pamphlet No. 40 on "Suggestion Systems." This discussion, based on the experience of many members of the Council, will serve as a guide to others.

31. **Safety Schools.** Schools for foremen and supervisors, such as those sponsored by industrial groups, state and community safety councils, state industrial commissions and others, are designed to give these men a greater vision of their responsibility in promoting the physical safety of those who work under their direction. Many members enroll all foremen and supervisors in these courses in which are arranged a specified number of sessions in a given number of weeks or months. Addresses, discussions, demonstrations, and moving pictures are presented at



Courtesy, International Harvester Co.

Figure IX. See paragraph 23. The safety message is easily conveyed in the pantomime. Note that the posters have a direct bearing on the playlet.

first-aid, efficiency, leadership, labor turn-over, production, and employment. The foremen and supervisors, occupying as they do vitally important positions in industry, will find these school programs specifically adapted to their problems, helping them to secure the best possible safety results and efficiency in production.

32. **Safety in Foremanship.** In lieu of and often in addition to safety schools for foremen, some members of the Council hold regular classes where safety is taught by the conference method. As an aid in developing this plan, the National Safety Council has formulated two series of booklets called "Safety in Foremanship" and "The Human Side of Safety in Foremanship." These booklets can be used to advantage in all types of industries. (Figure XIII.)

33. **Safety Committees.** Safety committees have come to be recognized as important factors in securing action on safety ideas suggested by workers. They also do what can hardly be done in any other way; they convince the workers that a considerable percentage of injuries result from their own thoughtlessness and carelessness. If the members are rotated, every worker will eventually be given an opportunity to serve on a committee. Some recognition might be given to retiring members, such as buttons, home first-aid kits, lunch boxes, and similar awards. These should be gifts of value, otherwise the results might be spoiled by giving too cheap an award. Occasional dinner meetings of committeemen have proved of value. Committees can (figuratively speaking) "starve to death" if they do not receive continuous support from the management. The manager, the superintendent, and the foremen should be encouraged to attend workmen's committee meetings from time to time, but they should be careful to encourage action rather than to scare the members into silence. The safety director should act as secretary and from that position "feed" the committee the ideas and activities that will keep alive their interest and stimulate their co-operation in the safety program. Many practical suggestions are contained in Safe Practices Pamphlets Nos. 42 and 72. It is, therefore, advisable to review these for more detailed information.

34. **Investigation of Accidents.** In creating interest in the accident prevention program, safety directors should make it a point to investigate all disabling injuries as well as accidents involving only property damage. Every accident is in reality a potential death case and often the mere fraction of a second or a slight movement of the body may split the difference between safety and disaster. If these investigations are delegated to or brought to the attention of various committees they will serve to focus attention on the sincerity with which the entire program is functioning.

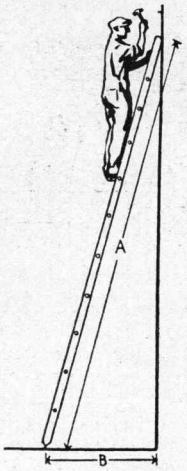
35. Some members carry this plan even farther. In such instances there is created a "Board of Inquiry" or "Safety Court." Here sessions similar to the civil courts are held to determine and fix responsibility. Employees found "guilty" usually receive a lay-off or reprimand, depending upon the seriousness of the case and the frequency with which the offender has been involved in similar occurrences. The complete proceedings of one such court session as well as other details in connection with the investigation of accidents can effectively with safety, fire prevention, be found in Safe Practices Pamphlet No. 56.

36. **Safety Contests and Campaigns.** Competition, if properly organized, can do much to develop teamwork among the workers. Teamwork is particularly successful in accident prevention work. Some workers who apparently give no thought to their own safety can be influenced to cooperate with their fellows if they know that an injury resulting from thoughtlessness or any other cause will bring discredit upon their department or "team."

