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BUREAU OF LABOR STATISTICS
ROYAL MEEKER, Commissioner

BULLETIN OF THE UNITED STATES BUREAU OF LABOR STATISTICS . . . . . No. 248
WORKMEN'S INSURANCE AND COMPENSATION SERIES

PROCEEDINGS OF THE FOURTH ANNUAL MEETING OF THE INTERNATIONAL ASSOCIATION OF INDUSTRIAL ACCIDENT BOARDS AND COMMISSIONS

HELD AT BOSTON, MASS., AUGUST 21-25, 1917

MARCH, 1919

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BULLETIN OF THE

U. S. BUREAU OF LABOR STATISTICS.

WHOLE NO. 248. WASHINGTON. MARCH, 1919.

PROCEEDINGS OF THE FOURTH ANNUAL MEETING OF THE INTERNATIONAL ASSOCIATION OF INDUSTRIAL ACCIDENT BOARDS AND COMMISSIONS, BOSTON, MASS., AUGUST 21-25, 1917.

TUESDAY, AUGUST 21—AFTERNOON SESSION.

CHAIRMAN, DUDLEY M. HOLMAN, PRESIDENT, I. A. I. A. B. C.

I. ACCIDENT PREVENTION.

The CHAIRMAN. It gives me great pleasure this afternoon to introduce to you His Excellency Gov. McCall, who has shown a deep interest in the workmen's compensation act during his administration. Under his administration added benefits have been given to the worker; the Industrial Accident Board has been increased from five to seven, thus obtaining for the injured worker more prompt and efficient service. Gov. McCall in his first inaugural address not only advocated very strongly added benefits to the workmen's compensation act but was, I think, the first governor to suggest and advocate to his legislature the passage of an old-age pension, and His Excellency went even further than that, and suggested that invalidity insurance and unemployment insurance were pressing on the heels of workmen's compensation, and he appointed a commission to study the entire subject of social insurance, which commission made its report to our last legislature. Therefore, I take great pleasure in introducing to the members of this International Association His Excellency, Gov. Samuel W. McCall, of Massachusetts.

ADDRESS OF WELCOME.

BY HON. SAMUEL W. M'CALL, GOVERNOR OF MASSACHUSETTS.

I am very glad to be here and to say a word of welcome to you. I congratulate you that you have selected a man as the president of this International Association who has had so much experience in the administration of the workmen's compensation act. I do not

know how we compare in Massachusetts with the other States of the Union, but our board has been making progress and has finally secured a procedure and a method of doing business which, I think, is very admirable, and I only trust that the other States and the Provinces of Canada are as well developed in that respect, if not better. It is strange how we move along, how we feel our way along, but I think perhaps the progress that comes from the groping ahead instead of leaping ahead is better and more permanent. The old-fashioned shoemaker, for instance, was not exposed to any accidents through the pursuit of his industry; possibly beyond hitting his thumb instead of the shoe with the hammer, or something of that sort, there was no liability to what might be called industrial accidents. But with the growth of modern industrialism and with the invention of these fast-flying machines which are in universal use to-day industrial accidents became a settled thing—in spite of all care on the part of the worker accidents will occur. And so the industrial accident system is simply based upon this idea: that accidents to workmen are a fair charge upon the industry, and that it is most inhuman to permit a man who is injured in an accident to bear the whole burden of that injury alone. Now, the application of this reasonable principle was resisted, but I am glad to say that it has finally become almost universal, and the object to-day is justly and fairly to administer the law; to find out just what the accident is without minimizing or without exaggerating, and in the giving out of the benefit, or rather in the distributing of the benefit, to consider in proportion just the character of the accident. Of course, the administration of any law is subject to abuse—men may not get fair treatment; they may not get what they deserve; other men may sham; they may try to get more than they deserve—but the permanency of this system of workmen's compensation will rest upon the honest and fair enforcement of the law. I think we are getting that in Massachusetts; I believe and trust we are getting it in the rest of the country.

So I am here just to say a word of welcome to the Commonwealth of Massachusetts and to express my pleasure at seeing here the representatives from our different States and from the Provinces of Canada.

PRESIDENT'S ADDRESS.

BY DUDLEY M. HOLMAN, PRESIDENT, I. A. I. A. B. C.

It gives me great pleasure to extend to you a cordial welcome to the Commonwealth of Massachusetts and to Boston, its capital city.

I give to you a genuine, hearty New England greeting, and trust that you will not only profit by your attendance, but enjoy your stay, and feel that you have been more than repaid for coming, some of you, many thousand miles.

While our program is a working program, we have left a little free time here and there, so that we can show you some of the historic places, which perhaps you have never seen, but which are a part of our national heritage.

Massachusetts was the earliest State to consider workmen's compensation and one of the earliest to adopt it. Its interest in this work grows as the beneficial results of this legislation make themselves apparent.

Our association is international in its scope, and we have with us not only representatives of the State and Federal Governments, but of several of the Provinces of our nearest and dearest neighbor, Canada. We, in this work at least, are one people. The imaginary line which separates us politically forms no barrier to the progress of this great work, and hands are clasped across the border in earnest desire further to extend the benefits of humanitarian legislation in which we are engaged.

In preparing the program for this occasion the committee thought best to deal exclusively with workmen's compensation problems and to divide them into three groups, arranging them in accordance with what seemed to us the importance of each:

First. The accident prevention and health protection problem.

Second. The problem of human repair after the accident has taken place, so that the wage earner may be restored to active participation in industrial life, fully reequipped for his old work if possible; if not, for some work, and at the earliest possible moment consistent with full recovery.

The third group is that of purely administrative problems—the questions we all want answered—in order that we may have the fullest and freest discussions, learning one from another the ways in which difficult or moot problems are being met and solved, and endeavoring to arrive, if that be possible, at some uniformity in our

way of solving them. With so many forms of compensation acts, widely differing on material points, with almost no uniformity save in the general scope and plan, this will not be possible in all cases, but I think it will be in most cases.

I am glad to see so many of the units of our organization represented here. It is a pleasure to see so many whom I have met and known at other meetings and an added pleasure to meet so many others who have come to us for the first time and who I know will be given a hearty welcome by the older members.

I am, however, as are all of us who have been engaged in this work, saddened with the remembrance that one of our honored members, my immediate predecessor in office, the Hon. Wallace D. Yaple, has been called from our earthly midst since last we met in his home city, Columbus, Ohio. One of the pioneers in this work, he threw himself heart and soul into it, with his tireless energy meeting the big problems and solving them, leading us all in many ways, and he studied night and day how best to meet and answer the questions that constantly arise; a man who was loved by his fellows, whose work lives after him, who took rank so high that we all looked up to him and admired him. Called from us at a time when his guiding hand was needed and his advice was sought after from all quarters, it seems to us incomprehensible, but it is not ours to question why God, in His infinite wisdom, has taken him home and we must bow in silent submission, realizing that He doeth all things well, and saying His will, not ours, be done.

It is a pleasure to me to again thank you for the honor you have done us by assembling here, and I know that I but voice the sentiments of the industrial accident board and the board of labor and industries, both members of our organization, in saying to you that we hope you will find yourselves repaid by coming and that this meeting will be productive of real benefits not only in the discussions which are to follow, but in our getting together, in knowing personally the men engaged in this work in the States and Provinces. This will lead to a broader development of the principles of workmen's compensation, and fit us to grapple with other and collateral problems when they come before us, as they soon must, for all touch upon the one great problem—that of the man and woman in industry, how we can best advance their interests, make their life's work more enjoyable through recognition of the principle that men and women engaged in industry should be protected from the hazards of that industry, should be guarded as to safety and health and made more efficient by the greater care taken to make their workplaces, not task rooms, not places to drag out the day under conditions that undermine their health and constitutions, but business places wherein they, happy and contented in their labor, intelligent

and well directed, are doing their share in building up industry, developing our natural resources, standing as one man behind the Government under which they live, giving the best that there is in them, in order that they and their children may in the future not only live in peace, but be accorded their rightful share in the prosperity which peace brings.

Facing as the world faces to-day the great problem of the success of democracy serious matters await our consideration. In the program as prepared, imperfect as it is and handicapped as the committee has been by reason of the conditions which exist, you will see the wisdom of our placing first on the program accident prevention and health protection.

I doubt whether the general public understands fully the work our boards are doing, or the extent and expense of this waste of life and health in industry. In the Commonwealth of Massachusetts during the fourth year of the act, there were 135,257 nonfatal and 463 fatal accidents reported. The number of benefit cases in that same year reported by the insurance companies was 93,825. Of this number 65,779 had medical service only and 23,819 had both compensation and medical service. Of the killed, in 239 cases there was total dependency and in 53 cases partial dependency.

There was paid out in this fourth year $834,804.52 for medical treatment and $3,252,146.97 for compensation, making a total of $4,086,951.49 paid out in that year under the act. The average cost last year per benefit case was $43.56.

In four years, in Massachusetts, there has been paid to injured workmen and their dependents under the provisions of this act $11,224,534.31 in the form of compensation and medical treatment.

The economic waste has been nearly three times that amount, so that we can gain some idea of the enormous waste in industry in this one State alone from accidents.

This will explain why we are desirous of checking this great and largely unnecessary waste—over 50 per cent absolutely preventable. Is it worth while to cut this waste in two? Is it worth while to prevent one-half of this great suffering which these figures reveal? Is it worth while to save over 200 lives annually? Is it necessary to have trained workers on their jobs at this time and not to have them absent because of preventable accidents when the workers in industry are just as essential as the men on the firing line at the front? This association, if it can only drive home these facts into the minds of the people and arouse them to the necessity for prompt and effective action in accident prevention, will have done much to justify its existence, and it is for this reason that in arranging this program we have given the place of first importance to the work of accident prevention.

Frederick W. Loughran, M. D., medical adviser, New York State Insurance Fund, makes the following statement:

> If we were to stop for a moment to consider the cost of sickness among the wage earners of this country, we would be appalled at the stupendous total. There are 30,000,000 workers in the United States whose average annual loss through illness is about nine days each. This is equal to 739,736 years each year, and as the average daily wage is estimated at $2.50, and the cost of medical attention at $1 a day, the annual loss to these 30,000,000 workers would be over $945,000,000. * * * The loss to the worker is not the only one incurred; we must take into consideration the one sustained by the employer, amounting to about $5 a day, or $1,350,000,000.

Should we not see that the working places are made healthful, sanitary, well ventilated, and well lighted to stop this tremendous waste consequent upon the breaking down in industry through surroundings that induce fatigue, disease, and discomfort? Is it or is it not worth while for our industrialists to consider these questions thoughtfully when the remedy lies largely in their own hands?

The greatest need to-day is man power. Man power means man and woman power, and this spells equal opportunity to both men and women, opportunity to render service. We all know that in periods of stress when a great national or world need arises the women respond with no less willingness to serve than the men, and the world is witnessing to-day sights that were undreamed of three short years ago. Wives, mothers, daughters, and sisters have gone into mills and factories, into the fields, into banks and business houses, aiding in every possible way. It is therefore our duty to see that when they step in to fill the gaps caused by the withdrawal for war service of their husbands, sons, fathers, and brothers that they are given safe, healthful, and cheerful places in which to work. They, because of the unaccustomedness of their surroundings, of the entire change in their lives, are more susceptible to accidents and disease than workers life-trained in these same employments. That is why accidents have doubled in all our industries during the past year and a half. There must be something more than the perfunctory enforcement of labor laws and safety laws. Conditions must be studied by men and women qualified to investigate, suggest, and insist upon remedial action.

Our very existence as nations depends upon the ability not only to mobilize our forces in industry, but to maintain the workers at the height of their efficiency and protect them from the hazards of industry to the best of our ability.

I would suggest the appointment of a committee by this association to do this work and to cooperate with our respective Governments in every possible way, through existing agencies if there be such, if not, to initiate such agencies in order that all may benefit thereby.

The workers must, when unfortunately they are injured, be given the best medical attention in order that they may return to their tasks at the earliest possible moment consistent with good recovery.

In the preparation of the program this thought has been constantly in the minds of the committee, and hence we have devoted a large part of the time of the convention to an attempt to show how the problem is being met in Massachusetts, and what loyal and sympathetic co-operation we are securing from the medical fraternity, the labor organizations, and the insurance carriers.

We all understand the importance of the administrative problems, and I will not therefore take up the time of this convention further.

I thank you again for your coming, many of you thousands of miles, to help us in this work, and I extend to you as president of your association, a cordial and heartfelt welcome to Massachusetts.

MECHANICAL SAFEGUARDS.

BY DAVID S. BEYER, MANAGER, SAFETY ENGINEERING DEPARTMENT, LIBERTY MUTUAL INSURANCE CO.[1]

There has been great progress in the development of standard guards in this country during the past 10 years. When the safety movement started there were no standards available, and it was largely a matter of "cut and try," each plant endeavoring to work out something that would stop the accidents and at the same time permit the machines to be operated. Many plants put in cumbersome guards of solid sheet metal, which were often inconveniently arranged and which did not allow a view of the working parts of the machine without taking off the guard. A foreman in a certain large plant which was a pioneer in the safety movement was once heard to remark that every machine in his department had been so covered up with guards you had to take the lid off to see what kind of a machine it was.

Guards have been developed which are made of expanded metal or heavy wire fabric, thus enabling the workmen to see the machine through the guard and to watch its operations without removing the guard. This open construction also allows light to pass through the guard, the machine or workroom not being darkened appreciably, as may be the case with solid guards. Experience has shown that in order to get the best results from a mechanical guard it is absolutely necessary to have it conveniently arranged so that it will offer the least possible interference with work around the machine, or the guard will be found hidden away under a bench or it will find its way in some mysterious manner to the scrap heap.

The proper time to apply mechanical guards is when machinery is being constructed, and more attention is being given to this point by the machinery builders every year. The designer, in getting up a new machine, can apply the guards at a minimum expense and can adapt them to the equipment in such a way as will not interfere with the work. He is thus able readily to provide difficult forms of protection that are almost impossible to work out satisfactorily after the machine has been built and placed in operation.

[1] Formerly Massachusetts Employees' Insurance Association.

As an example of how such difficulties often appear to the plant owner, a recent experience of one of our standardization committees may be of interest. We visited a plant at the request of a committee of mill owners, who represented an important manufacturing association. They felt, for various reasons, that the gears and some of the other working parts of the machinery used in their industry could not be guarded. The proprietor of the plant which we visited singled out one gear in particular which he said it was absolutely impossible to guard, since the gear had to be changed frequently and any guard that could be installed would so interfere with the operation of the machine as to be out of the question. He had spent some minutes emphasizing this fact, when we looked at the next machine and found the identical gear on it had been thoroughly protected by the builder, and instead of interfering with the operation of the machine the device was so simple that the employer had never even noticed it was there.

Similar experiences have been repeated, in one form or another, in many plants and industries. Machines which the owners or operators felt at one time could not possibly be guarded without limiting the output or interfering with the operation too greatly have been satisfactorily protected, with the exercise of sufficient care and ingenuity, so that the guards not only do not interfere with the operation, but in some cases even increase the output by enabling the operators to work more rapidly through the added sense of security which the guards give.

A mistake which has been made in probably hundreds of plants all over the country in starting their safety campaign is that of putting in guards which give only partial protection. In glancing through a hundred or more accident reports recently, it was noted that half a dozen of the accidents had occurred on machines which were but partially guarded. The old form of constructing a gear guard was to put a band around the face of the gear, which only partly protected the mesh point, and employees cleaning or working around the machine, feeling that the gear was guarded, were likely to be even more careless than they would have otherwise been. Many accidents have resulted from such forms of partial protection and there is no doubt that a poor guard may be worse than no guard at all.

Many plants have made the similar mistake of making their guards too light and flimsy at the outset, and later being compelled to replace them with heavier guards which would stand the wear and tear. This is an expensive road to travel, but it seems to represent a form of evolution that many plants have to go through, because

they can not be made to realize the importance of building a complete and substantial guard at the beginning.

Some such mistake was perhaps unavoidable at the start, when there were no definite standards available. That condition has been changed, so there is now no need for anyone wasting time and money on guards that are improperly constructed and will not give the desired results.

Through the standardization committees of the national safety organizations, the engineering societies, the State and Government authorities, and the rating boards of the compensation insurance companies the best practice of the leading concerns is being crystallized into definite standards that are being adopted all over the country. These standards are readily available in printed form for the use of anyone who is interested in the subject and no attempt will be made here to go into a detailed discussion of the construction or arrangement of mechanical guards.

Value of mechanical guards.—Some discussion will be given, however, of a subject which is of great importance to every one working on the reduction of industrial injuries, and that is, "What is the value of mechanical safeguards as compared with other methods of accident prevention?"

At the 1916 meeting of this association Mr. Dudley M. Holman devoted a part of his interesting paper to this question, and included some statements of prominent safety men in different parts of the country.

One of these men was Mr. Marcus A. Dow, general safety agent of the New York Central lines. He stated that only 9.65 per cent of their injury cases were "due to defective equipment, conditions, tools, or appliances, the balance being of a character which can only be prevented by the exercise of greater care on the part of one or more human individuals."

Another of the statements was made by Mr. Charles D. Scott, general manager of the bureau of safety of the Commonwealth Edison Co., Chicago, and similar concerns, who said that an analysis of accident reports which he had compiled showed that only 14.1 per cent of the accidents reported could be attributed to mechanical or physical conditions and that 85.9 per cent were chargeable to the human element.

Another statement was by Mr. Robert J. Young, manager of the safety department of the Illinois Steel Co., who said that no more than 33⅓ per cent efficiency can be gained by guarding machines (including the incidental advertising of safety that results from installing guards), and that usually this efficiency would fall below 25 per cent.

Data from the Brown & Sharpe Manufacturing Co. showed that for the years 1905 to 1910 mechanical accidents in their plants represented 42.7 per cent of the total, being reduced to 31.5 per cent in 1911, 23 per cent in 1912, and 19.2 per cent for eight months of 1913.

Apparently most of these statements are based on the number of mechanical accidents compared to the total number of all accidents, rather than on the seriousness of the accidents. As Mr. Holman pointed out, many of the companies whose statistics were quoted had been carrying on safety work for a number of years, and the fact that much of their physical safeguarding had been done for a long time must be borne in mind in considering their accident data. However, as a result of his investigation Mr. Holman concluded that only 15 to 25 per cent of industrial accidents can be prevented by safeguarding machinery and other danger points and that some 25 to 65 per cent can be prevented by education, including shop-safety organizations, etc. A number of similar statements have been made from time to time by other safety men, usually being given largely as matters of opinion, without any record of the data upon which they are based.

This question has a most important bearing on the fundamental principles of accident prevention, since its answer determines the whole line of attack in carrying on a safety campaign. If mechanical safeguards will prevent only 15 per cent of the total accident hazard, obviously mechanical guards should be given minor consideration, and our chief efforts should be concentrated on the place where the major hazard lies. If, on the contrary, mechanical guarding will prevent 50 per cent of the hazard, it becomes a matter of primary importance. With this point in mind, a thorough study of the entire subject has been made, with the idea of determining whether the statements mentioned above are fairly representative of conditions in the average manufacturing State.

It will be noted that the first two statements quoted were made in connection with railroad and electric light and power companies. These industries have very little machinery in comparison with the ordinary manufacturing plant and so much of their work is outside that the human element is necessarily a disproportionately large factor. The other two statements are from manufacturing plants, and are probably much more nearly representative of general conditions. They give an average of about 25 to 30 per cent for mechanical accidents, with a minimum of 42.7 per cent for one plant, presumably at the beginning of its accident-prevention campaign.

Since the workmen's compensation acts have been passed carefully compiled accident statistics are being kept by a number of States,

making available much additional data which throws interesting light on this subject. From these sources the following representative records are taken:

ACCIDENTS IN MASSACHUSETTS, JULY 1, 1914, TO JUNE 30, 1915, CLASSIFIED BY CAUSE.

[From annual report of Massachusetts Industrial Accident Board.]

Cause.	Fatal.	Non-fatal.	Total.
MECHANICAL ACCIDENTS.[1]			
Belting	5	1,034	1,039
Calenders		137	137
Cranes	3	325	328
Drills		481	481
Elevators	26	941	967
Engines	2	180	182
Extractors		32	32
Eye injuries: Belting, emery wheels, machine tools		4,373	4,373
Gears	1	1,086	1,087
Hoists	10	644	654
Lathes		869	869
Machinery peculiar to special industries	12	8,676	8,688
Milling machines		256	256
Planers		99	99
Portable tools	4	66	70
Presses	1	1,407	1,408
Saws	2	1,410	1,412
Shafting (set screws, etc.)	3	664	667
Vehicles (self-propelled)	14	991	1,005
Wood molders, shapers, etc		623	623
Miscellaneous[2]	1	1,360	1,361
Total	84	25,654	25,738
Per cent of grand total	22.7	27.1	27.1
NONMECHANICAL ACCIDENTS.[1]			
Animals	4	969	973
Asphyxiation and drowning	11	91	102
Assault and fighting	1	135	136
Boiler explosion		40	40
Burns	20	3,319	3,339
Electricity	14	437	451
Emery wheels		782	782
Engines		1	1
Excavating	9	336	345
Explosions (other than boilers)	2	159	161
Eye injuries; Chemical, gauge glasses, and molten metal		2,261	2,261
Falling material	6	1,523	1,529
Falls	82	8,749	8,831
Fooling		12	12
Glass		1,516	1,516
Hand labor	24	30,950	30,974
Harmful substances, irritant fluids, etc	3	699	702
Illness		186	186
Infection	9	3,572	3,581
Intoxication		9	9
Nails		4,066	4,066
Railroad equipment	60	947	1,007
Street railways	6	1,045	1,051
Vehicles (other than self-propelled)	33	3,474	3,507
Miscellaneous[2]	2	3,665	3,667
Total	286	68,943	69,229
Per cent of grand total	77.3	72.9	72.9
Grand total	370	94,597	94,967

[1] This grouping was made by the writer.
[2] Miscellaneous unclassified accidents divided pro rata between mechanical and nonmechanical accidents.

ACCIDENTS IN NEW YORK FOR YEAR ENDING SEPT. 30, 1914, CLASSIFIED BY CAUSES.

[From Bulletin No. 75 of New York Industrial Commission.]