37. Numerous safety contest, prize, and bonus plans have been developed and used by members of the Council. In some cases the frequency of disabling injuries may be the basis for determining the winner; in others a point-scoring system or imaginary "100 year" plan may be used. Many of these plans are unique and worthy of consideration in the development of any accident prevention program. It is, therefore, suggested that Safe Practices Pamphlet No.

SETTING UP A LADDER

1. Select a ladder with suitable safety feet; otherwise, block or tie the base, or have someone hold it.
2. Be sure rungs and side rails are in sound condition.
3. Place ladder feet parallel with wall or other solid backing. It is unsafe to rest a ladder against loose boxes, round objects, or other insecure backing, unless it is tied so that it cannot fall.
4. The best angle for a ladder is about 75 degrees with the horizontal. (Note diagram.) Have the distance "B" about 1/4 of the ladder length "A". In other words, place the base of a 12-foot ladder 3 feet from the object it leans against.



UNIVERSAL SAFETY SAFETY INSTRUCTION CARD **No. 16**

Revised May, 1936

Figure XI. This Card illustrates the practical safety information available through the use of Safety Instruction Cards published by the National Safety Council. They are intended for distribution to individual workers.

SHOP PAY ROLL

Millikin National Bank
DECATUR, ILLINOIS 70-69

COPY

Nº 7551

Period ending January 1, 1931

Pay to the order of John Doe $ 41.88

FORTY-ONE 41 88 CTS.

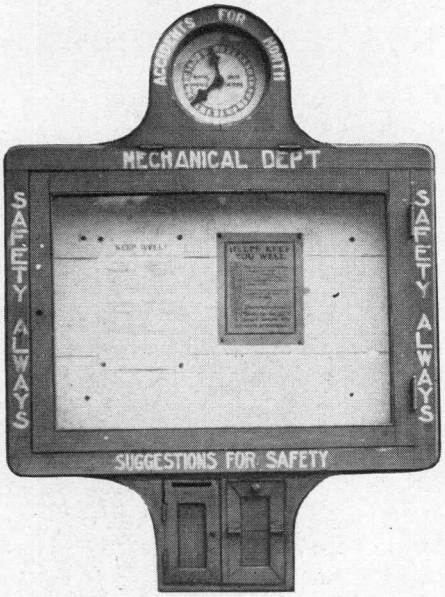
Endorsement of this check acknowledges payment in full to date of check
NOT GOOD FOR MORE THAN SEVENTY ($70.00) DOLLARS

Wages $ 37.88
Eff. Bonus $ 4.00
Deductions $

Hind sight
Won't bring back
Eyesight.

MISSISSIPPI VALLEY STRUCTURAL STEEL CO.
[redacted]
Asst. Treasurer

Figure X. This novel stunt is described in paragraph 24. The safety message is changed each day.



Courtesy Halcomb Steel Co.

Figure XII. Combined bulletin board and suggestion box. The boxlike arrangement attached to the lower part of the board is divided into two compartments; one at the right contains suggestion blanks; the other is slotted for the insertion of written suggestions. The front panel of the compartment at the right is divided in the middle, the upper section being hinged to swing downward. Hinges with springs close the door after use.

74 on "Safety Contests" be reviewed. (See also paragraph 51.)

38. In addition to the stimulating effect produced by company competitions, it is often advisable to take advantage of the national contests sponsored by the National Safety Council. (Figure XIV.) This enables direct comparison of records with plants in a similar line of work and assists in creating further interest because of the national publicity available through participation. Safety men should never overlook an opportunity to capitalize on the results of every contest. The "complete" membership service classification of the National Safety Council includes an 8½x 11½ inch bronze plaque and a complete outline for an inter-plant or inter-department contest. Further information will be sent upon request.