Cause.	Factories.		Mines and quarries.		Building and engineering.		Total.	
	Fatal.	Nonfatal.	Fatal.	Nonfatal.	Fatal.	Nonfatal.	Fatal.	Nonfatal.
MECHANICAL ACCIDENTS.								
Conveying and hoisting	44	2,431	6	164	112	2,148	162	4,743
Power transmission	20	2,120	.....	13	3	126	23	2,259
Working machines	19	15,840	.....	51	5	666	24	16,557
Total	83	20,391	6	228	120	2,940	209	23,559
Per cent of grand total	35.8	31.7	26.1	17.9	34.4	12.9	34.6	26.7
NONMECHANICAL ACCIDENTS.								
Falls of persons	42	5,081	1	114	126	3,283	169	8,478
Falling of weights and objects	18	12,728	15	613	46	8,211	79	21,552
Hand tools	1	6,650	.....	157	2	2,718	3	9,525
Heat and electricity	70	4,999	.....	64	35	1,047	105	6,110
Vehicles and animals	5	1,396	1	30	9	797	15	2,223
Miscellaneous	13	13,005	.....	71	11	3,791	24	16,867
Total	149	43,859	17	1,049	229	19,847	395	64,755
Per cent of grand total	64.2	68.3	73.9	82.1	65.6	87.1	65.4	73.3
Grand total	232	64,250	23	1,277	349	22,787	604	88,314

ACCIDENTS IN OREGON, 1914-15, SHOWING RELATIVE IMPORTANCE AS INDICATED BY THE COST OF COMPENSATION, AND CLASSIFIED BY CAUSES.

[From First Annual Report of Oregon Industrial Commission.]

Cause.	Number of accidents.			Compensation.	Per cent of total cost.
	Fatal.	Nonfatal.	Total.		
MECHANICAL ACCIDENTS.					
Boilers and steam pipes	1	9	10	$2,996.65	0.99
Hoisting and conveying apparatus	14	247	261	56,078.41	18.48
Power vehicles	6	37	43	20,052.40	6.61
Prime movers (engines and motors)	.....	21	21	1,561.31	.51
Saws	1	136	137	*21,596.70	7.12
Transmission apparatus	2	64	66	18,411.43	6.07
Working machinery (other than saws)	2	109	111	13,691.37	4.51
Miscellaneous	.....	12	12	321.01	.11
Total	26	635	661	134,709.28	44.40
NONMECHANICAL ACCIDENTS.					
Drowning	8	.....	8	21,617.76	7.12
Explosives, fires, corrosive substances, and electricity	4	71	75	14,539.78	4.79
Falling objects	9	396	405	35,426.18	11.68
Falls of persons	6	371	377	32,438.29	10.69
Hand tools	.....	393	393	19,166.07	6.32
Handling materials and objects	1	303	304	9,795.72	3.23
Rolling objects	5	82	87	17,368.73	5.72
Striking against or being struck by objects, stepping on sharp objects	.....	214	214	5,633.35	1.86
Miscellaneous	1	268	269	12,724.26	4.19
Total	34	2,098	2,132	168,710.14	55.60
Grand total	60	2,733	2,793	303,419.42	100.00

It will be noted that in Massachusetts, machinery accidents were 27.1 per cent of the total number of accidents reported from all causes. In New York they were 26.7 per cent of the total. In Ore-

gon they were 23.7 per cent of the total. These figures correspond closely with those given in a report of the Wisconsin Industrial Commission, where machinery contributed 25.5 per cent of all compensable accidents in the State for two and one-half years ending December 31, 1914.

This data covers such a wide range of experience that it would seem to be quite conclusive, and we may accordingly decide that machinery contributes about 25 per cent of all accidents in the average industrial State at the present time.

However, the mere number of accidents from a given cause is not a satisfactory basis for determining the seriousness of that cause as an accident producer, since in considering only the number of accidents the same weight is given to a cut finger as to a fractured skull. From the standpoint of the employer, the insurance company, or the accident board, the amount of time lost or the cost of the accidents gives a much better basis for determining the relative seriousness of mechanical accidents as compared with those from other causes.

The data given in most of the State reports is not so arranged as to show the cost of mechanical accidents, apart from other accidents; fortunately, however, this separation has been made in the Oregon data, and we find that, whereas from the standpoint of numbers mechanical accidents were only 23.7 per cent of the total, they contributed 44.4 per cent of the total cost. In other words, the average mechanical accident cost approximately twice as much as the average accident from all causes.

While the Oregon data is comparatively limited, including only about three thousand accidents, a moment's thought will show that this result seems entirely reasonable. The nature of nonmechanical accidents is such that in most cases the amount of power involved is very limited. Take for example the hand tool, which contributes a material percentage of all nonmechanical accidents. The power of such tools is slight when compared with that of a power-driven machine, and the average injuries caused by hand tools are accordingly less severe. Two of the most frequent causes of nonmechanical accidents are falling objects and falls of persons; in such cases there is a single shock of the object or person striking, and the damage generally ceases immediately. When anyone is caught in a machine, however, there is usually a continuous application of power and a corresponding increase in the damage done, until the machine can be stopped or the person released from it.

It will be noted from the Massachusetts data, that while hand labor furnished 33 per cent of the total number of accidents, it was responsible for less than 7 per cent of the fatalities. In Oregon, hand tools furnished 14 per cent of the total number of accidents and only 6.32 per cent of the total cost. On the other hand, we find in the Wiscon-

sin data that machinery accidents, while contributing only 25.5 per cent of the total number of accidents, were responsible for 37.7 per cent of all major permanent injuries, and 80 per cent of all minor permanent injuries.

Therefore, we would expect to find that the average accident from machinery is relatively much more severe than the average accident from other causes.

In weighing the value of mechanical safeguards for preventing injuries, another point which must be kept in mind is this: The value of mechanical safeguards is not confined to protection of machinery.

Two of the very important causes of accidents in any list of statistics are (1) falling objects and (2) falls of persons. These accidents are classified in the preceding statistical tables as "nonmechanical" accidents, and yet they are largely preventable by mechanical means. One of the first things the experienced safety engineer looks after when he starts an accident-prevention campaign is the erection of suitable toe boards or barriers along platforms and storage places to prevent objects falling and the construction of railings at stairways and along overhead platforms, scaffolds, etc. These guards are very effective in preventing falls of objects or persons. While the writer was dictating his notes for this paper he saw a window cleaner standing on the outside of a window sill on the tenth story of a near-by building, with only the uncertain grip of one hand on the window ledge between him and a fall to certain death, while he washed the window with the other hand. The use of a safety belt in this case would have practically eliminated the hazard.

Another type of accident which is commonly not considered as mechanical, but which is largely preventable by mechanical guarding, is that of electrical shocks, flashes, and burns. The protection of electrical equipment is undergoing much the same developments as the gear hazard passed through 10 years ago. While it was practically impossible to buy inclosed switches and fuse boxes for electric circuits up to 550 volts a few years ago, many concerns are now building such equipment completely inclosed, so that it is practically impossible for anyone to come in contact with current-carrying parts while they are live. In addition to the equipment that is furnished by the maker, it is possible to rail off and inclose exposed electric parts just as dangerous machine parts would be inclosed. Mechanical means for grounding electric circuits and other equipment when they are being worked on is another of the most effective means of preventing electrical injuries. These are purely mechanical forms of protection, and mechanical guarding is just as important here as it is for machine hazards.

Even in the classification "handling materials," which might seem at first glance to be reached only by safety education, mechanical safeguards play an important part in the prevention of accidents. It used to be common practice, when piling up pipe, round iron bars, shafting, and similar material, for the workmen to use a brick or any stray piece of wood or other object that he could pick up as a stop to prevent the material from rolling. As a result accidents were frequent, due to the piles collapsing when they were being put up or taken down. In many plants accidents of this kind have been practically eliminated by the use of properly constructed substantial metal skids or blocking. In one department of a plant where strains from lifting were frequent this trouble was done away with by providing lower benches, so that the heavy stock need not be lifted so high. The installation of mechanical hoists and trucks for handling material has greatly reduced the hazard in other cases.

Similarly, accidents from explosive and corrosive substances can be largely guarded against by proper mechanical means for handling the materials and proper barriers and guards for limiting the effect of the explosion or preventing the corrosive substances from splashing and striking the operator. For example, in many plants the old way of handling acid was to dump it from a carboy, by hand, into a big crock or tank and then dip the acid out with a pitcher and carry it by hand to the point where it was used. The man who "stubbed his toe" while he was carrying a pitcher of acid was very liable to be wearing a glass eye when he came back from the hospital. This hazard has been practically eliminated in many plants by the use of proper acid pumps and mechanical means for pouring and handling the acid from a safe distance.

Taking these three classifications from the Oregon data, namely, "explosives, fire, corrosive substances, and electricity," "falling objects," and "falls of persons," we find that 27.16 per cent of the cost of all accidents in the State were developed from these hazards. If even one-fourth of the accidents in these three groups were preventable by mechanical safeguards, it would so modify the total that more than 50 per cent of the accident cost would be preventable by mechanical guarding and less than 50 per cent by other means.

The percentage of mechanical accidents in Oregon was the smallest of any of the four States quoted; if the same ratio of cost for mechanical accidents compared with all accidents were maintained in the other States, it would give the following importance to mechanical accidents in these States: Wisconsin, 48 per cent; New York, 50 per cent; Massachusetts, 51 per cent.

These results are for accidents caused by machinery only, without including any of the accidents from falls, falling material, etc., which are also preventable by mechanical guards.

We may accordingly conclude from this study that accidents representing at least 50 per cent, from the standpoint of seriousness, of all accidents occurring in an average industrial State, are preventable by mechanical guards. Since the above accident records include those from many industries which have little machinery, it is apparent that the relative value of the machine accidents would be considerably higher in industries where much machinery is used. It is realized that the complete guarding of all machines will not eliminate all mechanical accidents; neither will the safety education of the employees eliminate all nonmechanical accidents. The value of mechanical safeguards and that of safety education are so interwoven that it is very difficult to say where one leaves off and the other begins. It seems clear, however, that the installation of mechanical guards is at least equally important with all the other forms of accident prevention, including safety organizations and educational work.

Some conclusions which have an important bearing on accident-prevention work follow logically from this result. If mechanical safeguards will account for 50 per cent of the accident problem, there is a real danger in understating the value of such guards, and of overstating the value of so-called educational work.

The installation of mechanical guards is an expensive matter, particularly in the older plants, some of which have been spending several thousand dollars a year on safeguards, for a number of years. If the employer felt that this would affect only 15 per cent of his hazard he might well hesitate to make the large expenditures that are necessary thoroughly to safeguard his plant.

On the other hand, it is a relatively inexpensive matter to organize safety committees, post up safety signs, provide bulletin service, and arrange for safety talks; in other words, to start the most approved schedule of safety organization and educational work. But the employer who thinks that alone will solve his accident problem is doomed to disappointment. The installation of effective guards is not only necessary for the prevention of the large percentage of machine accidents, but it plays an important part in the education of the employees. Until they are given this visible evidence of the sincerity of their employer they will not have much confidence in the safety campaign or give it their cooperation.

A few months ago an inspector visited a plant where the principal safety educational methods mentioned above were in full swing and had been for some time, yet the accident rate of the plant was high, and there was no appreciable reduction in it. He asked to meet the safety committee, and in introducing him to the committee the superintendent took occasion to remark that he had been disappointed in the work of the committee; that the men did not seem to take the interest in it he had hoped; and that they were not coop-

erating as they should. One of the men on the committee said, "Do you know why?" The superintendent said, "No." The man replied, "We think this is all bluff. We started out making recommendations, but whenever they cost any money we saw that they were not carried out, so that the whole thing looks like a waste of time to us."

Further investigation showed that the importance of spending money for the installation of mechanical guards had not been sufficiently realized by the management, and only when this point was cleared up were the desired results secured.

In thus emphasizing the importance of mechanical guarding it is not intended to minimize the value of safety educational work. Splendid results are being secured from properly organized safety committees and other means of interesting and securing the cooperation of the workmen, and such methods are absolutely essential to the greatest success in a safety campaign. In some plants, where safety work has been under way for a number of years, the mechanical guarding has gone about as far as it can. In the average plant, however, of which there are hundreds of thousands scattered throughout our great industrial country, mechanical guarding is still a big problem, and it will continue to be, in spite of our best efforts, for many years to come.

SHOP SAFETY COMMITTEES.

BY LEW R. PALMER, CHIEF INSPECTOR, BUREAU OF INSPECTION OF PENNSYLVANIA.

Accident prevention symbolizes the interest of the American people in the conservation of human life and limb. Never has a national movement in behalf of humanity aroused to a greater extent the minds and energies of our industrial managements for the betterment of industrial and social conditions.

The industrial world now realizes that only a small percentage of accidents are not preventable by precautionary measures.

The means of bringing about safety are unlimited. They are all good and have their effect. But you will agree that the purpose of all is the same; that is, to drive home to the individual the correct idea of safety; to gain his cooperation and to teach him to think of the welfare of others as well as his own safety.

The best method for obtaining the desired result is the personal appeal for safety, which method is, in our opinion, too frequently overlooked.

The individual is the objective point, and consequently the appeal must be made directly to him.

It may be that the superintendent can not talk separately to each individual in a large plant, but he can make his appeal to each department head, who in turn can talk to the foreman, and the foreman to the shop committee; thus safety will be made a vital, personal matter.

For obtaining and transmitting knowledge pertaining to personal welfare and safety, and securing cooperation from the individual employees, shop safety committees have been organized with excellent results in most of the large plants, and they may also be adopted with advantage by the smaller plants.

The shop safety committee unquestionably affords the most effective means for impressing the individual employee with his own responsibility, and for teaching the essential elements in accident-prevention methods, stimulating thoughtfulness on his part, and bringing to his attention many details which might otherwise pass unnoticed and result in personal injury.

With these committees, composed entirely of workmen, it is found that sometimes the men are more free to express their ideas when not handicapped by the presence of the boss. Some very valuable suggestions have developed in these workmen's committee meetings that perhaps might never have come to light until after an accident had there not been furnished an opportunity for these men to tell their

troubles and suggest through this committee their preventive methods. The man knows where and how he just missed being hurt, and generally knows how such an accident can be avoided. He knows he slipped on the oily trolley of No. 15 crane and only the wires on the trolley motor saved him—had they pulled out he might not have lived to tell how it happened—and he would suggest that every trolley, as well as the bridge of every crane, be provided with a walk and handrail.

The shop committee also assists in securing uniform supervision and in arousing active interest in accident prevention.

The membership of the shop safety committee should consist of at least three men from the rank and file, appointed to serve for short periods. Numerous suggestions of value will result from the activities of the committee, but in our opinion the greatest benefits will be derived through the gradual education of the working force, man by man or group by group, serving as members on the committee. It is a well-known fact that we become more familiar with a subject when called upon to discuss it or to make suggestions regarding it. As the saying goes, "There is no impression without expression."

The shop committee should devote at least half a day each week to a general inspection of their division of the plant, preferably working together as a body. Notes should be taken and suggestions submitted in writing for the consideration of the central committee.

The most satisfactory way to conduct this work is to arouse the interest and enthusiasm of the employees for the safety movement to such an extent that they will carry on the work by themselves as far as may be possible.

When handled in this way it has been found to be more effective than when managed from the office. It is, of course, understood that no plant safety organization can be a success unless the hearty support of the management is back of the movement; or, in other words, "Safety must begin at the top." The office or management must be represented on the central committee in order to keep in close touch with the work being done.

The number of men on the shop committee should be determined by the size of the plant and the work at hand. It is a good idea to appoint at least two members from each mill or department, and the length of service should be such as to enable each member to become familiar with the work.

As a general rule, it has been found that two or three months is sufficient for any employee to serve on the committee, and the term of service should be arranged so that too many new men will not be on the committee at the same time.

The method of rotating the membership at regular intervals assists materially in increasing the efficiency of the committee by devel-

oping a rivalry among the committeemen, who will endeavor to find danger points overlooked by previous committeemen.

In plants where large numbers of foreigners are employed the shop committees should include from time to time workmen who can speak the various foreign languages.

Real, effective accident prevention work can be obtained only through the cooperation of the entire committee, and every committeeman should be made to feel that he is on an equal footing with any other committeeman, regardless of rank or position.

In addition to making inspections of the plant or departments the shop committee should investigate all serious and fatal accidents that occur within its division and submit recommendations for the prevention of a recurrence. The experience thus gained is valuable to the workers, and when the cause of a serious accident is clearly understood there will be less likelihood of a similar accident occurring in the same plant. All the suggestions or recommendations of the shop committee should be referred, in writing, to the safety engineer, if the plant organization includes one, and those recommendations involving important changes should be referred to the central committee, which committee should issue orders for putting them into effect. This method tends to prevent petty jealousies that might at times arise among the men when orders for changes do not come from some one in high authority.

It has been found advisable to provide a badge or button for the members of the shop committees, not only to show their authority when it is necessary to question or censure a man, or make suggestions as to his methods of performing his work, but also for the educational value attached to the display of such badge or button, as it tends to keep safety always before the workers.

After having served on the shop safety committee the workman should be given to understand that he is a permanent member of the plant safety organization, and that his safety work does not end with his service as a committeeman.

We have attempted to point out in a general way the advantage of the shop or workmen's committee, and believe if this phase of accident prevention work is consistently carried out the desired end will be obtained—accidents will be prevented.

We firmly believe that our duty to our fellow man is more clear to us to-day than ever before, and if we hold to the faith our efforts will not be in vain.

There is much to do, there is much to win;
For the ages have taught their lore;
But we clearer see what the right must be
Than ever man saw before.

SOME SHOWINGS FROM ACCIDENT RECORDS.

BY LUCIAN W. CHANEY, SPECIAL AGENT, UNITED STATES BUREAU OF LABOR STATISTICS.

Since 1910 the United States Bureau of Labor Statistics has maintained a nearly complete record of the accident experience of the iron and steel industry. By experience is meant much more than the record of the number of accidents occurring. Such numerical accumulation may serve a useful purpose, but what purpose it is difficult to determine. The records used by the bureau have the following elements of completeness:

1. The amount of employment with which the accidents are associated is known in very close approximation.
2. The amount of disability is readily ascertainable.
3. The causes of accidents and the nature of injuries are illustrated by a sufficient volume of cases to permit some authoritative showings.

The distinction of this body of records does not lie in any particular excellence in the elements which make it up. Its unique character is due to the combination found in it and not present in like degree in any other compilation, so far as can be discovered. For example, in no other case known to the writer has it been possible to determine so closely the ideal employment base, namely, the number of "man hours" of labor with which each group of accidents was associated.

On account, therefore, of the varied and basic character of the industry and the quality of the records it should be possible to offer some "showings" of value.

Parallel with the development of this association there has grown up in mill and factory an organization whose purpose is the direct study of the accident problem. Both the association and the safety men may properly appeal to the constituted statistical authorities with an insistent demand to be "shown."

In response to this entirely legitimate demand this paper undertakes to make such "showings" as the records warrant on four points. These points are: (1) Progress, (2) relative hazard, (3) points of attack, and (4) possibilities.

PROGRESS.

Have the labors of industrial boards, the organizations of safety men, the propaganda which has been undertaken, produced any

substantial results? Are industrial accidents any less numerous or any less severe than formerly? Since modification in seriousness is much the more important matter, the answer to the question of progress will be given in terms of the severity rate.[1]

This rate is still sufficiently unfamiliar to require a brief statement concerning it. This is purposely couched in entirely general terms with no attempt to present the details. The severity rate is the rate obtained by dividing the amount of employment, expressed in terms of 300-day workers, into the time losses incident to the accidents under consideration. It is necessary to transform cases of death and permanent injury into time expressions by a system of fixed allowances, such for example as 6,000 days for death, 4,000 days for loss of arm, and so on. The severity rate so formed is a much more exact measure than the frequency rate could possibly be of the relative hazard of diverse industries and of the changes of hazard which occur from time to time.

In order to make satisfactory comparison of the accident occurrence of different periods it is necessary to choose those of like industrial activity. If this is neglected, it is very likely that in periods when industry is slowing up and rates are falling accordingly there will be undue optimism, with equally undue discouragement over the almost inevitable rise in rates which, unless there is some strong countervailing influence, accompanies industrial revival.

In the period covered by the records to which attention will be directed there are three years of high industrial tension, namely, 1907, 1910, and 1913. If, therefore, it is found that the later of these years has somewhat constantly and substantially a lower severity rate than the earlier, the conclusion of definite progress is justified.

The severity rate for the entire iron and steel industry in 1910 was 15.9 days per 300-day worker. In 1913 it was 13.0 days, a decline of 18 per cent. In a special group of plants in which it was possible to follow the record from 1907 the steps were the following: 1907, 21.6 days; 1910, 14.6 days; and 1913, 11.2 days. The decline from 1907 to 1913 is 48 per cent.

These percentages of decline are much less than could be shown by using the frequency rates but assuredly they give a truer picture of the effect of accident-reduction effort in this industry. It must be borne in mind that most of the figures hitherto presented have been those of particular plants or companies who had been especially active and successful. The figures which are now offered give for

[1] As originally prepared the "severity rates" used in this paper were computed by using the scale devised for the United States Bureau of Labor Statistics by the author of the paper and Mr. Hugh S. Hanna and applied in Bulletins 216 and 234. In preparing the article for publication they have been modified to conform to the scale proposed by the Committee on Statistics in their report found on pages 98–116 of this bulletin.

the first time, with any approach to exactness, American experience for a great manufacturing industry on a national scale.

So varied an industry as iron and steel can not safely be considered as a unit only. The entire industry may appear as reasonably progressive when important departments are sadly backward. To avoid being misled by such a possibility, the principal departments will be separately considered. The following table summarizes the facts:

SEVERITY RATES IN THE DEPARTMENTS OF THE IRON AND STEEL INDUSTRY—ALL PLANTS, 1910 AND 1913; SPECIAL PLANTS, 1907, 1910, AND 1913.

Department.	All plants.		Special plants.		
	1910	1913	1907	1910	1913
Blast furnaces	28.8	21.6	48.1	21.5	15.0
Open hearths	29.3	17.2	43.3	12.8	22.6
Heavy rolling mills	19.4	8.6	14.3	12.4	6.0
Sheet mills	12.7	8.2	12.2	13.5	8.6
Fabricating shops	16.3	11.2	28.6	19.9	7.3
Yards	19.7	19.2	22.5	16.4	3.0
Entire industry	15.9	13.0	21.6	14.6	11.2

Blast furnaces.—The severity rate for blast furnaces in general was 28.8 days per 300-day worker in 1910, and 21.6 days in 1913. The decline was 25 per cent. In a representative group of furnaces the rates were: 1907, 48.1 days; 1910, 21.5 days; 1913, 15.0 days. The decline from 1907 to 1913 was 64 per cent. It may be suggested that these furnaces had abnormal rates in the early years. This is far from being the case. There were many having even higher rates at that time.

Open-hearth furnaces.—The open-hearth furnaces of the country show a record as follows: 1910, 29.3 days; 1913, 17.2 days. The decline for the period was 41 per cent. Considering a special group of plants over a longer period, the following severity rates appear: 1907, 43.3 days; 1910, 12.8 days; 1913, 22.6 days. The rise between 1910 and 1913 illustrates the effect frequently arising from increased industrial activity. From 1907 to 1913 the decline was 48 per cent.

Heavy rolling mills.—These mills roll directly from the ingot and are almost completely mechanical in their operation. All mills recorded had a rate of 19.4 days in 1910, and of 8.6 days in 1913. The decline was 56 per cent. The special plants had rates as follows: 1907, 14.3 days; 1910, 12.4 days; 1913, 6.0 days. The decline from 1907 to 1913 was 58 per cent.

Sheet mills.—For all sheet mills the record is: 1910, 12.7 days; 1913, 8.2 days. This is a decline of 35 per cent. For special plants: 1907, 12.2 days; 1910, 13.5 days; 1913, 8.6 days. These mills register a decline from 1907 to 1913 of 36 per cent.

Fabricating shops.—These shops produce the girders and other parts of bridges and in recent years are largely occupied with the materials of steel buildings. All shops recorded show the following rates: 1910, 16.3 days; 1913, 11.2 days. The amount of decline is 31 per cent. The special plants have: 1907, 28.6 days; 1910, 19.9 days; 1913, 7.3 days. The decline from 1907 to 1913 is 74 per cent.

Yards.—Under this heading is included transportation, which is so large an item in the operation of a great industrial plant. In 1910 the severity rate was 19.7 days and in 1913 it was 19.2 days. The decline was only 3 per cent—an amount so small as to be of little significance. The record of the special plants is better. In 1907 they had a rate of 22.5 days, in 1910 of 16.4 days, and in 1912 of 11.5 days. In this comparison 1912 is used instead of 1913 because the later year is the only one in which the department was entirely free from fatality and the rate of 3.0 days for that year might be regarded as not typical. The decline from 1907 to 1912 is 49 per cent.

It will be evident from the foregoing review that the "showing" regarding progress is definite, constant, and pervasive.

RELATIVE HAZARD.

That different departments of industry have not the same degree of danger is so evident as to require no proof. There has been real need, however, of a method of measuring this difference. That such measurement is not accomplished by comparing the frequency of accident occurrence may be illustrated by noticing that when the machine-building records were made up it appeared in numerous instances that machine-building plants had a considerably greater accident frequency than some of the better steel mills. No one familiar with the two industries could for a moment suppose that these rates represented the true relation in the matter of hazard. Such observations as this led to further study along the line of the elaborate presentation of time lost through temporary disability, which was made in the first iron and steel report, and finally to the system of severity rates now used by the bureau.

For purposes of comparison between the different branches of the iron and steel industry, the experience of a period of years affords the best basis. Individual years are subject to the special industrial conditions which may prevail. The different departments may be very unequally influenced by these conditions. In a period of years, especially if it includes a reasonably varied set of conditions, the unusual will be overcome and rates of a fairly typical character will be obtained. Accordingly the five-year period 1910 to 1914 is used in the following comparison of the different departments.

The highest rate, 94.2 days per 300-day worker, is found in the erection of structural steel. This occupation has long been known to be one of great hazard. It will be further discussed at a later point. From this extraordinarily high rate there is a long drop to that of the operation of ore docks—24.8 days. Between 15 and 30 days there is a group of the important departments, such, for example, as blast furnaces, 21.4 days; Bessemer steel works, 19.3 days; open-hearth steel works, 19.5 days; coke ovens, 18.3 days; yards, 18.0 days.

Between 10 and 15 days there is another considerable group, including forge shops, 11.6 days; mechanical departments, 11.8 days; heavy rolling mills, 11.0 days; plate mills, 11.9 days.

A few departments are below 10 days. They are: Rod mills, 8.7 days; sheet mills, 7.7 days; wire drawing, 9.5 days; tube mills, 6.6 days; crucible melting, 7.7 days.

These figures rank these departments in very close accord with the anticipations of those best fitted to judge by reason of personal familiarity with the various hazards. This strengthens confidence that the rates are fairly typical, and therefore useful as points of reference. The operator of a given type of mill may compare his figures with these with confidence that they represent the experience of his branch of the industry with a fairly close approach to accuracy.

The rates presented indicate a wide diversity among the departments. One further point in this connection is worth noting. As rates have declined in recent years the differences between the departments have become steadily less. In 1910 the range was from 5.2 days per 300-day worker in tube mills to 31.3 days in Bessemer steel works. In 1914 it was from 5.9 days in tube mills to 15.3 days in blast furnaces. This somewhat unexpected drawing together of the rates suggests that the greater natural hazard incident to some departments and occupations may be, in a very considerable measure, overcome and nullified by the vigorous application of the right kind of preventive measures.

POINTS OF ATTACK.

It will naturally occur to anyone considering the facts so far presented that those departments exhibiting high rates are those calling for the most serious attention. This natural inference is subject to many limitations. For example, a low rate may reflect a small intrinsic hazard which, because it is small, fails to attract the attention which it deserves. Such a rate may accompany a degree of neglect far greater than that disclosed by the higher rate of naturally more dangerous occupations. It would be possible to specify instances where natural freedom from hazard has operated to give a false sense of security. The possibility of improvement not being keenly felt, the effort which might have brought about improvement has not been

forthcoming, and a whole industry has lagged far behind the position which it should properly occupy. This statement is offered lest it be supposed that, because the limits of this paper will make it necessary to confine attention to a few cases of notably high rates, the departments having lower rates do not call for improvement.

The erection of structural steel will be first considered. It may be thought that the rate of 94.2 days is exceptional. It is to be feared that it is—in the direction of being low. Personal knowledge of the methods of operation of the firms whose figures are used is convincing that they are conducted with greater regard for safety precautions than is usual with building constructors in general. The rate is probably below, rather than above, the average. It should be noted that not only is the aggregate rate high but the elements of which it is composed are high—the death rate is high; permanent and temporary disability are both excessive. Is this unavoidable or might concentrated attack bring about an improved condition? No authoritative answer can be given without further study. The facts on record are not extensive enough to warrant any final conclusion.

There are a number of conditions which make the control of accident causes in structural work extremely difficult. Among them may be mentioned:

1. There is nearly always a tendency to haste. Both owner and contractor are desirous of completing the task at the earliest possible moment.

2. The work must be done under temporary and extemporized conditions very different from the orderly conditions of manufacturing.

3. The migratory habit of building-construction firms makes such organization as that which is possible with localized industry difficult in an extreme degree.

More influential than any of these, in all probability, is a deep-seated conviction that effort is useless. Building constructors are ready to admit the success of efforts in general industry but insist that their situation is so different that no comparison is possible. They have therefore stayed, in a measure, outside the circle of those making active efforts toward accident prevention. It may, in view of past experience, be strongly suspected that it is this honest belief that there is little that can be done, rather than the inherent difficulties, which keeps structural work in such extreme and bad preeminence. Here, then, is a point of attack. The question of possible improvement should be theoretically and experimentally studied, with persistence and on a large scale. If the present situation admits of remedy it is nothing short of a scandal that the remedy should not be found and applied.

The second point of attack to which attention is directed is the transportation problem, listed under the head of yards. It has

been noted earlier that this department shows a decline of only 3 per cent when 1913 is compared with 1910. So small a decline means nothing. No improvement can be argued from it. That improvement is possible is evident from the experience of the special plants in which there was, between the same years, a decline of 88 per cent. Such study as it has been possible to bestow indicates that the internal transportation of the plants has not been brought up to the standard now maintained by the railways. It is a matter of no small cost and difficulty to do away with grade crossings, provide automatic couplers, adequate clearances, proper signaling apparatus, and a long list of other modifications necessary to insure safety. When they are applied the death rate falls at once.

Many other points might be specified. These must serve to illustrate the lines of effort which may be discovered by a study of the records.

POSSIBILITIES.

Is it possible to eliminate serious and fatal accidents? The answer thus far given has been an unhesitating negative. It will not be possible within the limits of this paper to give the body of facts which apply to this question. These have been elaborated in the Monthly Review of the Bureau of Labor Statistics for August, 1917. All that can be done here is to present the gist of the argument and some of the illustrations.

Studies of the changes in frequency rates which have come about in recent years are perfectly convincing that appeal to the human factor has often produced remarkable results in bringing about reductions in accident frequency. Take, for example, a group of mills which have pressed with unusual force various forms of appeal to the men. In this group of mills the frequency rate declined from 187.5 cases per 1,000 300-day workers in 1910 to 88.5 cases in 1913. This is a notable result which has been considerably exceeded in the experience of individual plants. This and other similar experience proves beyond question that results can be reached through the medium of educational efforts which appeal to the men. At the same time it has been proved that this laboriously acquired carefulness is easily dissipated. A sudden rush of business activity and the accident frequency rate may soar, to the despair of the safety man in charge. Human nature is not perfect and will not become so in our generation. If, therefore, the elimination of serious accidents is to be dependent principally upon the perfecting of human nature, such elimination must remain an "iridescent dream."

By means of the severity rate it is possible to show whether the reduction of serious accidents is dependent upon this human factor with its unescapable defects. The answer of the records is perfectly

clear. In the iron and steel industry the great successes in reducing fatal and serious accidents have been due to what is termed "engineering revision." By this expression is meant the broadest possible application of engineering skill to rendering industry safe.

To illustrate, in a typical group of blast furnaces "breakouts" and "asphyxiating gas" were the great causes of death in the early years. From neither of these does the personal caution of the men afford material protection if the conditions are such as to permit exposure. These two contributed 56 per cent of the severity rate of 1906. By 1910 "breakouts" had disappeared, as a result of improved construction, and the menace from "gas" had been so much reduced that its part of the severity rate was insignificant. The change in severity rate for "hot substances," which include "breakouts," was from 54.3 days in 1906 to 1.6 days in 1913, an absolute decline of 52.7 days, or 97 per cent. At the same time "handling tools and objects," a cause group particularly dependent on personal care, showed a decline of only 6.4 days.

Among the deaths occurring between 1905 and 1914 of which the bureau has record, 372 have causes stated in sufficient detail to justify conclusions regarding the relative importance of "engineering revision" and personal care. Of these 372 cases, 212, or 57 per cent, would probably have been prevented by the engineering changes which were made after the deaths.

A study of a group of 72 deaths occurring in 1916 indicates that 58 per cent of them would, in all probability, have been prevented by adequate engineering provisions.

It appears, therefore, that in certain important instances the practical elimination of hazard has actually occurred. It appears further that there is no limit assignable to the possibilities of greater strength, better design, and general engineering improvement.

Why, in view of the facts, should any theoretical limit short of entire elimination be set for injuries causing death?

If in practice the entire elimination of fatality be accepted as a reasonable goal of endeavor, and an "engineering revision," thorough beyond anything yet attempted, be accepted as the rational means of attainment, great progress may be expected. The limits of accident reduction through appeal to the human factor are in sight. If a satisfactory progress is to continue we must dig much more deeply into the problem.

A conclusion that fatality may be largely eliminated is, if well founded, of vast importance to every board and commission which administers compensation. It means vast savings in compensation costs and, more important, vast savings of human misery.

These are the "showings" of the accident records.

ACCIDENT PREVENTION.

BY BARNEY COHEN, DIRECTOR, ILLINOIS DEPARTMENT OF LABOR.

The scope of this topic and the time available for its discussion make only a sketchy treatment possible. The subject of accident prevention embraces a wide range of associated subjects and deals with information included in statistics, industrial development, economics, engineering, medicine and surgery, psychology—or mind study, as I prefer to call it—and other subjects.

This paper presents, following a few observations deduced from late experience in organizing a new department, some of the simple basic principles which govern accidents, with suggestions as to how these may be made of use in the reduction of accident hazard.

In bringing some 11 divisions—formerly independent State departments—under one head, I have noted several principles which have to do with the subject in hand. The new Civil Administrative Code of Illinois, in force July 1, 1917, provides that six free employment offices located throughout the State, the general advisory board for the free employment offices, the division of labor statistics, the division of factory inspection, and the division of industrial commission be brought under the supervision of the State department of labor. All of these divisions are under the control of the department of labor, excepting only the industrial commission, over whose judicial decisions the department has no supervision.

In making this consolidation, one fact stands out sharp and clear: The elementary—the A, B, C—needs are often the most difficult ones to be provided for by legislation. We in Illinois have not yet been able to secure, by legislation, two of the most vital yet simple requirements of thorough accident prevention. The first requirement is an accurate industrial census giving the names (or some lesser designation) of employers, the number of employees, and more or less comprehensive information, classified by occupations. The second requirement is a simple method by which all accidents are to be reported. Illinois has legislation—conflicting legislation, in fact—on accident reporting, but no one simple method of reporting is now required, the result being that many industrial accidents do not come to the notice of the department.

So much for needed legislation in my own State. Leaving State needs for general needs, I wish to ask, What constructive study has been and is being made of the function of the accident in the scheme of things?

Who among us is making a study of the why of the accident as a part of nature's plan? Here and there wholesale students of heredity

have given thought to this matter as one vitally affecting human life. By "wholesale students" I mean those who consider all of the facts of heredity—such men as Luther Burbank, for instance—instead of that class of technicians known to us all who specialize on some microscopic part of a science to the exclusion of all other parts.

If we consider the deductions of those writers and students who view facts by the wholesale, it is evident that the accident, in uncivilized life, had a most important function. Its utility, evidently, in the plan of a barbarous world, was to weed out the unfit. The accident was a mere by-product of progress. In the harvest, in the chase, and more particularly in warfare, accidents and casualties tended to weed out the less skilled, the less wary, and what, for a better term, we must call the unlucky. This tended to leave the fit, the unfit having been eliminated. The individual—his sufferings or death—did not matter so long as the race was benefited. Nature, unhampered, invariably subordinates the good of the individual to the good of the race. The individual may die prematurely; those living will be fit to continue the race.

Another inference is evident here. Nature, it is plain, placed the instincts of daring, curiosity, enterprise and initiative, desire for excitement, and similar moving motives, in man's make-up that he might continue to investigate and learn, though multitudes were to lose their lives in obeying those impulses and instincts.

So dominating are instincts, so strongly do they persist in man to-day, that when a ladle of molten metal spills in a foundry, curiosity will often hold a workman to a dangerous spot, even when he knows he is risking his life. Similarly, in the railway service, the spirit of daring often leads a brakeman or engineer to "take a chance." At the door of the primal instinct, therefore, is to be laid the deeply rooted cause of many accidents. Impulse may, and often does, run counter to safety. It is for the good of the race, such is evidently nature's plan.

So we have for a basic principle that nature does not count the individual of value but does place a high valuation upon the race. This is no new thought, nor is it always confined in its application to nonindustrial conditions. It is as true in our industrial age as it was when man lived by the fruits he could gather and the beasts he could kill. Nor is it a principle that has been limited in its consideration merely to the student of technical heredity or biology. Maeterlinck, as an instance, in his "Life of the Bee" constantly refers to the cruelty of nature, her willingness to sacrifice not only millions but an entire nation of individuals in one of her magnificent experiments, and further voices the thought that perhaps even the entire human race is being sacrificed to some form of gigantic experiment that we as individuals are not able to understand.

Now, suppose we take this principle governing all life and apply it specifically to present industrial conditions. Man assembles a gigantic industry and in planning it figures on having as much of the work of that industry as possible done by means of unskilled labor. In order to utilize such unskilled labor two things are necessary: First, the processes must be divided as fine as possible, so that routine, unthinking work will take the place of initiative and thought. Second, the machine must replace the man as far as invention and skill can bring this about. As a consequence the work of both men and machines is reduced to the simplest elements and combination of elements.

Now, bearing in mind the principle that the subconscious mind, rather than reason, controls the acts of the untrained man, and combining with this general principle the industrial principle that in order to procure dividends it is necessary that much of the work be performed by elementary processes, it is plainly to be seen that the causes of industrial accidents root deep in principles which not only are not being generally considered, but are not even suspected by many who are considering the subject of industrial accidents.

What we do know is commonly deduced from observation of what occurs rather than from the knowledge of the principles governing what does occur. For instance, either observation or a knowledge of principles leads us to the same accurate conclusion that where you place a large number of untrained men in the most highly specialized surroundings, where a single, momentary departure from reasoning acts means mutilation or death, that the accident quota is bound to be large. Further, when you work these men long hours at monotonous employment, and simple employment is bound to be monotonous, so tiring their conscious minds to a point where they have only their subconscious minds to regulate their movements, the hazard from accident is still more greatly increased.

For the animal mind, roughly the same as our subconscious mind, is not competent to deal with complicated conditions; the simplest departure from ordinary conditions is sufficient to act as a bait or trap for all except the shrewdest and most untiring animals that live. And when the human being tires, when he becomes fatigued or careless, he is obliged to trust his animal or subconscious mind to protect him and keep him out of danger. Yet the dangers to which he is subject are those of which the animal mind itself knows nothing—they are dangers which can be combated only by the exercise of reason governing unusual skill. This reasoning power and this skill we do not find in the lower grades of labor.

Here it is that we come in contact with two opposing principles—that of nature and that of humanity. The first principle, as stated,

is that nature does not care for the individual. The evident aims of nature are the continuance of the race and bringing the race to a high standard of perfection. The number of sacrifices that are made in furthering this aim seems to have no consideration in nature's scheme of things. If we take as a basic principle that nature does not care, then we must oppose such principle with a second one—that mankind must care.

Not only must mankind care, but man must show as great an initiative and intelligence in caring as nature does in her apparent wastage of human material. More specifically, man must show as great an interest in life protection and conservation as the manufacturer does in production.

If the same inventive skill which creates the machine were to exercise one-tenth of such initiative and skill in devising a plan of protecting the workmen about that machine, we would see the industrial hazard drop as rapidly as industrial production has increased. If we were to use the same degree of constructive thought to prevent accidents as is used in the arrangement of a complicated battery of machine tools that they may work together to produce a unified product, there would be practically no accidents other than those which would come from causes which are beyond the control of mankind—accidents which are truly accidents and not merely the result of the lack of foresight and care.

If we in the study and consideration of industrial accidents can go far back to the causes which bring them about, putting less reliance upon correcting results and more stress on what the deep-set causes are and then do away with or lessen those causes, the solution of accident prevention will have been found. How difficult a matter this is to arrange—how difficult it will be to cut down the toll of human life which is so relentlessly taken by organized industry—can only be realized when the profit angle of such a move is studied. For truly, profit is the motive that moves the industrial world.

At the present time, in many cases, there is no particular money motive for the large manufacturer in many lines to cut down his hazard. He is protected so thoroughly by the traditions of the law, by precedents established long before organized industry was even dreamed of, that reward for him can hardly come in a change of the law. "Let society pay the damages—if any damages are paid," is sometimes the slogan of the selfish employer who looks to dividends instead of to human brotherhood for his reward.

When, on the contrary, the law surely penalizes the business and the business alone, for injury to the workingman, there will be a strong motive for the employer to bring accident prevention to a high state of perfection, and to cut down every possible accident on the list to the minimum. Or, what is a still more remote possibility,

when labor is of such value to the employer that its loss, aside from some other penalty, becomes of vital interest to him, we have a motive which immediately will act doubly to protect the life and limb of the employee and the dividends of the employer. Finally, there is the humanitarian principle that it is a duty for human beings to protect their kind, even if it may cut down immediate dividends a trifle.

Now, for specific suggestions as to how it seems possible to further the work of reducing accident hazard:

1. As a basis we should know, from accurate deductions made by some biologist or sociologist, the exact place that the accident occupies in nature's plan for progress, that we may oppose this with man's plan for caring for the injured and protecting others from injury.

2. In asking legislation, we should attempt to secure, in every State, the simple requirements necessary to procure a complete, accurate industrial census and accident reports. This, once secured, will permit accurate deductions to be made, merely by comparing the number of accidents with the number employed.

3. Similarly, accidents should be standardized by defining all possible accidents, so that uniformity in both reporting and recording will be possible.

4. Some provision should be made for uniform classification of accidents as to real causes, rather than on the basis of results.

5. Financial incentive, as a motive, should be studied that it may be possible to draft legislation to influence the employer, the employee, and the public so as to act from the profit motive.

6. Somebody has to pay for every accident; let us take steps to learn exactly who it is that pays.

7. "Safety first" campaigns should be standardized, improved, and continued.

8. Engineering colleges and institutes should plan to include a course in safety engineering in all engineering courses.

9. Manufacturers of safety devices should unite to take up particularly the selling end of their business, that safety devices may be intelligently marketed.

10. Some provision should be made to instruct students of machine design, shop foremen, and others in specific methods of accident prevention in connection with the design, placing, and control of machinery.

11. Systematic distribution should be made of literature dealing with safety methods, particularly among employees who are subject to hazard, those supervising such employees, and apprentices and beginners in the hazardous trades and occupations.

12. Humanity as well as dividends should be appealed to in a systematic attempt to "make the world safe for industry."

DISCUSSION.

A. H. Young, director, American Museum of Safety. We know that because of the safety work in many of the industries, there has been a reduction in the death rate, but if we use a 9,000-day unit, we are going to throw things out of all proportion and make an abrupt change in our method of comparison. I have felt that our rates are possibly wrong. We know how accidents occur and we all know the same accidents cause different periods of disability. Now, if we reduce our accidents by mechanical means, but give the total number of fatal accidents a valuation 9,000 times greater than an accident which disables a man one day, we are going to get a result out of all proportion to the general run of accidents in blast furnaces.

Dr. Royal Meeker, United States Commissioner of Labor Statistics. It's the time lost that measures the economic effect of the accident, isn't it?

Mr. Young. Looking at it from the standpoint of a safety man. The only possible way for a safety man to achieve success is to eliminate all accidents—that's going to bring about a reduction of injury.