39. A broom, horse-race, bull's-eye, and other novel stunts, can be used to attract interest and at the same time indicate the standing of the teams competing in a safety contest. Some plants use scores in the form of baseball averages. One company used barrels representing the various divisions and these were shown floating down the "Safety River" in their relative positions. Another company used a large thermometer-like board. One of these was placed at every gate and clockhouse. Arrows indicated the present and previous month's records, and the comparative standings of departments were tabled below. An auto race was another stunt used; each car represented a division and in addition, one car was used to represent "carelessness." These cars were moved daily to denote the progress of each department in its race against "carelessness." Another idea was a large board with a space for each day in the month. For every day passed without a disabling injury a donation was made to the Salvation Army. If a disabling injury occurred, the name of the department was posted opposite the day. As the aeroplane always attracts attention, one company has used this idea to show the relative position of each division in its safety campaign. The ships were moved daily, on a large board painted to represent mountainous country. Others have used a "Safety Dollar." Thirteen sets of "bills," numbered in series, the size and shape of a dollar bill, were distributed. Every employee received a safety dollar with each pay check for thirteen consecutive pay-days. All were urged to save a complete set for the purpose of winning cash prizes offered to those holding lucky numbers and a perfect "no-accident" record for the period. (See also Safe Practices Pamphlets Nos. 100 and 101—"Safety Stunts.")

40. Special campaigns such as "Clean-up Week" differ from contests in that they are usually scheduled for short periods of time such as one week or one month. Also, each one is asked to put his shoulder to the wheel, not for personal or group recognition but rather to prove to himself as well as to the community what can be accomplished by concentration. Such special campaigns are of course in addition to, and not substitutes for, persistent accident prevention effort the year round.

41. Many of the same stunts or ideas that are used to maintain interest in contests can also be used to advantage in special campaigns. Some members use safety parades, exhibits of unsafe and safe tools and equipment, pledge cards, and other such features. (Figure XV.) A first-aid drill may be given or a demonstration of the prone pressure method of resuscitation (which is so essential for all to know) regardless of their positions. (For further details see Safe Practices Pamphlets No. 29 on "Electrical Equipment in Industrial Plants," and No. 83 on "Training for First Aid and Rules for First Aid Contests."

42. **Rule Books.** Printed rule books containing the company's safety regulations are popular. (See Safe Practices Pamphlet, No. 80, on "Safety Rules—Their Formulation and Enforcement.") The National Safety Council has samples of several hundred rule books and will gladly lend them to members upon request. When distributing rule books to new employees receipts are often required, and some companies hold quizzes from time to time. Sometimes suitable awards are given employees who, after six months' service, are able to pass a quiz or examination and who also have clean accident records.

43. Sometimes the safety rules contained in such booklets are not thoroughly studied and implanted in the minds of those who should follow them. A scheme that is worthy of consideration is to post rules one at a time, at suitable intervals, on the bulletin board. Regular sized bulletins should be made of them and in some cases newspaper clippings could be attached describing accidents referred to in the rules. This system could be followed until all rules in the book and all general orders having the effect of rules have been posted; certain rules, of course, should be reposted from time to time. Rule books can be made that contain the law and gospel of safety. (Figure XVI.)

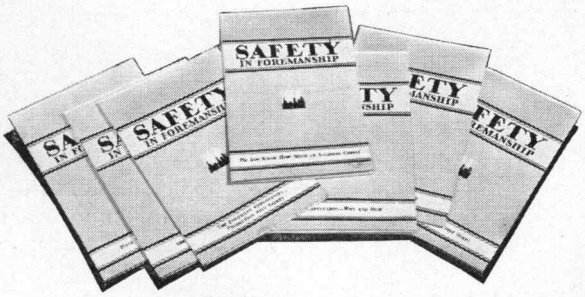


Figure XIII. A series of 12 textbooks (each 6 x 9 inches) entitled "Safety in Foremanship" and imparting safety instruction to foremen in a novel and interesting way, represents one of the greatest strides ever made toward the education of the men who have direct supervision of workers. See paragraph 32.

44. **Shop Safety—Illustrated and Safety Pays.** In lieu of and often in addition to company rule books, members have used the forty-two page handbook of safety called "Shop Safety—Illustrated" and "Safety Pays," both of which are available through the National Safety Council. These publications contain "straight from the shoulder" facts about accident prevention in the plant and on the job. Written in non-technical terms that are easily understood and fully illustrated, they afford another means of stimulating interest in safety.

45. **Questions and Answers.** A series of questions on accident prevention can be prepared. These may be printed for distribution to foremen or to all employees, or for publication in the house organ. The men may be requested to answer the questions or the answers may be published and distributed. A typical questionnaire, as used by the Westinghouse Electric and Manufacturing Company, is given on pages 10-11 of this pamphlet. Many advantages may be obtained from questionnaires of this kind. They keep everyone on the alert, for no department head wants his department reported unfavorably, nor does he wish to be pointed out, even indirectly, as being inefficient. Men answering questionnaires should never be ridiculed because of their failure to answer questions correctly. They should be shown every courtesy and the correct answer given by the instructor or someone in authority. To belittle a man immediately destroys his confidence and works directly against the objects desired. Full cooperation, the ideal of every safety program, is best secured by encouragement.

Figure XV. One department of the plant collected an exhibit of unsafe equipment for its bulletin board. On the board also are home-made posters submitted in a contest.

Figure XIV. An illustration of one of the sectional safety contest trophies awarded by the National Safety Council.

46. **Safety Literature and the National Safety Congress.** Much information and inspiration can be obtained from literature distributed by the NATIONAL SAFETY NEWS, PUBLIC SAFETY, THE INDUSTRIAL SUPERVISOR, Safe Practice Pamphlets, Transactions of each National Safety Congress, as well as from attendance at such Congresses and at Regional Safety Conferences. Men attending safety meetings learn of the ideas and programs of thousands of other companies and are, therefore, better equipped to cooperate in their own workshops. After hearing and taking part in the many round-table discussions at these meetings or in the sections which are pertinent to their industries, they can return to their own organizations with the renewed interest necessary to stimulate others. The Transactions are of exceptional value as they reproduce the many interesting papers read at these Congresses. These, together with the Safe Practices and Health Practices Pamphlets, constitute a miniature safety library — one that should be available to the manager, superintendent, safety director, safety committeemen, and foremen in every shop. The Council Safe Practices and Health Practices Pamphlets are the result of extensive research and are written as guides and not as technical codes.

47. To further aid members and others in selecting interest-creating literature, there has been issued a "Service Guide." In addition to the many items discussed in detail in this pamphlet there will be found in this Guide a list of such stimulating publications and services as:

- First Aid Reminders—(What to do in emergencies).
- The Healthy Worker—(to reduce absenteeism).
- Safeguarding Women in Industry—(preventing accidents to women).
- Pay Envelope Enclosures—(constant safety reminders).
- Safe Driving—(a booklet for motor vehicle drivers).
- Moving Picture Films—(safety subjects).

48. **Sharing Ideas.** Safety men should be encouraged to sumbit interesting data, difficult problems, or "kinks" of any nature to bureaus such as the National Safety Council. Here these problems can be solved or given to others for solution. Through such a clearing house, information is available on every phase of safety, gleaned from the experiences of others in similar industries. Many such ideas or "kinks" are published monthly in the "Safety Exchange" section, NATIONAL SAFETY NEWS. (Figure XVII.)

49. **The Plant Magazine.** All of these features furnish safety ideas for inclusion in the employees' magazines