Dr. Meeker. There are accident hazards which result in very serious accidents, and it seems to me that that's the point which needs to be dealt with—that is what has brought about this study of severity rates.

Mr. Young. Unquestionably; but we can go further, and say that all accidents—we use that term generally; it is about 50 per cent—are due to mechanical causes. We want to prevent accidents which cause fatality and those that cause the great economic loss, but to go on and say that all accidents, or 50 per cent of the problem of the safety man, lie in the extension of mechanical guarding, that I am not prepared to agree to. The same accident which may cause death may easily cause no injury at all, may break a man's arm, or may admit of his being back at work within a day, and yet the safety man wants to prevent that accident. You have to safeguard your trains and prevent all parts from dropping—that's the real problem of the safety man. It is not just to find out what are the fatal accidents and then to take those accidents and give them a value 9,000 times as great as injuries similarly caused.

George A. Kingston, commissioner, Workmen's Compensation Board of Ontario. I would like to ask Dr. Chaney if in compiling

his severity rates he ignores altogether the cost idea. Suppose death occurs from a certain accident, and there happen to be no costs, on account, say, of there being no dependency—would you provide funds to meet the cost of such an accident? In other words, under such a system of rating would you consider that every death is supposed to cost so much regardless of the actual conditions? I ask this question because, speaking from recollection, I would say that about half our fatal accidents cost our accident fund not much more than funeral expenses.

Dr. CHANEY. You are going to get another view of the question from the cost side. The difficulty with using cost is that it varies so; no two accidents are alike and then another cause is that wages are higher in some cases.

Mr. KINGSTON. That is, you are going to base your rates on your severity experience rather than cost experience?

Dr. CHANEY. You save money; that's a perfectly fair assumption. All deaths do not cost the same, but when you are trying to estimate the relative standing of industries, you put all deaths on the same basis.

Dr. MEEKER. All deaths do not cost the same in time. I would like to say that the idea was to get a unit basis. We tried to estimate from the figures given to us by everybody what was the average term of life of men who had met with fatal accidents. I do not think the estimate was a very accurate one, but we used the figures that we got and we arrived at this result, of allowing 9,000 days as a fair estimate of the time lost to that individual normally and to society because he was wiped out in an industrial accident. That does not mean that every individual has 9,000 days left for him to live at the time he meets with a fatal industrial accident, but that was the average life expectancy as near as we could get at it. Of course, there are a great many criticisms that can be made of this severity rate; it isn't absolutely accurate. No method of estimating the severity of accidents is absolutely accurate, but I am convinced that the "time lost" method of measuring the severity of accidents is immensely more accurate than simply the number. Frequency rates put the man who gets his head busted on the same level with the man who gets his thumb-nail busted. Both are accidents, but there is a great difference in the results. Now, to take up Mr. Young's criticism, I think the hazards that are the most hazardous are those that cause the most severe accidents. Suppose we have two accidents each caused by a sliver penetrating a workman's foot. One results in blood poisoning, which eliminates the man; the other results in nothing at all—he doesn't lose any time at all. The cause is the same for both. Why should we make any difference in the

records of the two accidents? Simply because they result differently—that is all. It will all come out in the wash. The industries and occupations that kill most men and injure men most severely are the more hazardous industries and occupations, and their more hazardous character will be shown by their accident severity records. It is a perfectly legitimate thing to count accidents according to their results and not count all accidents as accidents regardless of what they do to the individual.

[The chairman stated that he did not quite agree with Dr. Chaney as to the per cent of accidents that can be prevented by the use of safeguards. Referring to the extracts from his paper at the Columbus meeting, quoted by Mr. Beyer, he emphasized some of the statements there made, and also, as corroborative of his view, quoted W. H. Cameron, secretary of the National Safety Council, to the effect that "75 per cent of the accident-prevention problem is the elimination of unsafe practices and thoughtless methods"; G. M. Cooper, in charge of the safety work of two of the United States Steel Co.'s plants, who stated that in 42 of their plants not one accident happened the previous year attributable to the absence of a safeguard, although many machines, equipment, and buildings were not adequately protected; Charles L. Close, of the United States Steel Corporation, who stated that if his company was starting its campaign over again it would not emphasize safeguards, but would devote its attention almost entirely to education; and Magnus W. Alexander, executive secretary of the Conference Board on Safety and Sanitation, who said that five large plants, employing 30,000 persons, by the wholesale guarding of machine tools at great expense, reduced machinery accidents to 12 per cent of the total, the other 88 per cent being in no way connected with machinery, and that at the most but about 25 per cent of all accidents would be prevented by total safeguarding of all machines. He contended that only a combination of safeguarding and education will solve the accident problem, and while not underestimating the value of safeguards said that they in themselves do not prevent accidents. As illustrative of this point, he told of two accidents which had happened in Massachusetts on a machine that was adequately safeguarded. The first man who was injured was a Russian, who was put to work on this machine within two weeks after he landed in this country. He was shown by signs how to operate the machine, by a man who did not speak his language. Had he been instructed in his own language, he could have avoided the accident. Four months afterwards another Russian, taught in exactly the same way, was put to work on the same machine and suffered the same kind of an accident, with the same result—loss of his left hand. The safety

device on this machine was adequate to protect these men, but they were not educated in the use of it.

Not only must the workmen be educated by personal instruction, shop organization, stereopticon lectures, pay-envelope series, etc., but also the employers and foremen must be educated to the necessity of safeguarding the men. Mr. Holman also pointed out the value of study of accident reports, and instanced cases in his State where conditions disclosed by such a study were remedied by the introduction of precautionary measures and the accident rate greatly reduced.]

Mr. BEYER. Mr. Holman spoke about the machine that was guarded, on which the men were injured. The first question is, How was the machine guarded? It is possible to guard a great many machines defectively. In some places the man starts his machine and also shuts it down; that's the maximum scope of safeguarding in a great many industries. In many industrial plants where safety engineers are employed, where guards are used, and where knowledge of them is enforced you will find the men have injuries; but, on the other hand, where you have the best form of safety and educational work you have the men doing careless things and being injured just the same. I know of a case in a plant where a man who had been there several years was operating a machine and was operating it in a dangerous way. He was a pieceworker, and to operate the machine carefully he would lose time. The result was that his hand was cut off; that was due to the careless operation of the machine. Mechanical safeguards certainly will not give you 100 per cent efficiency; neither will education. Most of the reports to which you refer, Mr. Holman, are based on accident frequency; based on the number of accidents rather than the seriousness of them.

[The chairman replied that he did not think so; that he had sent letters to the men whose statements he had quoted, telling of the results of his study of 350,000 accident reports, and asking if their experience agreed therewith, and the replies were all corroborative, the percentage of accidents prevented by mechanical safeguards ranging from 10 to 25. The highest, 25 per cent, dealt with all accidents coming under the observation of these men in the different plants they represented, covering considerably over 1,000,000 employees, and the accidents that would have happened during the years these men were there. Their belief, therefore, is based on their own studies and experience.]

Mr. BEYER. Twenty-five per cent is not the highest. Forty-two and a fraction was the most that was given for mechanical accidents. None of these reports mentioned speak about any rating for seriousness. The New York Central quoted 22 per cent from mechanical

causes. Our records show that 10 per cent were due to mechanical causes. Now, of course, you will have a great many accidents, but I think we have a very wide coverage that we can depend on. It seems to me one of the most convincing things in Dr. Chaney's paper is that he bases his opinion on things so closely comparative on the basis of cost, which shows that, regardless of the basis which you use, if you have wide enough coverage it will be about the same.

T. Norman Dean, statistician, Workmen's Compensation Board of Ontario. In my mind's eye I picture a protruding set screw and a man working around that set screw; that is a potential accident producing a potential death. You propose to measure the severity of a death by 9,000 days. Is the set screw any more dangerous—should we protect that set screw any more—because the man was killed? Is not the point of hazard a potential accident?

Accident severity rates, as I understand them, are used to produce comparisons of two trends of events from similar bases at the same time. It is a matter of proportional relation. Can we not keep proportions irrespective of what basis we use—whether we are highly accurate or entirely wrong—as long as we maintain the same basis? I think that that is the purpose of accident severity rates. It has nothing to do with the work of accident prevention except to express the results of accidents which have happened in a given time, for comparable purposes.

I would like to ask Dr. Chaney as to the total number of accidents this experience takes into consideration. You say about 300,000, with the mechanical portion about 15 per cent, analyzed on a basis of seriousness, but if 50 per cent they are the same accidents absolutely, judged by end results, and it is a large enough number from which to draw conclusions. I think most of the men in safety work have accepted the proportion of 15 per cent on mechanical equipment, though the suggestion has just been made that it is much higher. The question becomes, on this basis of reasoning, whether it is better to pay the foreman or to pay the safety man, because of the greater economic value of the preventive movement. When gross results are shown, the men who have worked one way have obtained good results and those who have worked another way get good results also—both simply by getting busy and keeping at it.

Carl Hookstadt, expert, United States Bureau of Labor Statistics. If it is true that there is a definite line of demarcation between serious and minor accidents, and if it is true that serious accidents are caused by defective engineering or lack of safeguards, while the minor accidents are caused by the ignorance or carelessness of the worker, then it seems to me that the duty of safety engineers is clear and definite; that is, for the prevention of serious and fatal accidents

our attention should be centered upon engineering revision and mechanical safeguarding, while education and organization should be relied upon for the elimination of the minor accidents.

WILL J. FRENCH, member of the Industrial Accident Commission of California. Next week it will be six years since I was appointed on the California commission. It has fallen to my board to have charge of our safety department, and during that time there have been 400,000 accidents that have come to the commission in California, and, consequently, we think we have some experience in this connection. Our chairman has accurately expressed my belief as to the situation, namely, that it is impossible to definitely say what per cent of accidents can be prevented by mechanical safeguards. In the first place, there are different industries in the different States, and in the next place, because of that fact, we are sometimes unable to get exposure. The percentages of accidents prevented by the use of mechanical safeguards that I have read of are from 10 to 75, and just what those figures mean is unknown. We should use the two things, safeguards and education, and I would not confine the educational process to the employee, as is so frequently advised. We find employers who ought to know that proper lighting and good water are just as important in preventing accidents as the education of the worker. Also, you have to take into consideration the thousands of foreigners. Some of these men come to us without a knowledge of the language, so that they have to be taught. Therefore, I heartily indorse what Mr. Holman has said, and I believe you can never arrive at any definite per cent of accidents that can be prevented by the use of safeguards alone.

[Mr. James L. Gernon, of the New York Department of Labor, thought that in considering this whole proposition too much statistics had been used and that the basis of our figures has not been right, and doubted if any of the States have complete figures for a proper calculation of all these accidents. He thought that some of the arguments used had been productive of harm, as the manufacturer in many instances, not wanting to provide guards, would argue that safeguards were no good, as the so-called authorities in the country have said that only 25 per cent of the accidents can be prevented by them, and fall back on a safety campaign, which in many cases was not really a safety campaign, or a campaign of education. He agreed with the chairman that both guards and education should be provided, and emphasized the point that the guards must be of proper design and properly installed, as the number of guards that are inadequate is amazing. He admitted that in some plants it will be quite a task to educate all their workmen along safety lines, as, for instance, in one plant where, on account of the higher wages paid

in a munitions plant near by, a great many were leaving, and 2,500 men came and went in one month, but it should be done, as many men know nothing about the hazard in the operation of the machines until they are injured. As to the basis for figuring lost time in fatal accidents, Mr. Gernon thought that the expectancy of life rather than 9,000 days should be used, as a man 20 years of age has a greater life expectancy than a man 80 years of age, and said that when the labor people in New York State organized they insisted all payments for death should be based on the expectancy of life.]

Dr. JOSEPH M. BURKE, chief surgeon of the Seaboard Air Line Railway. In so far as my State is concerned, I regret to say that we have no compensation law, but whether or not there is a compensation law existing in a State, education and safeguarding are necessary. I know a little something about preventive hazards. In one shop in the city of Portsmouth, Va., accidents by getting chips of steel into the eyes last year amounted alone to 40 per cent of all the accidents that occurred in that shop. It was mentioned by one of the gentlemen here that in a certain shop guards over the eyes prevented many accidents. Under a workmen's compensation law we have to pay for such accidents. An accident may occur where a person may lose the sight of an eye, and if that eye is not taken out he may lose both eyes. Education in all branches and in all professions, coupled with providing safeguards, is what is necessary for the people in this country.

Mr. A. W. WRIGHT, vice chairman of the Workmen's Compensation Board of Ontario. I don't think it is safe to trust to one or the other; that is, to safeguarding of the machine or to education alone. They must go hand in hand. But one thing you must bear in mind—that you in the United States are suffering from industrial indigestion. Something must be done if you are going to trust things to education alone. We have a section in our act which provides for safety associations. That, I think, can be made very useful in the way of accident prevention. The employers are behind the safety association movement. Each association has its own inspector, appointed and controlled by the association. Our board has nothing to say except as to the question of salary. These inspectors can go into a factory and say certain things are required. They can lay down certain rules. They can't enforce them, but they can come to our board and say, "We want such a rule enforced," and if the board feels that it is a proper rule it can enforce it as a law. About a week ago I had occasion to go into one of our large establishments over in Canada—we have a great many such over there, and we are glad to have them. These people are very proud of their safety work; they had

recently had a safety campaign in the shop, and there was a wonderful spirit existing amongst the men.

Dr. CHANEY. I want to say, in the first place, that the figures quoted by the president, I think, are exactly right. They are based on the frequency of accidents. So far as the frequency of accidents is concerned, I think our form showed very plainly a little less than 25 per cent due to mechanical causes. I am quite sure both Mr. Beyer and myself will feel highly pleased and satisfied if what we have had occasion to say here to-day leads to a very thorough research of this whole problem. We ought not to be satisfied with the present status; we ought not to be satisfied with the results which we have secured in getting rid of serious and fatal injuries. We should study our accidents; and unless we study our accidents on the severity basis, I am afraid we will still be in the dark. My idea of protecting the workman is to improve the conditions under which he works, and I think that has been neglected.

TUESDAY, AUGUST 21—EVENING SESSION.

CHAIRMAN, WM. M. SMITH, CHAIRMAN MICHIGAN INDUSTRIAL ACCIDENT BOARD.

II. HOW CLAIMS ARE HANDLED, WITH SPECIAL REFERENCE TO LUMP-SUM SETTLEMENTS.

Mr. HOLMAN. It gives me pleasure to introduce as the chairman of this evening's program Mr. William M. Smith, chairman of the Michigan Industrial Accident Board.

The CHAIRMAN. Your president induced me to act as chairman, or a sort of temporary toastmaster. I am entirely a new member and don't know much about compensation, having been only some seven or eight months in the work. I learned much this afternoon about accident prevention. My board has nothing to do with accident prevention, but I am sure it is a good thing for me to know and a good thing for all boards to know. It strikes me, though, that most of the industrial accident boards of this country have nothing to do with the prevention of accidents, though, of course, they may exercise a moral influence, and may recommend the use of this or that sort of a thing to prevent accidents.

The program to-night, as I view it, comes somewhat closer to our work, the subject being, "How claims are handled with special reference to lump-sum settlements." My experience with lump-sum settlements so far has been to deny them. I don't think we should have such a thing. Seriously speaking, this lump-sum settlement should be granted in very few cases.

I don't know why the speakers should be confined to lump-sum settlements entirely, as I am sure you all have a great many problems confronting you about which you would like to take counsel of your fellow members.

As I talk with other members and read the statutes of the States, I find about as many rules regulating a given subject as there are States in the Union. It seems to me that it might be a good thing to have the laws governing workmen's compensation somewhat uniform. To illustrate: One State said, "We have all accidents reported, no matter how small or trivial"; another State said, "We have accidents reported when they incapacitate the man for more than 24 hours"; still another, "We have accidents reported when they incapacitate the man for seven days or more"; and so on. Is there any reason in the world why rules should not be the same? If an accident which

disables a man for 24 hours is reported in Michigan, it should be reported in Maine; if all accidents are reported in New York, they should be reported in New Jersey. It seems to me that this organization might do something along the lines of administrative work in securing uniform workmen's compensation laws. We have had five or six years' experience in this work. The laws of the United States have secured uniform legislation on half a dozen other important subjects, and I believe workmen's compensation is capable of uniform legislation. I suppose lump-sum settlements should be governed by the same rules in Texas as in Tennessee, but I don't know of any rule covering that subject, and have been unable to find any rules laid down, except the facts surrounding the particular case and the judgment of the industrial accident board in that State, which experience usually shows to be wrong.

Mr. W. C. Archer, the first speaker on the program and the deputy commissioner of the New York State Industrial Commission, is, I am told, not here.

LUMP-SUM SETTLEMENTS.

BY WILLIAM C. ARCHER, DEPUTY COMMISSIONER OF NEW YORK STATE INDUSTRIAL COMMISSION, IN CHARGE OF BUREAU OF WORKMEN'S COMPENSATION.

[Read by F. M. Wilcox, of Wisconsin Industrial Commission.]

In addition to this paper on the subject of lump-sum settlements it has been my intention to prepare a symposium giving expression to the principles and practices obtaining in every American jurisdiction. Between one-third and one-half of the various accident boards and commissions have responded to my request for information, and as soon as all have responded I shall forward the symposium to the secretary, to be printed, if it is so ordered; and if not, I shall endeavor to find a means of transmitting copies of the symposium to all of you.

My paper is expressed somewhat in general terms, and yet it may be accepted as indicating the practices prevailing in the bureau under my care.

Workmen's compensation for losses arising out of industrial accidents is in no sense a charity or a dole from the State. Neither is it provided in lieu of the cost otherwise to be encountered in the maintenance of eleemosynary institutions. And its source is not a tax upon industry, for it is not a levy in support of government nor is it an assessment to support an improvement of property for the benefit of the public. It is not even a burden.

But, as the word signifies, it is payment over and above ordinary wages for losses sustained through the risks taken in hazardous employment. In a sense it is a wage whose payment is contingent upon loss from accident. The money for the purpose, through being made a certain element in the calculation of the cost of production, is collected as part of the selling price of finished goods or work.

It does not lay an added burden on industry after proper adjustments to new conditions take place, but really produces relief. Money hitherto paid for indemnity contracts would almost effect full payment of compensation awards and benefits. Then there are the attendant economies and incidental improvements of industrial relations. All these much outweigh any estimate of compensation as burden.

The State in its attempt to further social justice has compelled the plan; has done it by the method of insurance, since single indus-

tries do not alone develop the law of contingent losses; has regulated it in commerce through rates varying as hazards vary, and among workmen according to earning capacity, which reflects living conditions; and with conditions of hitherto unalleviated distress in mind has sought to guard against unthrift in expenditure by means of installments of payments throughout the entire period of disability or dependency.

This has been said in support of three propositions:

First. Awards and benefits of compensation are the workmen's as of right, as things earned, paid for in advance by all, and enjoyed by all, the better, be it said, in expectancy but perhaps with more appreciation during disability.

Second. The State, which enacted the law, has the right, and it is its duty, to safeguard its fulfillment and to realize its beneficent provisions.

Third. The employers have especial rights through their duties to their workmen and since they themselves are directly benefited when the law is well administered.

Periodical payments during disability or dependency is the rule of all compensation laws. The schedule of specific awards is no exception to the rule, for schedules have been adopted for the sole purpose of certainty and convenience in administration and under the analogy of the general law are contingent interests rather than vested. It may be said, therefore, that lump sums are not favored by the law. Nevertheless, as has been shown, awards are the workmen's as of right and may under certain conditions be made in lump sums and still kept within the letter and the spirit of the law.

In fact, I should say that the single and only test is the good of the recipient, which will always satisfy the interests of justice. If this may be effectuated by a lump-sum payment, the State will instantly be obliged as a matter of duty to grant it. In doing so it need not be deterred through consideration of the probability of the failure of its purpose, for if it exercises a wise precaution it will have performed its duty. For the State to go too far as overseer or protector would be a violation of the workmen's rights and a wrongful use of its own powers.

Let us proceed to a consideration of the various kinds of cases in their relation to lump-sum payments, and first to those in which lump-sum payments may well be made. Where the awards are small and the disability of definitely short duration, payments which may become due after the award is granted may well be made in a single payment. This for obvious reasons.

Where the claimants belong to a fine type of thrifty men who would likely know no dependency even were there no compensation benefits or who show other evidences of thrift, payments should be

made. In such cases the opportunity for a distinct betterment of conditions is offered and should be encouraged.

In cases in which a reputable employer interests himself in the welfare of his injured workmen and seconds an application for a lump-sum payment it may well be made. The attitude of the employer is somewhat of a guaranty that he will see the matter through.

Where sentiment through sympathy would support a small business in a community in which the injured is known, a lump-sum award should be granted.

Lump sums should be given to aliens who are nonresidents or who are about to become nonresidents of the country. Every reason supports this, for abroad the award is worth more, our own States will have discharged their duties to the injured, and a more suitable environment will likely be found in native scenes. There is justification for discounting the present values of such claims.

Lump-sum payments should seldom be withheld when they go to support children in school. Through education the disability may be turned into a blessing. It may, however, be said that an education may be paid for in installments, but experience teaches that the periodical benefits to children are too small for this purpose, though when confined to a more limited period they prove sufficient.

In the granting of lump-sum awards administrators of the law are bound to take cognizance, at least mentally, of the different characteristics of various races. It is seldom indeed that the representatives of certain races will lose or waste their awards if made in lump sums, but, rather, they will proceed to turn them into increased benefits.

There is another class of cases in which lump sums are granted which would not be guessed by those who merely read the law or give but academic consideration to the question of compensation. This class arises out of injuries which we call permanent-partial and in which theoretically there is ability to do some work. The law measures compensation in such cases by the impairment of earning capacity. There are such cases, and hundreds of them, but as a rule employees are totally disabled temporarily and when they are able to work earn full wages. But if an employee has been injured, has recovered as far as he will ever recover, and has not secured employment, or if he has secured employment at the same wage, has done so through the consideration of his former employer who will not turn away a faithful employee, and yet with any other employer could not receive so much wages, a commission in such cases knows that it is either a question of continuing payment upon an impaired earning capacity or of a purely theoretical consideration of what a man is able to earn when, in fact, he is not earning anything. Such cases afford peculiar difficulties and endless

hearings and rehearings, with some show of ill will on the part of insurance carriers who lose all sentiment in the matter and begin to resist the claim, or a temptation to malingering, in which the claimant may seek to secure advantage out of doubt. So when claimant and insurance carrier come before a commission with a prayer to end the case by an award for a single amount, such amount being suggested jointly by employer (or his representative) and employee, a commission should not hesitate to make an award and close the case if clearly in the interest of justice. A commission need not be a party to any dickering as to amount, nor does it enforce its opinion on either party. It simply approves if justice is furthered. It is needless to add that this function should be exercised with great care.

Finally, in certain cases lump-sum awards are justified to prevent malingering, and especially is this true in cases of neurosis. If the psychic element tends to prolong disability the quicker a case is closed the better. There are also certain cases of real disability accompanied by malingering to the extent only of overestimating the disability. I should say in the interest of justice that such cases are better closed.

There are cases in which lump-sum payments should seldom, if ever, be made. Since all payments should be made only for definite purposes it follows that payments to satisfy sentimental reasons should never be made. Claimants often desire their money that they may see it and count it and put it in the bank. Their application should be denied. Some desire to loan it or to speculate with it. This is not sufficient reason.

Drunkards, the diseased of certain types, the stupid and imbecile should never be granted lump sums.

Lump-sum awards, except in very rare cases, should not be granted when the injured is suffering a permanent total disability. In such cases only when the periodical payments are too small to subsist upon should serious consideration be given to the claimant's application. Each such case should and undoubtedly will have very earnest and special consideration. It is enough to say that such is needed.

Many applications are supported by the pleas of attorneys or next friends. In the majority of these cases the suspicion is at once aroused that the expectation of fees rather than the good of the claimants is back of the application. Such claims should be denied.

Cases sometimes come on for lump-sum settlements at the instance of the employer or carrier whose reasons may be found in a desire to liquidate doubtful cases, to pull down reserves or to save expense of further handling. These are not justifiable causes for granting lump-sum payments.

In death cases where payments are contingent upon life or remarriage or dependency or minority great caution should be exercised

in the granting of lump sums. In some such cases the very terms of the law itself would seem to prohibit. In cases of children who would be helpless against the improvident use of commuted payments, their interests should be safeguarded. For the same reason lump sums should seldom be paid to the aged or infirm who have no hope of support outside the compensation benefits.

I have spoken of cases in which payments may nearly always be made and of cases in which they should seldom, if ever, be made. For these and for all other cases the growing, if not paramount, importance of the question of compensation problems leads me to suggest that where the volume of compensation business is sufficiently large to warrant it, and it is likely so in all States, that a unit of organization be formed for the special consideration of lump-sum payments. There are many applications for money with which to purchase businesses, to pay debts, to embrace and encourage opportunities, and to satisfy desires seemingly springing from proper motives. All such applications should be carefully examined and the administrative department might even go so far as to make investigations and pass critical judgment upon the proposed ventures as viewed from every standpoint. Certainly the matter can not be treated with haste or disregard without subverting the ends of justice. This is a stern business and should be governed by a great deal of practical hardheadedness. Necessity rather than enjoyment should be a governing rule, and there should be evidenced on the part of the claimant enough foresight and thrift to justify the department's action, and it should be kept constantly in mind that the interest of justice and the good of the claimant will in many instances justify lump-sum awards. A consideration of this will fortify the department with the proper balance and patience to listen to the never-ending applications for money.

Finally, I want to speak of one or two dangers to be guarded against and avoided. The first is the tendency toward the practice of granting lump-sum awards in order to get rid of cases. This tendency should be curbed as entirely unworthy, and the importance of the suggestion should not be overlooked for it denotes a real and present danger everywhere. The compensation business is new. Its volume has surprised the public, who are yet unaware of its real magnitude. Many departments administering compensation laws are starved and compelled to work under strain. To close cases by lump-sum payments is a temptation and especially since this method satisfies all parties concerned, at least temporarily. But it is one thing to be tempted, another to fall; and we must not fall.

The greatest danger of all, however, is the danger of a single corrupt administration, which would in a wholesale manner commute future installments of outstanding claims and in doing so effect dis-

counts in value. This would be the real calamity, for the injury would be irreparable, the work of years brought to naught and it would scandalize the State in its benevolent purposes in furthering the great humane laws comprised in our various compensation statutes.

Finally, let me conclude by saying that a discussion of lump-sum agreements by emphasis of the details involved might lead to the hasty conclusion that such payments should be made in a relatively large number of cases. The very opposite should be the rule, and, the law, as has been said, generally looks with disfavor upon this manner of determining claims.

The CHAIRMAN. Mr. C. H. Crownhart, the second speaker on the program and formerly chairman of the Industrial Commission of Wisconsin, is unable to be here, but he has prepared a paper on the subject of lump-sum settlements, and in the absence of Mr. Crownhart his paper will be read by his fellow member on the Industrial Accident Board of Wisconsin, Mr. F. M. Wilcox.

[Mr. Wilcox read a letter from Mr. Crownhart, relative to his inability to be present.]

LUMP-SUM SETTLEMENTS.

BY C. H. CROWNHART, FORMERLY CHAIRMAN OF INDUSTRIAL COMMISSION OF WISCONSIN.

[Read by F. M. Wilcox, of the Industrial Commission of Wisconsin.]

For the most part our compensation laws permit lump-sum settlements upon approval of the compensation boards or the courts. However, the general policy of the laws is to treat compensation as in lieu of wages, to be paid weekly or at other stated periods. Where the law permits lump-sum settlements on approval of the administering agency, a great responsibility rests upon such agency.

At the beginning of the compensation systems in the United States, New Jersey and Wisconsin, in 1911, were the first States to adopt constitutional laws. Wisconsin adopted the board system of administration, while New Jersey adopted the court system.

The old-line casualty insurance companies had advocated the New Jersey system and condemned the Wisconsin system. This they continued to do. Tons of literature were sent out from their New York insurance bureau, representing the combination of old-line companies dominating the liability-insurance field. Some of this propaganda went out under its true colors; more of it went out under deceptive titles. For instance, articles went out from a paid attorney of the bureau under the title of "Former Commissioner of Labor of New York." None of these documents contained the real reason for their preference of the New Jersey system over the Wisconsin system.

In a speech in 1912 before the association of old-line casualty company agents at White Sulphur Springs I made the statement that the companies were short-changing the workmen in New Jersey. A representative of the bureau promptly challenged my statement by calling it an absolute falsehood. Not long afterwards the American Association for Labor Legislation published the result of an investigation made by it in New Jersey, establishing the fact beyond controversy that such companies were systematically fleecing the laboring men, and particularly the widows and orphans of laboring men who had died as the result of their injuries. The New Jersey law provided no adequate system of reporting accidents, no statistical department, and no real supervision. The companies had a free field; they continued their old common-law liability policy of getting the best settlement possible from the ignorant and helpless. But they

had, and still have, this advantage under compensation: Under common-law liability there developed along with the claim adjuster an equally conscienceless ambulance chaser, who frequently forced the claim adjuster into a reasonable settlement or made his company pay dearly in a court of law; but under the compensation system the amounts to be paid were so small as to discourage the ambulance chaser, leaving the field free to the oppressor of the poor man. Any system that takes away the only protection the injured man had against chicanery and fraud, and gives nothing in its place, is a poor system, indeed, for the laboring man. Most of the States, much to their credit, have followed the Wisconsin system or substituted State insurance or added something in way of protection under the New Jersey system.

But a correct system does not end the abuses of unconscionable settlements. The laws must be administered by able, conscientious men, with plenty of backbone. There is no room for a man with a weak spine in working out compensation problems and in securing to the injured workman or his dependents their due under the law.

The average claim adjuster works overtime, and while the officers of the law sleep they make settlements that rob the poor. There is no doubt that the injured man or his dependents prefer lump-sum settlements. There is no doubt that they will discount their claim liberally for cash in hand. They fear the intricacies of the law and the law's delays.

Compensation is a debt due the injured workman or his dependents. The insurance company has the same obligation to pay it as though it had borrowed money of the workman and given its note of hand. And yet a company that boasts of its assets, its credit, and its honesty has no hesitation in discounting its debt to injured workmen.

Now, I know this from experience, and every member of a board supervising compensation payments knows it. Not all companies are equally guilty. Some are fair and some others would be fair were it not for their competitors.

Right here it becomes the bounden duty of the board to see that there are no favorites and no slackers. If supervision is adequate every accident must be properly reported. It must be carefully checked against compensation payments. Investigations must be frequently made, and any time a company is found to have overreached an injured man it should be promptly brought to book and thereafter its settlements should be scanned with greater care.

Lump-sum settlements give the insurance companies the greater opportunity to take advantage of the injured man's ignorance and cupidity. Hence they are to be discouraged and allowed only in such cases as the board can affirmatively say that such settlement is for the best interest of the beneficiary.

In a prosecution against the insurance combine known as the Workmen's Compensation Bureau, before the Wisconsin insurance commission, for crooked practices in rate making, representatives of the bureau testified that Wisconsin compensation insurance rates had been increased over the true ratable proportion, or, as it is called, "law differential," because of Wisconsin's administration of the law.

What does that mean? It means one of three things: Either they were falsifying or the Wisconsin commission were forcing the companies to pay too much or other States were not compelling them to pay enough. The fact is that the rates in Wisconsin were then and are now higher than the law differential indicates and several States are lower than the law differential requires.

I don't believe for a minute that the companies have paid on the average in Wisconsin more than the law requires. In fact, I know they have not. But I do think the commission has watched all settlements with commendable strictness. I know that the board because of this has made itself persona non grata with many of the companies. I know that some of these companies have been politically active in opposing members for reappointment, and I know this is true also in other States. But I believe that any board member will feel better to go down with the knowledge that he has been true to the interest of the work confided to him than to know that he has yielded one jot or tittle to the strong and powerful in oppressing the weak and helpless.

Another thing that tempts injured men to make improvident lump-sum settlements is the delays allowed in making compensation payments and in adjusting claims. There is probably not a State under compensation where the law is fully and promptly enforced. One reason for this is the great burden placed on administering boards and appropriations insufficient to allow for adequate help. But a greater reason in many cases is the knowledge of insurance adjusters that delay works to their advantage by inducing favorable settlements.

I believe it is quite rare for insurance companies to make a practice of paying compensation as the law requires. They hold back for one reason or another a considerable period of time. Usually this is accomplished by retaining all authority to pass finally on compensation at the home office, frequently thousands of miles from the place of accident. Reports have to be made and often volumes of correspondence follow before any payment is made, the insurance company meanwhile protesting its anxiety to make speedy payment.

The compensation boards have arduous duties to perform. They are overburdened with work. They are beset with astute claim agents and insurance attorneys who stand on technicalities. The courts make troublesome decisions from failure to understand the

full intent and purpose of the law. But compensation boards should realize that they are the protectors and administrators of a sacred fund. To allow the poor and ignorant to be defrauded by the capable and powerful is to make such boards particeps criminis. The laboring man will have no special representative haunting the corridors of your office. He will attempt no backdoor entrance to your presence. He will have no high-salaried attorney to assist you in finding the facts nor in construing the law. He will have no special representative to come on from the home office to give you gratuitous advice. And finally this same man, when you have served him faithfully and well, will often turn out to be an ungrateful and suspicious recipient of your efforts in his behalf. Such is your lot; you have no flowery road of ease to travel; but good public service is its own reward. As the courts say: You take your office cum onere.

I would not be understood as making any attack on insurance companies. We accept them as they are, indeed, as they must be. Their adjusters are often good men, and sometimes humane. But the system of long-distance administration of insurance business is built on office efficiency, on dollar saving, and on dividends. It has no heart.

To illustrate some of the abuses under lump-sum settlements I will cite a few actual cases out of very many that have come under my observation.

1. On a hearing before the Wisconsin insurance commissioner against an insurance company the chief examiner testified that the company seldom, if ever, paid a claim on time, as the law provided. It was shown that the company had a systematic policy of delaying their payments through correspondence, often running up to 25 or 30 letters over a single claim.

2. The general counselor, for the State, of a company made a lump-sum settlement with a minor for a schedule injury. He based the settlement on the low wages—$1 per day—that the boy was receiving instead of the probable wages that he would receive at 21, as required by law. The injury resulted from failure to guard, and the law provided a penalty of 15 per cent to be added to the compensation. This was not done. In checking the accident this was disclosed and the settlement was not approved.

3. The general attorney of another company attempted a compromise with a widow for $2,500 in a case where $2,742 were due. He justified his position on the ground that the claim was doubtful. There were no doubts, except those that he conjured up to beat the widow out of $242.

4. In another case the general attorney, for the State, of an insurance company made a stipulation of settlement for $650 with a

man who had lost an eye. This was a schedule injury, and the amount due was $1,124.40. There was absolutely no dispute as to the facts or the law. When criticized for attempting such a fraud he claimed the right to make any settlement that he could get by agreement.

5. In a case where a minor had a bad injury to the shoulder and spine a lump-sum settlement was made on stipulation for $143.22, and the settlement was confirmed by an award of the commission. It subsequently appeared that the stipulation falsely recited that the boy had recovered from his injury, whereas he was in fact badly crippled. A new award was made for $1,665.96 in addition to the amount that had been paid. This award was affirmed in the supreme court.

6. A young man had his hand cut off at the wrist. It was a schedule injury and there was absolutely no dispute as to the amount to which he was entitled. A lump-sum settlement was made for $800, whereas in fact he was entitled to $1,250.

7. A most interesting case was one where a man lost the sight of an eye. It was a schedule injury, and the man had been advised by the commission of the amount to which he was entitled. He was a poor man and his wife was sick, and he needed money badly. The State agent of the insurance company met the man in the office of the commission, and after a conference with him he induced him to agree to a settlement for $450. The commission refused to accept the compromise and awarded the man about $900. The agent was very bitter over the arbitrary action of the commission. He appealed the case, and after much delay the award was confirmed.

The foregoing are merely illustrations. They could be extended far beyond the scope of this paper.

There is another phase of lump-sum settlements that is worthy of consideration. In the case of deceased workmen the widows almost unanimously beg for lump-sum awards, and it is rare indeed that their requests should be allowed. When they receive lump-sum settlements they make improvident investments or their friends and relatives borrow their money and forget to repay it. I think experience demonstrates it is the wisest course to award widows compensation payable at stated times extending over long periods of time.

In conclusion, I urge compensation boards to greater promptness in disposing of the business before them. Delay in this regard is the one outstanding fact that is leading to criticism of the administration of compensation laws. Delays only add to the difficulties of the boards. Many insurance companies want delay because it makes the injured man more eager to settle his claim at a discount, but the policy of the compensation laws is to get relief to the injured immediately and continually until he is paid in full.

It is only fair to say that some insurance companies are as anxious for speedy disposition of cases tried before the boards as are the workmen and are equally impatient of delay.

The CHAIRMAN. The next on the program is Mr. F. J. Donahue, member of the Industrial Accident Board of Massachusetts.

[Mr. Donahue's paper is not reproduced, as a copy was not received for publication.]

The CHAIRMAN. The next on the program is Mr. Meyer Lissner a member of the Industrial Accident Commission of the State of California. I am informed that Mr. Lissner is not present, but we have with us to-night an associate of his on the board, Brother French, of California, who has been on the board since its organization, and I am sure we would all be greatly interested to hear a dissertation on the work of his board, and I hope he will include in his subject what accidents ought to be reported and who ought to report them.

HOW CLAIMS ARE HANDLED, WITH SPECIAL REFERENCE TO LUMP-SUM SETTLEMENTS.

BY WILL J. FRENCH, MEMBER, INDUSTRIAL ACCIDENT COMMISSION OF CALIFORNIA.

In California about 1,000 formal hearings are heard by the industrial accident commission, out of each 60,000 industrial injuries. In a large majority of the 59,000 injuries, compensation is paid according to law by either the employer or the insurance carrier. Insurance is not compulsory in California. When I use the word "compensation" I include the hospital and medical benefit, which commences at the time of injury and lasts as long as may be necessary.

Out of each 60,000 injuries, compensation in monetary form is paid in only about 13,000 instances, because of the two weeks' waiting period, during which time recoveries occur in approximately 47,000 injuries out of the 60,000 used as a base.

Reports of each injury from employers, insurance carriers, and doctors are furnished our statistical department. The injured man is informed of his rights under the law. Care is taken to see to it that, if no compensation is paid, the injured worker is impressed with the necessity of filing an application for adjustment of claim within the six months before the statute of limitations begins to operate. There is rarely occasion to do this. The working people of the State know their rights. Those of foreign birth have consular agents alert to their interests. Fraternal and trade organizations are important factors in advising injured workers.

The California statistical department finds out why compensation is not paid by employers and insurance carriers if the reports show derelictions of duty. This course has the effect of both protecting the injured and causing those responsible for the payment of compensation to realize there is an ever-watchful eye.

Efficient secretaries are maintained in San Francisco and Los Angeles who meet injured workers with grievances, or employers or insurance agents who desire assistance in straightening out difficulties. Many a budding controversy is thus nipped and the parties satisfied of the right procedure. When the issue is of a medical character there is reference to the medical department, and arrangements are made for immediate examination or the injured man is sent to an expert. Usually the report of the doctor terminates the dispute. In several of the California cities are representatives of

the commission whose duties include the kind of work described as performed by the secretaries.

If it is found impossible to adjust a dispute by informal means, an application for adjustment of claim is filed by the interested party or parties. After due notice a hearing is held, presided over by a commissioner or a referee. The commission has always taken the position that hearings should be inexpensive to employers and employees, and referees are sent to places far removed from the main cities, for California is a State of magnificent distances. A stenographer accompanies the referee. Usually the testimony is written up. Sometimes the substance of the testimony is placed in the record, in lieu of all that transpired, because the issue may be comparatively unimportant or a settlement may be agreed to at the hearing. The record goes to the decisions department, where it is worked up for submission to the commissioners, a majority of whom are required to render a decision.

A number of the controversies relate to permanent injuries. The California law bases compensation for such injuries on the nature of the injury or disfigurement, the occupation, and the age. The central thought is that loss of earning power shall govern, for it is certain workers are affected differently by injuries. One man with a lost finger can soon resume his usual employment. Another man with a similar loss will have to search for new work. Older men are given more than younger men because of the increasing difficulty of finding work as a man passes middle age, and also because a younger man can more easily adjust himself to the changed condition. An elaborate schedule for rating permanent disabilities has been prepared. It covers all injuries or disfigurements, all occupations, and all ages.

Lump-sum settlements can be made only with the approval of the commission. There are many applications in California for such settlements. The policy of the commission is hardly ever to use the power given to force lump-sum settlements, and to consider carefully those presented for consideration. Rarely is a settlement approved unless both parties agree to it. Occasionally a widow will want to clear her home of indebtedness and save interest payments. If a proper showing is made, the employer or insurance carrier will be instructed to make the payment. If the sum is only a portion of the compensation due, the payments are computed to allow 6 per cent interest and taken from the end of the compensation period. This enables the weekly payments to continue without interruption until the full amount is paid.

The California statute provides that commutation may be ordered "if it appears that such commutation is necessary for the protection of the person entitled thereto, or for the best interest of either party, or that it will avoid undue expense or hardship to either party, or

that the employer has sold or otherwise disposed of the greater part of his assets, or is about to do so, or that the employer is not a resident of this State."

Slightly more than 10 per cent of the total amount of compensation payable in any one year is paid in lump sums. The exact proportion is 11.9 per cent.

It has been found difficult to have our busy secretaries investigate applications for lump-sum settlements as thoroughly as the commission desires. There is under consideration a proposition to engage the services of a welfare worker to ascertain just what is behind an application for a lump sum, see the parties and their references, make sure any money awarded is expended as contemplated, and assist those who venture into business enterprises. This welfare worker can also aid permanently injured workers in their efforts to prepare for new occupations, or guide them toward new work if there is a disinclination to use to advantage the weeks during which there is a fixed income.

The stronger insurance companies are inclined to favor lump sums because of the 6 per cent discount. The weaker companies are, for obvious reasons, less inclined to favor complete payments.

Occasionally compromises are approved by the commission because of uncertainty as to the issue or issues and a belief that it is best for all concerned to close the case. Traumatic-neurosis cases come within this class.

Partial lump-sum payments are not uncommon in California. Sickness, bills for living expenses, heavy funeral costs, and other sources of expense are considered at times as warranting the action of the commission.

The policy of one payment is not good, unless for the reasons here outlined, and the California commission does its best to see that the true compensation principle is maintained when lump sums are requested.

The CHAIRMAN. I might say, in connection with the question of reporting accidents, that in Michigan the plan has not proven satisfactory to us. Our statutes require the reporting of all accidents, as the statutes of a number of the States do; though, as a matter of practice in times past in Michigan, the employers and insurance companies have reported—that is, reported in detail and separately—only those accidents for which they believed compensation should be paid. They have also sent in a sort of so-called weekly report of all minor accidents, the disability from which was very mild, and which did not run into the compensatory period. We have now seen fit to put into operation a new plan, which took effect August 10. We have amended the statute rules of the board so that we may require reports separately on each and every accident by the em-

ployer, and not by the insurance company, within 10 days after the accident occurs. There is a penalty of $50 provided by law in case any employer refuses to report any accident within 10 days. Under the law, we have provided that every accident, no matter how small or trivial it may seem, must be reported, and we hope to get a report of each and every accident after August 10 within 10 days after it occurs.

The waiting period, like that of many States, is 14 days, the employee getting no compensation unless disabled for more than 14 days. The plan we are experimenting on provides that the employer must make a second report on each and every accident on the 15th day following the accident, the end of the waiting period. If the employee, during the 15 days, went back to work, was given a little medical or surgical treatment, lost a little time—less than 14 days—then on the 15th day it must be reported to the board on paper of a certain color, so that the employees in the office immediately know that the receipt of that report by our board means that the accident that was reported previously is on its face a noncompensatory accident. We then annex that report and, while no index is made of it, it is filed alphabetically in the noncompensatory file, so that it can be found if necessary. If, on the other hand, the accident disables the employee so seriously that on the 15th day he is still disabled and compensation should start, we require a second report on a paper of another color, so that the employees in the office will know that the receipt of that report means that the accident previously reported has turned out to be a compensatory accident.

It is quite important to every industrial accident board to have some proper and efficient method of classifying accidents, both compensatory and noncompensatory. The experience in Michigan under the old plan has been poor. If we were to require only the reporting of accidents that disabled for the waiting period, we would have a good deal of trouble. In some cases accidents that do not disable the employees at all turn out to be most serious accidents, and later may cause the employees' death.