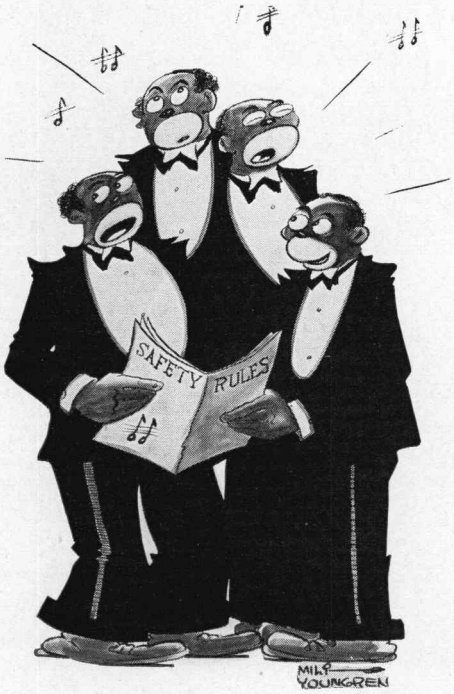


Figure XVI. Safety Rules set to music was the unusual method adopted by a mine superintendent of the Koppers Company to keep the men interested in the company rule books. Some well-known jubilee singers were engaged. The mine crew worked over two months without a disabling injury during the campaign.

through which the management can keep in touch with the employees and their families. As a medium for safety teaching and maintaining interest in safety, the plant magazine has proved its value, according to the testimony of many members of the National Safety Council. In plants, where a full time editor is employed, the editor looks to the safety man to supply him with safety material, while in many smaller plants the safety man is the editor. The National Safety Council has published a pamphlet entitled, "The Employees' Magazine—Its Duties and Opportunities", outlining the functions of a plant publication and many methods by which the editor can secure and maintain reader interest.

50. **The Safe WORKER and the Safe DRIVER.** When no plant magzine or house organ is published, and quite often when they are, members make use of the Council's booklets "The Safe WORKER" and "The Safe DRIVER." These little monthly magazines (3½ x 6 inches) consisting of sixteen pages, generously illustrated with cartoons and sketches, make safety popular among workers and win their cooperation and support in the safety program. The Safe DRIVER is a twin of The Safe WORKER both in size, general appearance, and usefulness, but the editorial content has to do with the safe operation of motor vehicles. The Safe WORKER consists of short stories built around current happenings of world wide importance interspersed with editorial comments and actual incidents which have a shop safety angle.

General

51. **Off the Job Accidents.** Industry is paying another bill of tremendous proportions for injuries sustained by its employees while they are away from the job. To combat these "losses," many members are now extending their accident prevention programs, including contests, to cover all time losses due to accidental injuries incurred by the employee whether on duty or off. A complete discussion of the methods used and interest-maintaining details can be found in Safe Practices Pamphlet No. 102, "Off the Job Accidents and Their Prevention."

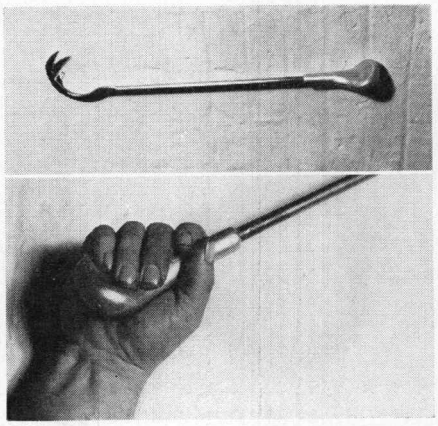
52. Many other methods have been developed for maintaining interest in safety and many of the ideas suggested in this pamphlet can be changed and adapted to give variety to the program. As in life, no one wants to attend a baseball game every day in the year, so in safety, the workers do not want to attend too many meetings, neither do they want to look at the same posters day after day, nor will they continue to read and re-read the safety rule book. The safety director, however, need not worry about his apparent inability to develop something new; perhaps it is truly stated, there is nothing that is new. Success, therefore, to a large extent depends upon a man's ability to take the old ideas, adapt them, dress them up in new clothes, and present them in such a way that they have new interest. A stunt that does not make any impression at all on one man may be just the thing to "sell" another.