Personally, I can not figure out any way to make really effective laws in that line, except to require the reporting of every accident, no matter how small, to be followed up in some way by the board.

COMMUTATION OF COMPENSATION AWARDS UNDER THE PENNSYLVANIA SYSTEM.

BY HARRY A. MACKEY, CHAIRMAN OF WORKMEN'S COMPENSATION BOARD OF PENNSYLVANIA.

[This paper was submitted but not read.]

It very frequently happens that either the employer or the employee—or both—feels that it would be advantageous, under the circumstances of a particular case, to have the continuing payments of compensation commuted to present value and paid in a lump sum. The present value is simply the amount which, put at interest at 5 per cent, compounded annually, would produce the weekly payments in question. In practice the commutation is computed by means of a table which shows the present value of $1 weekly, at 5 per cent compound interest for each number of weeks up to 20 years.

There are three sections of the Pennsylvania act of 1915 which deal with the subject of commutation. The first is section 310, which provides that "the employer may at any time commute all future installments of compensation payable to alien dependents, not residents of the United States, by paying to such alien dependents the then value thereof, calculated in accordance with the provisions of section 316."

Section 316 is as follows: "Compensation may at any time be commuted by the board at its then value when discounted at 5 per centum interest, with annual rests, disregarding the probability of the beneficiary's death, upon application of either party, with due notice to the other, if it appear that such commutation will be for the best interest of the employee or the dependents of the deceased employee, and that it will avoid undue expense or undue hardship to either party, or that such employee or dependent has removed or is about to remove from the United States, or that the employer has sold or otherwise disposed of the whole or a greater part of his business or assets."

Section 424, which is a part of the procedure article of our act, provides: "If any party shall desire the commutation of future installments of compensation, he shall present a petition therefor to the board. The board shall appoint a time and a place for hearing the petition, and shall notify all parties in interest. Every such petition shall be heard by the board, but the board may refer any question of fact arising out of such petition to a referee, whose findings shall be final, unless upon petition the board shall, for cause

shown, grant a hearing on the facts. The board shall fix a time and place for the hearing, and shall notify all parties in interest."

The Pennsylvania law, therefore, has given the absolute right to the employer to commute to present value and pay in a lump sum any award that may be due to the widow and dependent children of an alien employee who is killed in the course of his employment in this country, when such dependents are living abroad.

Another section of the act provides that such alien dependents living in a foreign jurisdiction are entitled to two-thirds of the compensation that would be due them were they living in this country. This is for the purpose of equalizing money values, rather than to discriminate against foreign dependents. Therefore, the act recognizes the fact that it would be highly advantageous and economical, very frequently, for the employer to dispose of such accounts by payment in a lump sum.

We have recently ruled that the employers, under these circumstances, have a right to do it of their own motion, without the necessity of petitioning the board for an order to do so. The vast number of cases, however, that come before our board are filed in consequence of the procedure section 424, praying for the commutation in the method suggested in section 316.

Our attitude as to these applications was defined some time ago in an opinion by the writer, which, at the time of its filing, seemed to be a very wise precedent to establish, and our experience since that time has not impeached our judgment, but has rather reaffirmed it. The opinion is as follows:

> The case came before us in the form of a petition presented by Mary Stifura asking that we commute certain continuing payments in present value in order that the whole sum be paid to her at once.
>
> The compensation which is now being paid to her is in consequence of an agreement executed beween herself and the Pressed Steel Car Co. for herself and three small children because of the fact that her husband was killed in the course of his employment and while he was an employee of the defendant.
>
> The important facts of the agreement are:
>
> *Age of children.*
>
> Daughter born February 13, 1911, will be 16 on February 13, 1927.
> Son born April 20, 1912, will be 16 on April 20, 1928.
> Daughter born December 26, 1915, will be 16 on December 26, 1931.
>
> *Terms of agreement.*

300 weeks at $20 per week, 55 per cent	$3,300
262 weeks at $20 per week, 35 per cent	1,834
61 weeks at $20 per week, 25 per cent	305
192 weeks at $20 per week, 15 per cent	576
Total compensation	6,015

In this case the widow has formed the opinion that although by this agreement she has been secured in substantial semimonthly payments until her youngest child shall have reached the age of sixteen, to wit, December 26, 1931, that she prefers to have the future payments commuted to present value and venture the whole sum in some uncertain undertaking.

It seems to the board that it will be well to protect her as against herself by refusing her petition. These petitions for commutation come before us under section 424 of the Workmen's Compensation Act. It will only be in rare cases that we can wisely exercise this discretion by granting such petition. It is a great temptation to a widow or any beneficiary under this law to ask that the compensation payments be commuted to present value and paid in a lump sum. We think, however, in a great majority of these cases these petitions are ill-advised and a real wrong would be done to the petitioners if we granted their prayers.

The act has wisely provided for the payments of compensation to be made at such times as the injured or the deceased would have received his pay, thereby providing a certain, modest, but sufficient, sum at stated intervals so as to relieve the dependent of real want.

In the majority of these cases the dependents have been unaccustomed to the use of money in bulk and the sudden acquisition of a considerable sum might readily lead to its unwise expenditure or to its unfortunate investment. The widow might terminate her dependency by remarrying and then the money would probably be spent without regard to the rights or best interests of the children.

As a general rule, we are opposed to granting such petitions to alien citizens who are desirous of taking the money to foreign countries. Awards have been made on the basis of their residence here. This same amount of money in a foreign country would be worth more than it is here, hence the difference, in the act, in the amount to be awarded to alien dependents, not that our legislature intended to discriminate against this latter class, but it attempted to equalize money values between foreign countries and ours.

We desire by this opinion to apprise the public that it will only be in the exceptionally meritorious case that we will grant commutation.

In order to compute present values of continuing payments our actuaries must have certain definite facts upon which calculations can be made. It is very obvious that commutation can not be made unless we have before us a definite number of weeks during which the compensation is to run.

We have had before us many applications for commutation of awards granted for partial disability. In many of these cases we felt, in the language of the act, that had we the power to grant commutation that it would "be for the best interest of the employee and that it would avoid undue expense or undue hardship." We have not been able to grant commutation in such cases because of the uncertainty as to the number of weeks compensation would run. This is best illustrated in a case which came before us in the form of petition for commutation of compensation where one Caskantino Cesarino had been very badly injured in the course of his employment. The compensation agreement had been promptly executed between his employers and himself. The amount agreed upon was being

paid each week. He applied for commutation in order that he might take the present value of his payments in a lump sum and return to Italy, where his money would purchase more for him than here and where he could be surrounded by his relatives and friends. We would have been very glad to have granted this petition had we had the power. We nominated a disinterested physician to examine the petitioner in order to ascertain whether or not we could find him permanently injured and base commutation upon 500 weeks. The result was that we were informed that while he was apparently permanently injured at the present time, nevertheless he might recover in a week, a month, or a year, and the apparent permanency of his injury be alleviated to that extent so that his condition would be reduced to partial disability. We therefore were compelled to decline compensation, and we voiced our embarrassment and the reasons for our declination as follows:

In the above case the board has extended every opportunity to the claimant to establish a status whereby we could find some way of relieving his situation. There is no question but that the claimant was seriously and perhaps permanently injured while engaged in the employ of the defendant. He is under compensation at this time. We have had him examined by disinterested experts, and while the seriousness of his present condition is not denied, nevertheless no physician nor surgeon can say how long this condition will continue. It may continue for the full 500 weeks, which would be the number of weeks of compensation for permanent disability, or the symptoms may clear up in a week, a month, or a year.

The claimant's condition of total disability at the present time might be reduced to partial disability within a short time by an unexpected recuperation; therefore the board has no data upon which it can grant commutation.

In order that our statisticians or actuarial experts may be able to compute present values from continuing payments there must be a definite and fixed term during which such payments are to run, otherwise there can be no mathematical calculation. In the case of a lost member the act specifically schedules the number of weeks during which the claimant shall be compensated so that when we have that class of cases before us present values can be computed with certainty, but in the case at bar we could not adopt one week nor five hundred as a basis of commutation.

We find as a fact in this case that it would be for the best interests of the claimant to have his compensation commuted to present value and to have it paid to him in a lump sum. The man has apparently been rendered helpless. He is in a strange country, removed from his friends, and his compensation is not sufficient to maintain him.

Under the undisputed testimony, were we able to award his compensation in a lump sum in present value he could return to his native land where he would be surrounded by his own kin and where he could secure more comfort at less cost.

But under the foregoing facts there can be no commutation in this case.

Eighteen months' experience under the Pennsylvania act has demonstrated the wisdom of the provision which places commutation in the discretion of the board. We have granted public hearings to every applicant. We have been guided entirely by the thought that

very frequently generosity on our part would do the applicant a great injustice, for it often happens that close examination discloses the fact that the application was ill-considered when presented, and that if the whole amount of money were placed in the hands of the injured man or the dependents of the deceased it would soon be dissipated, and no real good would follow. We have been very keen to grant commutation when the object was to pay off a mortgage on a home in which the widow and children are domiciled, or to assist an injured young man to an education, or to purchase artificial limbs for the maimed in order to render them more efficient in industry.

The board receives hearty and cheerful cooperation in this respect at the hands of the employers, who have very readily acceded to the suggestion to supervise the payment of these sums when commutation is granted, to insure the injured or dependents of the killed against imposition or dishonesty.

The CHAIRMAN. The gentleman from Texas on the program is not present, I am informed, but Brother McDonald, from Oklahoma, is present, and as Oklahoma is so near Texas, we will be glad to hear what Brother McDonald has to say regarding lump-sum settlements there.

Mr. A. A. McDONALD, chairman State Industrial Commission of Oklahoma. I have listened with great interest to this discussion of lump-sum settlements, and I should judge there is not much difference of opinion among us as to the proper method of handling them. I will say that our commission in Oklahoma is theoretically opposed to granting them but, like all other boards, we are frequently persuaded against our will to do so. It is our practice, in cases like the loss of a finger, where the dismemberment has not interfered with the earning capacity of the injured man, to grant him a lump-sum settlement in preference to paying it weekly. If a man is paid $10 per week in addition to his regular earnings, the chances are, by the time the payments have ceased, he has formed some extravagant habits of living. If it is given to him in a lump sum, he may make some good use of it.

I doubt if we should ever grant lump-sum settlements for the loss of an arm, though we have many cases in our State, especially among employees on cotton gins, who are recruited for the season's run from among the farm labor of the State, and after losing an arm, desire to purchase a farm as the only method known to them of making a living. As a one-arm man can, to a certain extent, make a success of farming, we have made many settlements of this class.

We are always willing, in the case of a minor or a real young man, to make a partial lump-sum settlement where he desires to take a business course and try to learn something else to do.

We had one case of a coal miner who had both a leg and an arm cut off. He was 27 years old, married, and had two children and a mother-in-law to support. He was entitled to $4,400 in 500 weekly payments. We assumed that if we compelled him to take his weekly payments of $8.57, his compensation would be over before he reached his 40th year, and his children who were only five or six years old would not even then be self-supporting; so we granted him a lump-sum settlement. He went over to Arkansas and bought out a cold-drinks stand, and as Arkansas is now bone dry he is doing pretty well.

In regard to reporting accidents, in our State we require all accidents to be reported that result in calling the doctor and giving medical attendance, or in loss of time, regardless of whether it runs to 14 days or not. I think it is very essential, where any medical attendance is given, that the accident be reported. If the doctor is not called, it is immaterial whether it is reported or not. We, of course, endeavor to ascertain the medical expense in each case, and we have a form that the insurance carrier has to fill out and file, showing the amount of the compensation and the medical attendance.

The CHAIRMAN. In the absence of our member from Nevada, who is listed on the program, I shall call on Miss Anderson, who lives pretty close to Nevada, and who I am told is practically the whole thing in workmen's compensation in Wyoming.

Miss EUNICE G. ANDERSON, chief clerk, Workmen's Compensation Department of Wyoming. I think that our chairman of the evening elaborated somewhat upon the position which I hold in connection with the Wyoming act. However, the Legislature of Wyoming did seem to think, when introducing the law in the State, that the several departments, or some of the executives of the State and the office of the treasurer of the State, did not have enough duties to perform; and while it is purely a State law, a compensatory law, yet its administration has not been made a separate department, but is a department of the State treasurer's office. Since I have been connected with the treasury department for a number of years, it fell to my lot to take charge of this special department.

I was asked by Dr. Meeker to tell something of the method of handling claims in Wyoming. First, the accident report is filed with the clerk of the district in which the accident occurs, and the judge of the district decides upon the extent of the accident and what compensation shall be awarded. He has, of course, the privilege of employing physicians to give a report on the extent of the accident. We have 7 district judges; we have 21 counties—a large State in area, but not so large in population—perhaps some of you might be interested in knowing that we have only about 150,000 people in

Wyoming, hardly enough to make up a city—so that the judges can handle the claims very well. But we find that we do need inspectors; that sometimes the injured workman is not, perhaps, given just the attention that he would have if we had inspectors who had more time and who were compensated for their services.

There is no compensation attached to the salary of the judges when they were given additional duties. The only additional compensation that was given was, of course, to the treasurer's office for administering the act, for salaries, and for supplies.

The accident reports—the employer's report of the accident and the employee's report of the accident—are filed with the clerk of the district when passed upon by the judge of the district. If the employee is granted compensation, an order of award is issued in duplicate. One copy is sent to the office of the treasurer and one to the State auditor. We then compare orders of award, and if all information is given which we feel that we need in our office to make up our report we pay the order of award.

The law does not provide that the treasurer may take exception to these awards when granted by the judges, although we often feel that we should have that privilege, as sometimes something in connection with the awards, from information given in the order, makes us feel that it is scarcely just. But these are things which we shall have to ask to have straightened out.

We have paid a great many lump sums, and perhaps more in proportion than other States would pay. It may have been a little easier way and a shorter route to dispose of claims, taking care of them as they are decided by the judges.

Mr. CHARLES S. ANDRUS, chairman, Industrial Board of Illinois. Where do you get the fund to pay the bills?

Miss ANDERSON. We feel that our law is brief as compared with most of the laws of the various States, and in some ways it does work out very satisfactorily. The employer pays into the fund a flat rate. When the law was first introduced, it provided for a rate of 2 per cent. We do not have a graded schedule of rates. The fund grew so rapidly and satisfactorily, and we had such a fine balance at the end of two years, it was decided that the rate could be decreased.

Mr. ANDRUS. Do I understand that it was 2 per cent of the weekly pay roll?

Miss ANDERSON. Two per cent of the certified copy of the monthly pay roll. The copy is transmitted to the treasurer's office each month, together with the remittance of 2 per cent. It was changed to 1½ per cent last January, and this became effective April 1.

Mr. ANDRUS. Do I understand, Miss Anderson, that all dues are the same?

Miss ANDERSON. When the orders of award are issued they are charged to the employer, and we are required to keep an account with each employer, and all his remittances are credited to his account, and all orders of award are charged against his account as drawn.

There is also a State transfer account and we are allowed an appropriation from the general fund each year, which we probably will not need after this year, as the fund has now reached the figure that, should we have a very bad mine accident, the fund would take care of it. There could be a fatal accident, where all of the employees in any one or more mines were killed, and yet our fund would take care of it.

Coal mining is our principal industry, although the oil industry is growing to be one of the principal ones. There are very great opportunities to get rich in Wyoming, and many eastern people are becoming interested, and we hope that many more will become interested, as there are many opportunities there. I have no doubt but what more will become interested, as we have the greatest drawing card—the fact that you may all get very rich if you come to Wyoming.

Mr. WILCOX. I would like to ask whether or not you have any reserve set aside to take care of permanent disability extending over a period of years.

Miss ANDERSON. No; we have not.

Mr. WILCOX. How do you know whether your fund is sufficient?

Miss ANDERSON. There is a limit to the amount that may be paid in a continuing claim. The limit is, I think, $1,200; and then if it is found that the accident has caused a permanent disability an amended order of award is issued and paid in a lump sum, the amount that has already been paid to the claimant being deducted.

Mr. WILCOX. Regarding the question of auditing of pay rolls, do you have any system of checking pay rolls of employers?

Miss ANDERSON. We check every pay roll from the companies, but we may also request the State examiner at any time to make an examination. We have not done that so far because we have had no reason to feel we needed to do it.

Mr. WILCOX. Where an employee is paid a certain wage and has his board, do you have this employer make his report in that way?

Miss ANDERSON. We require them to report the total amount of their pay roll as to what the wage would be.

Mr. WILCOX. What do you do with respect to board?

Miss ANDERSON. We have never come to that point.

Dr. JOHN W. MOWELL, medical adviser, Industrial Insurance Co. of Washington. Is it purely within the discretion of the judge as to

the amounts for permanent or partial disability? Do they vary a great deal?

Miss ANDERSON. Yes; they vary a great deal.

Dr. MOWELL. With reference to the same kind of accident?

Miss ANDERSON. With reference to the same kind of accident, they do not vary a great deal. The judges have the law to govern them and they have the amount specified for the kind of accident.

Mr. FRENCH. Is there any medical or surgical treatment in Wyoming?

Miss ANDERSON. In the case of coal companies they provide hospital and physicians. In the case of small employers the injured man must take care of that expense, though ofttimes the employer does.

The CHAIRMAN. The next speaker on the program is Mr. J. M. Wilson, chairman of the Industrial Insurance Department of the State of Washington.

LUMP-SUM SETTLEMENTS.

BY J. M. WILSON, CHAIRMAN, INDUSTRIAL INSURANCE DEPARTMENT OF WASHINGTON (STATE).

Before going into the question of lump-sum settlements I want to say a word with reference to our method of handling claims.

I presume you all know that workmen's compensation in Washington is compulsory. Every employer in the State is obliged to pay into the accident fund a certain percentage, based upon his pay roll, graded according to the class. We have 48 classes throughout the State, the rates running from 1½ per cent to 10 per cent.

Our claims are handled in this way: The claimant himself must file his claim for compensation, the employer must report the accident and the surrounding circumstances, and the attending physician must report the condition of the man as he finds him when called upon to attend him. Those three papers constitute the claim before the department. Until all three of those papers are in the file and properly inspected and properly proven, no claim will be paid.

We have had some difficulty, though very little, in obtaining reports from employers in instances where the employer thought that the accident was not of sufficient importance to render a report. However, we have a provision in our laws which makes it a misdemeanor for any person to fail to give the required information to the department. We have not been lax in enforcing this provision, and one or two have been prosecuted, which has given warning, and we are now having no difficulty along that line. When those three papers are filed and the claim is completed, we then award to the claimant compensation each month, if his period of disability should extend over a month.

We have five outside officers; we have branch offices in Tacoma, Seattle, Spokane, and Vancouver, and in those offices we have representatives of the department whose duty it is to investigate claims, and in the Seattle office we have a certain day fixed when claimants are met there by our chief adjuster in the field, who passes upon the injuries of the individual and decides whether or not he should be examined by a physician, or if he is able to return to work suggests a settlement with him. No payment is made without two of the committee passing on it. We find that that system works very well, and with follow-up cards going out to the attending physician and to the employer it enables us to keep a very close and accurate check upon the expense of his partial disability.

Under the Washington workmen's compensation act two kinds of lump-sum settlements are provided—one in the settlement of permanent partial disability claims; the other in cases of permanent total disability. The former is mandatory; the latter is within the discretion of the commission. There are nine permanent partial conditions expressly defined by the act for which lump-sum payments are provided, as follows:

Loss of one leg amputated so near the hip that an artificial limb can not be worn	$2,000
Loss of one leg at or above the knee so that an artificial limb can be worn	1,900
Loss of one leg below the knee	1,300
Loss of major arm at or above the elbow	1,900
Loss of the major hand at wrist	1,600
Loss of one eye by enucleation	1,200
Loss of sight of one eye	900
Complete loss of hearing in both ears	1,900
Complete loss of hearing in one ear	500

Compensation for any other permanent partial disability is in the proportion which the extent of such other disability bears to that permanent partial disability which most closely resembles and approximates in degree of disability such other disability, but not in any case to exceed the sum of $2,000. This maximum is as increased by amendment of 1917.

These maximums have been reduced to degrees representing $25 each, making the maximum permanent partial disability 80 degrees, or $2,000, and graduating downward on all lesser disabilities according to their relative comparison to the maximums fixed by law. This rating has been sustained by the Supreme Court of the State of Washington and the fixing of the relative degrees of disability has been held to be within the discretion of the commission and not reviewable by the courts. (Sinnes *v.* Daggett, 80 Wash. 673; Chalmers *v.* Industrial Insurance Commission (Wash.), 162 Pac. 576.)

In case of death or permanent total disability the monthly payments may be converted into a lump-sum payment, not in any case to exceed $4,000. Such payments can be made only upon the application of the beneficiary and shall rest in the discretion of the department.

In every case of death or permanent total disability there is transferred from the accident fund to the reserve fund of that class a sum of money for the case equal to the estimated present cash value of the monthly payments provided for it, calculated upon the basis of annuity covering payments provided by the law for the case. Such annuities are based upon tables prepared by the insurance commis-

sioner of the State and calculated upon the standard mortality tables with an interest assumption of 4 per cent per annum.

Under the law as originally passed there was set aside a sum calculated upon the theory that a monthly payment of $20 to a person 30 years of age is equal to a lump-sum payment according to the expectancy of life as fixed by the American mortality table of $4,000, but the total in no case could exceed $4,000. The experience of a few years proved this plan to be inadequate. The theory was not accurate as to figures and the limitation of $4,000 resulted in an insufficient sum being set aside to care for some cases where the expectancy of life was great. This condition was discovered about one year ago and the present plan devised. The publication of this fact resulted in the misleading inference that a shortage existed in the department's funds and this was in some instances colored to infer that the shortage was due to fraud, whereas the only difficulty was the inadequate provisions of the law itself.

The Washington commission, exercising the discretion vested in it by law, has ruled that no lump-sum settlement on account of death or total disability will be made to any beneficiary unless it clearly appears that the same is necessary to prevent the loss of property by mortgage foreclosure or other legal process. This ruling was made after careful consideration of the interests of the beneficiary, together with what is believed to be the plain intention of the law.

The fundamental principles of workmen's compensation are: 1. That the industry shall bear the cost of its accidents (not only the breaking of its machinery and equipment, but the breaking of its men); 2. That the injured workman shall receive sure and certain relief from the consequence of his injury, and his family and dependents shall be provided with sure and certain compensation for the loss of the bread winner upon whom they were dependent; and 3. That the general public shall be relieved to that extent from the burden of the care and maintenance of such person.

The Washington law provides that no money paid or payable under the law prior to the issuance of the warrant therefor shall be capable of being assigned, charged, or taken in execution or attached or garnished, nor shall the same pass to any other person by operation of law, showing clearly that the money so provided is for the benefit of the beneficiary and no other. The law provides, in the case of death or permanent total disability, a stated monthly allowance payable to the beneficiary until death, or, in case of a widow, until remarriage.

We believe the legislature intended what it said, namely, that as long as the beneficiaries live or remain unmarried they shall receive from the industry, by and through the State, a fixed monthly allow-

ance, and that such allowance shall not be jeopardized by being intrusted to the injured workman or his beneficiaries, a large percentage of whom are inexperienced in business affairs, unused to the handling of considerable sums of money and easy prey of the scheming, speculating sharks who constantly hover about the inexperienced person with a little money. The commission says to these beneficiaries, we will not turn this money over to you and permit you to take a chance of unwise investment, worthless loans, or speculation; this is a trust fund now in the hands of a competent trustee, the State, which guarantees to you through life the amount the law allows you.

We are sometimes asked why we pay a lump sum of $2,000 in case of permanent partial disability and refuse to pay a lump sum in permanent total disability cases, though the amount of the latter may in some cases be no greater than the maximum permanent partial disability allowance, or, as the claimants sometimes put it: Why do you trust us with a lump sum in the one instance and not in the other? We answer: A claimant suffering a permanent partial disability has only a certain degree of earning power left and is not in a dependent condition, whereas the totally disabled person has no earning power and is dependent upon the amount provided by law or the public generally. If he loses or dissipates his award he has nothing left and becomes a charge upon society.

It is not always easy to say no to applicants for lump-sum settlements, as sometimes their arguments seem plausible and persuasive, but in our judgment to grant these requests would be contrary to the spirit and policy of the law and the proof of the wisdom of the ruling is found in the fact that in many instances those who at first are dissatisfied return after a period of years to thank us for the wisdom exercised in their behalf.

DISCUSSION.

The CHAIRMAN. We are sorry indeed to have some of those who were given a place upon the program to-night for some reason or other unable to be here. I know there are a great many here who can aid us in the consideration of many perplexing questions that come before us, and I call upon Mr. Andrus, of Illinois, to say a few words.

Mr. ANDRUS. The discussion this evening has been very interesting to me. I was very much interested in the talk this morning, but in Illinois we are in the same position as Mr. Smith says he is. In Michigan we do not have anything to do with accident prevention, and that is the reason I have enjoyed the discussion to-night so much, not in any way minimizing the excellent authority we heard this morning.

I have been a member of the commission since the 1st of July, nearly two months, so you may well imagine that I speak with a good deal of authority. It has, however, been very interesting to me to talk with the men here, discuss the laws of their States and their methods of operation, and, if you feel the same as I do, perhaps a little account of the law and procedure in Illinois will be of some interest.

The first compensation act in Illinois was enacted in 1911, and the enforcement of that was left to the courts. The provision of the law was that each side should procure an arbitrator, and the county judge should select the third, and they should make the award. An appeal could be taken from the award of these arbitrators to the district court, and from there the procedure was the same as any other case—they could go to the appellate court and to the supreme court. In 1913 the industrial board was created, and that name was changed to the industrial commission this last year. The acts of 1913 provided that appeals could be taken direct from the industrial board to the supreme court. The act was further amended in 1915, and the law specifically provided that appeals should go to the circuit court.

We have seven arbitrators in Illinois, but the number was increased by the last legislature to eight. If an employee is injured and there is no question about the compensation, it is paid, and the accident report is sent in to the industrial commission. We do not approve or deny the settlement; it is simply paid as a matter of course.

Duplicate receipts are sent to the commission, and in case a disagreement exists the case is set for hearing before an arbitrator. When the board was first created it followed the old system of having three men to act as a board of arbitration, but we soon found that the third man always made the decision, so that now the arbitrator hears the case in the town where it originated.

Most of the business is in Chicago, and the only office is in Chicago. The arbitrator hears the case and makes and files his decision, a copy of which is sent to each party. Either party may have that award revoked by the commission by filing a petition and filing transcripts of the testimony. The board furnishes the reporter. Up to July 1 we hired the reporter; since then we have been doing the work by contract. The testimony is written up and sent at once to the office. In case the party desires to have the order revoked by the commission, he must file transcripts of the testimony, for which he is compelled to pay at 5 cents a hundred words. That amount is fixed by the statutes. The case is then heard by a member of the board and taken up in conference by the whole board or commission and a decision is made. A majority of the commission, of course, governs the decision. Then the party may remove that case by appeal to the circuit court. At this hearing before the commission or board either party may introduce additional testimony, provided proper notice be given, and the aggrieved party may remove the case (upon points of law, but not upon facts) to the supreme court. Our supreme court has handed down 50 decisions upon the act.

There are several difficulties that I have discovered as to which I would like information. I remember in reading over the proceedings of last year, some gentleman (I don't remember his name) said that the lawyer had been entirely eliminated in the practice in that State (I do not remember the State, either). The question of attorneys and attorneys' fees has been the cause of some difficulty. Some one asked as to how the attorney is going to get his fee when an award is in a lump sum. I suppose the answer is that that is of no interest to the board or commission. The practical result, however, is that if he does not get his fee he will not take the next case.

The United Mine Workers is the strongest union in Illinois. It has a legal department; it pays its principal counsel, who lives in Springfield, $5,000 a year, and there are five other attorneys over the State. They handle all the claims for miners absolutely free of charge. Before this year they were allowed a small percentage of 5 per cent, I think, but now they receive nothing. If you are going to have an attorney for the employer and make no provision for an attorney for the employee, you are going to have a great many claims that will not be successfully prosecuted. If that gentleman is here

when I get through, I would like to hear from him as to what the plan is.

The question of lump-sum settlements is a very serious one in Illinois. The law makes no provision for an award of a lump sum—for the loss of an eye, a certain number of weeks; for the loss of a finger, a certain number of weeks, and so on. The commission may order a lump-sum settlement only in death cases or permanent disability when the finding of the board is not opposed by the other party. We have several hundred claims filed every month. Most of them are small, and it is a very difficult thing when everybody wants the money in a lump sum. The lawyer can not see why his client should not get his money if he wants it, and it is a very serious matter. I have been very much interested in what I have heard here to-night in regard to it.

Up to the 1st of July our board consisted of three members. We have a provision in our laws that does not exist in any other State, apparently. Our law provides for three members, one member to be a person representing the employer under the act, another a person representing the employee under the act, and the third a person representing neither, and the provision is the same with five members, two for the employer, two for the employee, and the fifth man who represents neither the employer nor the employee. It is not a lawyers' board. I find a great many of these boards are composed mostly of lawyers. There is only one lawyer on our board, and that was when I was elected. In addition to the regular duties of the board, the duties of the State board of arbitration, which was abolished in July, were imposed upon the industrial commission.

The CHAIRMAN. I would like to ask Mr. Armstrong to say a few words to the meeting regarding the laws in Nova Scotia.

Mr. F. W. ARMSTRONG, vice chairman, Workmen's Compensation Board of Nova Scotia. The difficulties spoken of to-night in regard to workmen's compensation by some previous speakers do not apply at all to Nova Scotia. We have what some members of the accident boards or commissions would call a kind of an ideal system. It is a pure State fund of compulsory insurance. We are not bothered at all with any casualty companies or liability companies of any kind. This practically follows the line of Ohio and also of Washington. Ontario and British Columbia practically follow the same lines as far as a pure State fund is concerned. Many of the objections offered and difficulties mentioned by the different members to-night disappear altogether when you have a board with power such as we have in Nova Scotia. No doubt we and the legislature have profited by the experience of other States and Provinces of the Dominion.

The act went into effect January 1, 1917, and, of course, it has only been practically about eight months in existence, but the record has been what I would consider very satisfactory. Speaking for myself, we expected we were going to strike some snags, but when they do not amount to what we expected, we feel we are running along pretty well.

The question of reporting of accidents has been mentioned by the chairman. We follow practically along the lines mentioned by Brother Wilson. We require, however, perhaps a little different procedure. According to the law, the employer is supposed to report every accident where a man loses any time. We do not pay any compensation unless the man has been ill over a week. The act provides that if a man is off five days he gets nothing. If he is off seven or eight days or two weeks, he gets his full two weeks; any part of a week is eliminated. In that way we get a report of practically every accident which happens in the Province, and you can understand that in this way we should be able to keep first-class records of accidents in the different industries.

Mr. Andrus, chairman of the Illinois State board, has spoken about the question of lawyers. This is the first time I have been present at these meetings, but in Nova Scotia we have also eliminated the lawyer. We do not have any dealings with them at all. Not that we consider them bad, but we feel we can get along without them.

Mr. ANDRUS. Do you have a lawyer on either side?

Mr. ARMSTRONG. No lawyer on either side. These reports come in from the employers within three days. When the matter they report is sent in, blank reports are sent out to the workmen telling each one a report has been made of the accident, asking him to fill out papers and send to the board, and inclosing a surgeon's report to be filled out and returned with the papers. Then the claim is ready for adjustment by the commission. The man is paid his claim, and if he has any objections he writes to us and we give him just as good a show as if he had a lawyer.

The CHAIRMAN. How many accidents are reported each month?

Mr. ARMSTRONG. You can understand that in the starting of a commission you will find some difficulty in getting these accidents reported as promptly as is desired. During the first six months, however, we have had over 5,000 accidents reported. Some of these filed had no claim and were not entitled to compensation.

Regarding the question of appeal, the commission has full power in regard to questions of fact, but in regard to questions of law there is an appeal to the supreme court. On questions of fact there is no

appeal at all. We have had very little trouble in the settlement of claims, as we have tried to decide these questions so that the employer can not come back and say we have not done the right thing, and neither can the employee. It is a difficult matter to do this always, but we have succeeded very well so far.

In regard to lump-sum settlements, there does not appear to be any difference of opinion. We have to be shown in every case what is to be done with the money. We had a case of a man who had his hand injured and was awarded $900. The man was badly injured and had to leave his employment. He wanted the money to stock his farm, which he had left to go to work in a munitions factory. He wanted about $500 for the sheep farm and we gave him $490. We did not make any bargain with him. We told him, "You are entitled to $900, and we will let the other stand in abeyance." He is entitled to his full $900 when he has shown the board he has made good use of that money. We have to be shown that a lump-sum settlement is for the best interest of the applicant.

We do not have some of the difficulties mentioned by some of the other members to-night, because our act does not provide for so many weeks for the loss of an arm or a leg or an eye. The man is entitled to so much a month for life.

The bulk of our assessments in Nova Scotia is from coal mining. Practically one-half of our assessments is from coal mines. Our estimated assessments for this year will amount to about $800,000, and nearly $400,000 is from our coal mines. Unfortunately, a few weeks ago we met with a serious accident. Sixty-seven men lost their lives in an explosion. We have placed a pretty high rate on our mines, and we are able to take care of the catastrophe without any increase in the 3½ per cent on our mines.

Mr. Wilson spoke of the different classes in Washington. He will agree with me, I think, that if he had the making of the act over again he would decrease the number of classes. If he reduced the number to nine he would have a very much easier and better working system.

The CHAIRMAN. There is one provision in your law which is vastly superior to anything we have in the States, and I am sure everybody here will agree with me. If you will explain to us how it is done we will all be much interested. How long is your term of office?

Mr. ARMSTRONG. One of the advantages of the British system of government, or, rather, of appointments, is that you are given a life appointment for good conduct, but they have put a wise provision in that you must retire at the age of 75.

Although I have been on the board of workmen's compensation only since the 1st of January, I have been a very close observer and

student in regard to compensation laws for some years. By life appointments we get clear of one of the features in your American law which works against the best working of the compensation law, and that is the political influence. As I was talking with some of the members to-night, if you put a man in charge of a business and keep him there for six years, and at the end of the six years turn him off, you are turning off a valuable asset. If he could continue on for some years he would become a more valuable man. If you take a new man in at the end of every six years and then turn him off you are training men all the time. Therefore a good deal can be said in favor of the British system of appointments for some length of time.

Mr. WILCOX. Do you give medical aid in Nova Scotia?

Mr. ARMSTRONG. We give no medical aid at all, but we realize that that is only temporary and eventually we must adopt that. At the time our act was passed, which went into effect the 1st of January, they did not have medical aid in Ontario, or in any of the other Provinces, and we thought we would go as far as Ontario did. Ontario at the last session of the house passed a medical-aid provision of 30 days, effective the 1st of July, 1917. Our commission recognizes the fact that eventually we shall have to adopt it, but we do not want to force it, because we feel it is a matter for the legislature or the Government to take up.

The CHAIRMAN. Have you met with considerable opposition among the coal-mine owners for assessing 3½ per cent on the pay roll?

Mr. ARMSTRONG. I might mention that the argument used by us in regard to that rate was that our rates were based rather along the Washington system of rating, and where we used a basic rate of 3½ per cent, if we did not require that money it was not necessary for us to assess it.

The CHAIRMAN. We have had very strong opposition in Michigan among the owners of coal mines because of the amount of money paid out. One owner carried his own risk, and with a pay roll of $2,000,000 last year the expenditure for surgical and medical compensation the whole year was 1½ per cent of the pay roll. If our most hazardous employment in Michigan can get along with 1½ per cent of their pay roll, I should imagine you would meet with strong opposition in Canada when you levy a 3½ per cent rate.

Mr. WILSON. You understand that under our act we have a basic rate of 3 per cent, and we make calls then as we need the money. In some industries we make only two calls a year, and in many only six calls a year, which makes only one-half of the basic rate. Last year we had a very disastrous explosion in one of our mines, where 20 or 30 people were killed, and we not only made the 12 calls, but

assessed 1 per cent extra. In that way, while we have a basic rate, we make calls as we need the money, and the industry gets the benefit of their careful administration. That is, if they are producing less accidents, they pay less money; if more accidents, they pay more money. We have just recently adopted a merit rating system, whereby the commission has power to increase rates where the accidents so warrant it or to reduce the rate wherever the showing warrants reducing it.

The CHAIRMAN. We have with us to-night Mr. Charles H. Verrill, of the United States Compensation Commission, and we would like to hear from him for a few minutes.

Mr. CHARLES H. VERRILL, chief statistician, United States Employees' Compensation Commission. The act providing for the compensation of employees of the Federal Government prior to September 7 last was very inadequate, covering something less than one-fourth of all Federal employees, and providing a curious scale of compensation. During disability extending less than 15 days, no compensation was paid, but if the disability ran beyond 15 days, the employee drew his full wage right from the first day for a period not exceeding one year. The result was not at all satisfactory. A new act went into effect on the 7th of September last bringing under the compensation provision all the civil employees of the Federal Government, perhaps something over 400,000. This new act was based on the principles recognized in most of the State acts. The waiting period is three days, and the scale of compensation is two-thirds of their wage, but not exceeding in any case $66.67 a month. There is no limit to the time during which compensation is payable in case of permanent disability. The administration of this act was placed in the hands of a commission appointed by the President, except in the case of employees of the Panama Canal and of the Alaska Engineering Commission. In the case of these two services the administration was transferred to the immediate administrative body by the President. The procedure there is that these administrative bodies pay the compensation due under the act and the amount paid is reimbursed from the compensation fund. The compensation fund, I should explain, from which all compensation is paid is an appropriation designated by Congress, and is a contingent fund. There is no question of insurance, because all employees are employees of the Federal Government. This act differs in some small respects from the other act. I refer particularly to the description of what injuries are compensated. The Federal act uses the term "personal injury," following the precedent of the Massachusetts act, and already a few cases of occupational diseases have been compensated under this law. The law in its phrasing has another feature. Where in most of the State

acts you have the requirement that the injury must be in the "course of employment," in this Federal act the phrasing is "while in the performance of duty." There is practically no precedent for the interpretation of that term, and it still remains to be determined just what the scope of the act is as determined by the phrasing.

The CHAIRMAN. We have derived a great deal of help by discussing the propositions that trouble us. I wish that every one of us would write down the matters that trouble us most each day in the hope that we may have the opportunity of getting some sort of counsel from each other during our stay here. I do not know that there is anything more to say, and as the hour is getting late, I will turn the meeting over to Brother Holman.

Mr. HOLMAN. The hour is late, but I wish to say that we have a clinic at the Massachusetts General Hospital in the morning, and I think the members would be very much interested in seeing what they have to offer down there, so as many as possible should try to attend that clinic. It is at the corner of Blossom and Allen Streets, just over the hill. You will be met at the gate by representatives of the hospital, and you will be shown the way in which they make certain type of investigations, particularly in injuries to the back. You will also be taken through the room where they have all kinds of mechanical appliances for massaging, for taking certain kinds of exercise, and restoring functions by the use of the mechanical massage. There are other features in connection with this clinic that perhaps may be useful to some of us, but that will be instructive to all of us, and I trust that as many as possible will be present.

WEDNESDAY, AUGUST 22, 1917—MORNING SESSION (BUSINESS MEETING).

CHAIRMAN, DUDLEY M. HOLMAN, PRESIDENT, I. A. I. A. B. C.

REPORT OF THE SECRETARY-TREASURER.

RECEIPTS.

1916.		
May 15.	Check of former secretary-treasurer covering balance on hand	$42.77
19.	Dues of Industrial Commission of Ohio	25.00
June 2.	Dues of Oregon Industrial Accident Commission	25.00
12.	Dues of Maryland Industrial Accident Commission	25.00
21.	Dues of Massachusetts Industrial Accident Board	25.00
22.	Dues of Workmen's Compensation Board of Ontario	25.00
July 5.	Dues of Industrial Board of Illinois	25.00
21.	For 100 copies of the Proceedings of the Second Annual Meeting, for State of Michigan Accident Fund	25.00
24.	Dues of Industrial Accident Commission of California	25.00
Aug. 24.	Dues of New York State Industrial Commission	25.00
28.	Dues of Texas Industrial Accident Board	25.00
Sept. 21.	Dues of West Virginia Compensation Fund	25.00
Oct. 10.	Dues of American Museum of Safety	25.00
14.	From United States Steel Corporation for expenses of conference on social insurance	25.00
26.	From National Window Glass Workers for expenses of conference on social insurance	25.00
31.	From United Mine Workers of America for expenses of conference on social insurance	25.00
Nov. 2.	Dues of New Jersey Department of Labor	25.00
3.	From Brotherhood of Painters, Decorators, and Paper Hangers of America for expenses of conference on social insurance	25.00
3.	From National Civic Federation for expenses of conference on social insurance	25.00
6.	From American Association for Labor Legislation for expenses of conference on social insurance	25.00
9.	From Equitable Life Assurance Society for expenses of conference on social insurance	25.00
11.	From International Association of Machinists for expenses of conference on social insurance	25.00
24.	Dues of Massachusetts Board of Labor and Industries	25.00
Dec. 4.	Dues of Workmen's Compensation Commission of Connecticut	25.00
	Registration and membership fees for conference on social insurance (in addition to above listed contributions) received from Nov. 6 to Dec. 15, inclusive	309.00

Dec. —.	Refund from National Society of the Daughters of the American Revolution, after charges in connection with the use of Continental Memorial Hall had been deducted from $100 deposit	$2.75
1917.		
Jan. 1.	Interest on bank deposit	1.07
May 10.	Dues of Pennsylvania Department of Labor and Industry	25.00
June 14.	Duplicate check from National Society of Daughters of the American Revolution sent under impression that original check No. 5484 had been mislaid and not presented for payment	2.75
29.	Dues of Workmen's Compensation Board of Nova Scotia	25.00
July 1.	Interest on bank deposit	3.35
8.	For copy (including postage) of Report of Discussion before the (British) Royal Society of Medicine on Toxic Jaundice Observed in Munition Workers, for Compensation Fund of West Virginia	1.05
14.	For copy (including postage) of above-mentioned report for Workmen's Compensation Board of Nova Scotia	1.12
18.	For copy (including postage) of above-mentioned report for Industrial Accident Board of Texas	1.12
23.	For copy (including postage) of above-mentioned report for Workmen's Compensation Board of Manitoba	1.12
28.	For postage on three copies of above-mentioned report, ordered by Illinois Industrial Board	.36
Aug. 11.	For copy (including postage) of above-mentioned report for Industrial Accident Commission of California	1.12
13.	For copy (including postage) of above-mentioned report for Workmen's Compensation Board of Ontario	1.12
14.	For copy (including postage) of above-mentioned report for Insurance Department of Washington (State)	1.12
14.	Annual dues of Insurance Department of Washington (State)	25.00
14.	Annual dues of Workmen's Compensation Board of British Columbia	25.00
	Total	1,044.82

DISBURSEMENTS.