A Safety Quiz for Supervisors

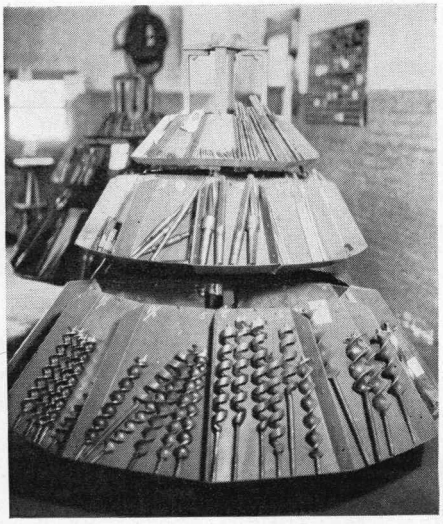
53. The Westinghouse Electric and Manufacturing Company has used a series of questions, (several at a time) at weekly meetings of the supervisory force. These are used to test the foremen's knowledge of the fundamentals of safety and to supply material for discussion at these meetings. These questions cannot be answered by a straight "yes" or "no" but involve many points which will lead to interesting discussions. The discussions are recorded and the answers amplified by the opinions of supervisors in several groups. A copy of the answers furnished by the Westinghouse is available from the Council upon request. Here are the questions:

A—Accident Prevention

1. Why is the teaching of safety desirable or necessary for all employees in a plant?
2. When should it begin and how long should it continue?
3. What are fundamental causes of preventable accidents?
4. What are the main reasons for attempting to reduce accidents?
5. Why should safety work in a plant be organized?
6. Give your views how such organized safety work should be carried on.
7. What are the most common hazards or causes of accidents in your plant or department?



Courtesy, International Harvester Co.



Courtesy, Chicago and N. W. Ry.

Figure XVII. On the left is shown a safety handle molded to fit the palm of the hand. On the right is a safe and efficient rack for boring bits. These are typical of the many practical ideas submitted by members of the National Safety Council. See paragraph 48.

8. Is there any difference in your opinion between male and female workers or between young and old workers as to their being safe workers?
9. Have you any idea as to the causes of accidents in this plant; that is to say, are they due to the want of safety devices, in the main, or to other causes? If the latter, what are the causes?
10. Why should you regularly inspect your department from a safety standpoint?
11. Do you have a man who spends all his time on safety patrol inspection work? If so, what and to whom does he report?
12. Do you insist that a workman when slightly injured, cut or bruised, go to the first aid department and why?
13. Do you understand the Prone Pressure Method of Resuscitation? Describe it.
14. What is its principal recommendation and for what accidents is it best adapted?
15. How would you keep the subject of safety constantly before the workmen?
16. Do you believe in guarding equipment? If so, why are so many guards removed and not replaced?
17. What practical recommendations can you make to reduce accidents in the plant?

B—Health and Welfare

18. Is there any connection between safety and health?
19. Why is physical examination advisable before hiring an employee?
20. Why are periodic physical examinations advisable?
21. Why would you recommend a sick benefit association, a pension plan or other welfare activities for a plant?
22. Do you believe there is any relation between accidents and labor turnover; if so, why?

C—Statistical

23. Should accident records be maintained and for what purpose?
24. What accident records would you maintain and for what purpose?
25. Have you any idea as to the number of persons accidentally killed and injured in the U. S. annually?
26. How do such accident statistics compare with those of other countries?
27. Have you any idea as to the number of breadwinners who go down and out from sickness as compared to accidents?
28. Are accidents more frequent during any particular hours of the day or day of the week; what are such times and days and why?

D—Workmen's Compensation Laws

29. Do you know what is meant by Workmen's Compensation Laws? Describe them.
30. What was the method of settling accident claims previous to the introduction of the Workmen's Compensation Laws?
31. How does this Company's annual cost of accidents compare with some other costs entering into overhead; for example, defective design, workmanship and material?

E—Fire

32. Do you know what is the most common cause of fire in this plant?

ACKNOWLEDGMENT

This Safe Practices Pamphlet was drafted by W. Dean Keefer, Director, Industrial Division, and G. E. Burns, Safety Engineer, both of the National Safety Council headquarters staff. The assistance of the safe practices conference committee is gratefully acknowledged.

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NATIONAL SAFETY COUNCIL
INCORPORATED
20 NORTH WACKER DRIVE
CHICAGO