1916.		
May 25.	To Julia T. Buchanan, stenographer, for Columbus meeting	$67.00
June 8.	To Lilley & Co., for badges for Columbus meeting	21.60
22.	Postage, including rubber stamp, etc	3.00
23.	Balance due Julia T. Buchanan, stenographer, Columbus meeting	8.00
July 1.	To Service Photo Co. (installation), Columbus meeting	20.00
1.	H. C. Wylie (lumber work, etc.), Columbus meeting	7.80
1.	F. J. Heern Printing Co., printing expenses, Columbus meeting	36.25
Sept. 5.	Stationery—3,000 letterheads, 3,000 envelopes, and 3,000 second sheets	27.50
16.	Fund for postage, telegrams, etc	5.00
Oct. 13.	Fund for postage, telegrams, etc	10.00
27.	Fund for postage, telegrams, etc	10.00

Nov. 28.	For deposit to cover charges for use of Continental Memorial Hall for conference on social insurance		$100.00
	The following charges were made:		
	Cleaning and moving furniture	$6.50	
	Manning building	7.50	
	Electric light	7.50	
	Heating auditorium	6.25	
	Operating vent fan	2.00	
	Eight ushers	14.00	
	Wear and tear	50.00	
	Insurance	2.50	
	Maid	1.00	
Dec. 4.	To Judd & Detweiler, printing registration cards and tickets for conference on social insurance		9.00
5.	For tin cash box for conference on social insurance		1.00
9.	To Gibson Bros. (Inc.), for printing 2,000 programs and making alterations—for conference on social insurance		53.00
9.	Badges for conference on social insurance		1.50
9.	Miscellaneous expenses of committee on arrangements for conference on social insurance (including signs, dating stamps, tips to hotel employees, ink, receipt books, etc.)		9.20
9.	To W. H. C. Mais, registration clerk for conference on social insurance		12.00
9.	To Leon Robbin for clerical and other services in connection with conference on social insurance		10.00
19.	To E. B. Thompson, furnishing stereopticon and operator for lecture at social-insurance conference		7.50
21.	To Smith & Hulse for reporting night sessions (including attendance of stenographer)		138.75
21.	To Bureau of Applied Economics for furnishing clerical assistance for conference on social insurance		29.17
1917.			
June 4.	For 50 copies of the Report of the Discussion before the (British) Royal Society of Medicine on Toxic Jaundice Observed in Munitions Workers		49.96
July 3.	Fund for postage, telegrams, etc		3.00
18.	For postage		1.09
18.	Excess postage returned to Industrial Accident Board of Texas		.03
30.	Postage on Report of Discussion before the (British) Royal Society of Medicine on Toxic Jaundice Observed in Munition Workers, sent to Illinois Industrial Board		.11
30.	Excess postage returned to Illinois Industrial Board		.25
31.	Check returned to National Society Daughters of American Revolution (refund for duplicate check sent by mistake)		2.75
Aug. 2.	Fund for postage and telegrams		5.00
15.	Fund for postage and telegrams, etc		5.00
20.	To Gibson Bros. (Inc.), for printing 800 programs and making alterations—for fourth annual meeting		22.75
20.	Cash on hand		367.61
	Total		1,044.82

I wish to submit the following explanation in connection with certain financial transactions which do not appear in the above statements of receipts and disbursements:

When I became secretary-treasurer of the I. A. I. A. B. C. I kept both my personal account and my account as secretary-treasurer at the same bank. Two checks for expenses of the Columbus meeting, one for $21.60, and the other for $8, were, by mistake, paid from my personal deposit. I decided, therefore, to keep my account as secretary-treasurer at another bank, the National Savings & Trust Co. Owing to the fact that checks for the above amounts had been drawn on my personal account, I found, when I went to transfer my deposit as secretary-treasurer, that the balance credited to the association was $108.72. I drew a check for this amount and then reimbursed myself for the two checks that had, by mistake, been paid from my personal account, depositing the actual balance of the association—$79.12—in the National Savings & Trust Co.'s bank.

On August 24, 1916, I drew $50 from the bank for expenses in connection with a meeting of the social insurance committee in New York. I afterwards found it was unnecessary to charge up any expenses to the International Association of Industrial Accident Boards and Commissions. I therefore redeposited this amount on August 31, 1916.

There is a postage fund balance amounting to $3.48.

Eighteen copies of the Report of Discussion before the (British) Royal Society of Medicine on Toxic Jaundice Observed in Munition Workers have been ordered by different commissions and boards, but 11 have not yet been paid for.

Respectfully submitted.

ROYAL MEEKER, *Secretary-Treasurer.*

[The constitution was taken up and discussed, article by article, and in the course of the discussion the following statement as to the finances of the association was made by Dr. Meeker, the secretary-treasurer:]

Dr. MEEKER. You are a bankrupt institution. You could not survive for one minute without a subvention from the United States Government in the shape of the printing of your proceedings and the distributing of them free of cost. If I should charge to the association the printing bill for the time since I have taken charge of your finances, it would certainly amount to not less than $6,000. That includes no charge for editorial work, the enormous amount of expert clerical work, and stenographic work. You are helpless to finance yourself as a going concern. The only way it can be done is in some such way as it has been done in the past year and a half. Now, I sent out this draft of the constitution very largely as a mental stimulus. I hope that it has worked. I think it has. It has been suggested in some quarters that the wealthier States ought to make a large contribution. Everyone who has had anything to do with the reserves of the association has known all along that it is a bankrupt concern; that it depended on charity. Now, I want to take it out of the realm of charity patients and provide some more satisfactory way. It

didn't seem to me that that was a very satisfactory way of conducting business, and the proposition was made by some that there ought to be a difference in the assessment to the different States because of the differences in the amount of wealth and the number of accident cases, the importance of the work of compensation commissions in the different States, etc., and I sent this suggestion out as a feeler. I think it has stirred people up pretty well. It was the opinion of the committee, when they met yesterday, that it is undesirable to make a higher charge to the wealthier States. As to the amount you really need, you can't hope to raise it. I have made out several estimates of expenses, putting them as low as I felt it safe to do. Now, some provision will have to be made for traveling expenses and the necessary clerical assistance, preparation for annual meetings, etc. Nothing has been expended on that account as yet, but it is quite likely that it will be necessary to expend money for that purpose. A total of $862 was expended last year. This makes no provision for the experts brought to address the conference. If we include $500 for such expenses, that will increase it to $1,362. If you provide for printing, on the lowest reasonable estimate the printing of your annual proceedings, on the basis of one meeting a year, can not be done for less than $3,000. That brings the expenses up to $4,362. Then, if you do as was suggested at the Columbus meeting, conduct all your correspondence from a central point, central headquarters, you must provide, I estimate, about $200 for postage and mailing expenses; that will bring it up to $4,562, and that does not include expert editorial work. I think a $50 membership fee is high enough so that you can produce the finances with the subvention from the Federal Government. The assessment of $50 per member on the basis of the present membership would give us something in excess of $862.

[In the further course of the debate the question was raised, "What public agencies are entitled to active membership?" and Dr. Meeker spoke as follows:]

Dr. Meeker. As I conceive the job of workmen's compensation boards and industrial accident boards, it is fourfold, no matter what your law may prescribe. It is your business to cut down accident rates, and you can do it whether or not you have legal authorization to do so. There is nothing in the laws of any State that forbids the compensation commission to use its moral suasion with the employers, with the insurance companies, in order to cut down accident rates. This is the most important function that such a board can perform. When the gentlemen allege that their compensation commission has nothing to do with accident prevention, I take issue with them. You have everything to do with accident prevention. If your law pro-

vides that a bureau of labor shall have to do with safety work, it is the business of your commission to make connections with that safety organization just as soon as you possibly can, in order to reduce your accident rates. Your next function, which is absolutely necessary, is the restoration as quickly and as completely as possible of those men disabled through industrial mishaps. Much money could be saved, it seems to me, by spending money more liberally on proper hospital and surgical treatment. You saw some evidences of it this morning. I hope you will see more. Massachusetts did not have any authorization to do the work she is doing; she just simply did it. There is nothing in her law that absolutely forbade the Industrial Accident Board of Massachusetts from rehabilitating these men as fully and as quickly as possible, and so she has done it on a small scale; a miserably small scale, to be sure, but she has done something. It is the business of such boards and commissions to get busy just as quickly as they can along this line of work. The third great function is to retrain these men. That is just what we are up against. Canada is doing it. She is reeducating her men who have been wounded or injured in military service. It is a pretty hazardous task, this task of killing the Germans. They are hard to kill. We don't know what the hazards are that our boys will have to meet over there. The compensation commissions have not begun this work of rehabilitation. You know what the attitude of the employers has been and what it still is in this country. There are thousands of men in this country who have met with serious industrial mishaps who could have been restored to full earning power, but have been allowed to become tramps, beggars, and paupers. If a man loses his hand, he is compensated for the loss of a hand. He is paid a sum of money—a grossly inadequate amount in most instances even for the loss of one hand. The disability that man really suffers is in many instances—in the great majority of instances—permanent total disability. You know it. You know that a man can't get a good job when he has but one hand. He goes down and down and down. I can point out hundreds of cases where that retrogression has taken place. The man goes down and becomes a beggar in the gutter unless somebody has decency enough in him to go down and pick him up, take hold of him, and put him in a position and keep him there until he can make good. It is the third great function of these accident boards and commissions to reeducate these disabled men and put them back in industry. That is what they are doing in Canada, and we all wish more strength to her, that she may do more thoroughly the work she is engaged in. The fourth function of the bureaus and commissions is the function of paying out compensation. It is vastly important that a man's family be kept from want while he is being restored, in the hospital or out of it, but it is

not as important as any one of the three functions I have mentioned. In drafting that clause of the constitution we wanted to give representation to those four functions, no matter who performs them. In order to keep the membership limited, I feel we should exclude all States and Provinces who have not manifested enough interest in industrial accidents to enact a compensation law. Once they have enacted a compensation law, then they should become members. Why should New Jersey be kept out of our meetings? Why should we make it more difficult for New Jersey by excluding her from our meeting? Why should we exclude Wyoming? I think there is no earthly reason why Miss Anderson should not become president of the association. I don't know any reason. Mr. Mitchell can, just as soon as Tennessee enacts a compensation law and no sooner. I don't see why Illinois should not be represented by a director of labor. I think that anybody who has to do with the administration of accident-prevention work, factory inspection, or with the surgical function of rehabilitation of men, putting them back into industry, or doling out compensation—I see no reason why anybody in the States and Provinces engaged in such work should be deprived of full active membership in this association and be ineligible to any office of this association.

[After full discussion the constitution of the association was adopted in the following form:]

CONSTITUTION OF THE INTERNATIONAL ASSOCIATION OF INDUSTRIAL ACCIDENT BOARDS AND COMMISSIONS.

ARTICLE I.—This organization shall be known as the International Association of Industrial Accident Boards and Commissions.

ARTICLE II.—*Objects.*

SECTION 1. This association shall hold meetings once a year or oftener for the purpose of bringing together the officials charged with the duty of administering the workmen's compensation laws of the United States and Canada to consider and, so far as possible, to agree on standardizing (*a*) ways of cutting down accidents; (*b*) medical, surgical, and hospital treatment for injured workers; (*c*) means for the reeducation of injured workmen and their restoration to industry; (*d*) methods of computing industrial accident and illness insurance costs; (*e*) practices in administering compensation laws; (*f*) extensions and improvements in workmen's compensation legislation; and (*g*) reports and tabulations of industrial accidents and illnesses.

SEC. 2. The members of this association shall promptly inform the United States Commissioner of Labor Statistics and the secretary of the Department of Labor of Canada of any amendments to their compensation laws, changes in membership of their administrative bodies, and all matters having to do with industrial safety, industrial disabilities, and compensation, so that these changes and occurrences may be noted in the Monthly Review of the United States Bureau of Labor Statistics and the Canadian Labor Gazette.

ARTICLE III.—*Membership.*

SECTION 1. Membership shall be of two grades, active and associate.

SEC. 2. *Active membership.*—Each State of the United States and each Province of Canada having a workmen's compensation law, the United States Employees' Compensation Commission, United States Bureau of Labor Statistics, and the Department of Labor of Canada shall be entitled to active membership in this association. Only active members shall be entitled to vote through their duly accredited delegates in attendance on meetings.

SEC. 3. *Associate membership.*—Any organization or individual actively interested in any phase of workmen's compensation or social insurance may be admitted to associate membership in this association by vote of the executive committee. Associate members shall be entitled to attend all meetings and participate in discussions, but shall have no vote either on resolutions or for the election of officers in the association.

ARTICLE IV.—*Representation.*

SECTION 1. Each active member of this association shall have one vote.

SEC. 2. Each active member may send as many delegates to the annual meeting as they may think fit.

SEC. 3. Any person in attendance at conferences of this association shall be entitled to the privileges of the floor, subject to each rule as may be adopted by the association.

ARTICLE V.—*Annual dues.*

SECTION 1. Each active member shall pay annual dues of $50. The United States Employees' Compensation Commission, the United States Bureau of Labor Statistics, and Department of Labor of Canada shall be exempt from the payment of annual dues.

SEC. 2. Associate members shall pay $10 per annum.

SEC. 3. Annual dues are payable any time after July 1, which date shall be the beginning of the fiscal year of the association; dues must be paid before the annual meeting in order to entitle members to representation and the right to vote in the meeting.

ARTICLE VI.—*Meetings of the association.*

SECTION 1. An annual meeting shall be held at a time to be designated by the association or by the executive committee. Special meetings may be called by the executive committee. Notices for special meetings must be sent out at least one month in advance of the date of said meetings.

SEC. 2. At all meetings of the association the majority vote cast by the active members present and voting shall govern, except as provided in Article VIII.

ARTICLE VII.—*Officers.*

SECTION 1. Only officials having to do with the administration of a workmen's compensation law or bureau of labor may hold an office in this association, except as hereinafter provided.

SEC. 2. The association shall have a president, vice president, and secretary-treasurer.

SEC. 3. The president, vice president, and secretary-treasurer shall be elected at the annual meeting of the association and shall assume office at the last session of the annual meeting.

SEC. 4. There shall be an executive committee of the association, which shall consist of the president, vice president, the retiring president, secretary-treasurer, and two other members, elected by the association at the annual meeting.

SEC. 5. The duties of the executive committee shall be to formulate programs for all annual and other meetings and to make all needed arrangements for such meetings; to pass upon applications for associate membership; to fill all offices which may become vacant; and in general to conduct the affairs of the association during the intervals between meetings.

SEC. 6. The president, the secretary-treasurer, and one other member of the executive committee shall constitute a quorum of that committee.

SEC. 7. If, for any reason, an officer of this association shall cease to be connected with any agency entitled to active membership, before the expiration of his term, he may continue in office notwithstanding until the next annual meeting; but if the president should resign the executive committee shall appoint his successor, may reconsider the decision of the last annual conference as to the next place of meeting, and may change the place of meeting if it is deemed expedient.

ARTICLE VIII.—*Amendment.*

This constitution or any clause thereof may be repealed or amended at any regularly called meeting of the association. Notice of any such changes must be read in open meeting on the first day of the conference, and all change of which notice shall have thus been given shall be referred to a special committee, which shall report thereon at the last business meeting of the conference. No change in the constitution shall be made except by a two-thirds vote of the members present and voting.

REPORT OF THE COMMITTEE ON STATISTICS AND COMPENSATION INSURANCE COST.

At the last convention of this association your committee reported the completion of standard classifications of industries, of accident causes, and of industrial injuries by location and nature of injury and extent of disability. The committee recommendations on these heads were officially adopted by the association and have been put into practical effect by several States. It is hoped that the foundations have thereby been laid for uniform and intelligible statistics of work accidents.

During the past year your committee has held four meetings, comprising in all some twelve sessions.[1] The standard tables for the presentation of accident

[1] These four meetings were held as follows:

Chicago, Ill., May 31 and June 1, 1916. Those present at this meeting were E. H. Downey, chairman; W. H. Burhop, F. C. Croxton, L. W. Hatch, Don L. Lescohier, C. H. Verrill; and, by invitation, G. F. Michelbacher, of the National Workmen's Compensation Service Bureau.

Buffalo, N. Y., July 19, 1916. Those present were E. H. Downey, chairman; W. H. Burhop, F. C. Croxton, T. N. Dean, L. W. Hatch, Royal Meeker; and, by invitation, G. F. Michelbacher, of the National Workmen's Compensation Service Bureau.

New York City, Nov. 3 and 4, 1916. Those present were E. H. Downey, chairman; P. A. Broderick, T. N. Dean, L. W. Hatch, Royal Meeker, C. H. Verrill; and, by invitation, Louis I. Dublin, of the Metropolitan Life Insurance Co.; Arne Fisher, of the Prudential Insurance Co.; and G. F. Michelbacher, of the National Workmen's Compensation Service Bureau.

Boston, Mass., April 18 and 19, 1917. Those present were E. H. Downey, chairman; P. A. Broderick, W. H. Burhop, T. N. Dean, L. W. Hatch, Royal Meeker, C. H. Verrill, and E. E. Watson.

statistics, begun in February, 1916, were first taken up and completed. The standard list of statistical definitions was next revised and extended. Lastly, the committee has worked out a standard scale of weights designed to express the severity of accidental injuries in terms of time loss.

The standard tables proposed by the committee are appended to this report, and are designated by serial numbers and titles. These tables are intended to bring out in convenient form and in due correlation the significant facts of work accidents. Next to the use of standard classifications, nothing will contribute so much to the value of statistical reports as uniform and effective organization of material. Conversely, the lack of any standard organization has detracted greatly from the usefulness of most statistical reports heretofore published by the several States. In many cases essential information which was available in the files of the board or commission is not disclosed by the published reports, because the statistician did not perceive the significance of the facts in his possession. In other cases again it is necessary to wade through hundreds of pages to obtain facts which can and should be so clearly set forth that he who runs may read. A moderate number of standard tables, thoroughly worked out, will present more information in far more accessible form than is ordinarily contained in ten times the bulk of printed matter.

The standard tables proposed by your committee are so designed as to admit of adaptation to the administrative needs and financial resources of different jurisdictions. Thus, Table 1 substantially in the form proposed, should be published by all jurisdictions. This table will give the essential facts of industrial accidents by industries. The exposures for this table are calculated both in terms of pay roll and of number of full-time workers. It is expected that the industries will be shown in such detail as the volume of exposure and the financial resources of the particular commission will admit.

Table 2 is possible only for those jurisdictions in which injuries and diseases not attributable to accident are reported.

Table 3 is a combination of Tables 1 and 2. In most jurisdictions Table 1 will answer all purposes of Tables 1, 2, and 3. In those jurisdictions which take account of injuries other than by accident, Table 3 will answer all purposes of Tables 1 and 2, provided that a separate list of injuries not due to accident is published.

Table 4 exhibits the number and severity of injuries by causes. This is in many respects the most important table of the entire list. It is particularly desirable that in publishing this table the standard classification of accident causes be adhered to.

Table 5 shows the compensation cost of injuries by severity of injury. The table as drawn provides for the separation of benefits, but it is not particularly essential to carry this separation further than a distinction between compensation and medical aid. In other words, a table in which columns 5, 6, 7, and 8 were consolidated in one would answer all practical purposes.

Table 6 will be needed only in those jurisdictions which compensate for occupational diseases.

Tables 7 and 8 are alternative. It is recommended that where the information is available the degree of impairment of each specified member shall be shown, but in those jurisdictions in which compensation is based upon loss of earnings rather than impairment of the particular member Table 8 may be given in lieu of Table 7.

Table 9 is intended to show the importance of infection as a cause of disability and death. It seems especially desirable that this table should be made in order to emphasize the possibilities of reducing the duration of disabilities by efficient first aid and medical treatment.

Table 10 is intended to show the character of injuries due to each particular cause. It is especially desired to bring out the causes which are responsible for the greater number of dislocations and fractures. Table 10, however, is less important by far than table 4.

Table 11 is intended to show the character of injuries which result in death and in permanent disability. It is particularly intended for the benefit of the medical profession. Obviously medical attention ought to be centered upon those injuries which are producing the greater number of serious disabilities.

Your committee has likewise devoted much time to the consideration of accident severity, with a view to obtaining a standard measure of industrial hazard. Hitherto every attempt to compare the hazards of different industries, or of the same industries at different times and places, has broken down from sheer lack of any adequate basis of comparison. The mere number of industrial accidents per thousand employees per annum—the ordinary definition of accident rate—is not a measure of hazard, because it takes no account of accident severity. Heretofore, indeed, the acccident rates of different jurisdictions have been wholly incommensurate because of the immense disparity in the definition of reportable accidents. The accident rates of the German Empire, e. g., are based only on the comparatively small number of accidents which cause disability for more than 13 weeks, those of France are derived from accidents which cause disability for more than four days, while Massachusetts includes every accident reported, however trivial in character. Obviously, a tenfold difference in accident rates, as between Massachusetts and Germany, would indicate nothing as to relative hazard. This particular difficulty may, of course, be overcome by general adoption of the standard definition of "tabulatable accident" which your committee has already recommended. But a more fundamental obstacle lies just behind. The immense majority of tabulatable accidents cause only a few days' disability, with no permanent impairment of earning capacity. A single death will produce greater economic loss to the victim's family and to the community at large than many hundred minor temporary disabilities. This difference would matter little for the purpose in hand if the number of deaths and of permanent injuries bore any reasonably uniform relation to the number of tabulatable injuries. Unfortunately, however, the very reverse is the case. In some of the lighter machine trades there may be a thousand tabulatable acccidents for one fatality, whereas among coal miners, railway trainmen, lumbermen, and structural-iron workers the proportion of fatal and serious injuries is many fold greater than in industry as a whole. Accident rates, therefore, as ordinarily compiled are worse than inaccurate; they are positively misleading.

Various attempts have been made to overcome this defect by publishing, not one but several, accident rates for each industry. Thus German and Austrian statistics show the whole number of accidents, the number of deaths, and the number of permanent injuries per thousand full-time workmen. But permanent injuries again cover a wide range—from the loss of the tip of a little finger to total paralysis of the body. And the several degrees of permanent disability are most unevenly distributed among industrial employments. In woodworking industries, for example, finger injuries predominate; in logging and in coal mining there is an excessive number of permanent total disabilities. To be at all significant the analysis of accident rates must be carried further. We must know not merely the number of all permanent injuries, but the number causing total incapacity and the number involving loss of hand, foot, eye, or fingers. The moment such an analysis is made, however, the resultant accident rates become too multiform for practical use. No mind can compare six columns of figures at one time. Neither are the separate comparisons capable

of any intelligent summation. If the several rates happen to vary in the same direction the meaning is sufficiently clear, but how if a decrease in fatalities is accompanied by a marked increase in permanent and temporary disabilities? What is wanted evidently is some common denominator in terms of which can be expressed the total volume of accidental injury per unit of exposure—a single expression which shall combine the number with the severity of work accidents.

In seeking for such a common denominator your committee early fixed upon time loss as the most significant, stable, and convenient expression of the economic cost of industrial accidents.[1] Obviously, it is only the loss of time due to accidents that is susceptible of satisfactory measurement. The physical or physiological results can not be reduced to a common denominator and the cost in terms of human suffering can neither be estimated nor expressed in standard units. Obviously, again, the economic cost of accidents can not be measured by the compensation paid. No one of our American acts even purports to give full compensation for the worker's immediate economic loss, and no two of them agree in the scale of benefits assigned to particular injuries. Compensation cost in industries of equal hazard accordingly fluctuates enormously from State to State and the aggregate cost in every jurisdiction grossly understates the relative importance of permanent disabilities. Wage loss likewise, even if it could be accurately obtained, is not a satisfactory index of occupational hazard. Wages vary tremendously from occupation to occupation and from time to time, insomuch that no constant relation can be predicated between extent of disability on the one hand and wage loss upon the other hand. The same wage loss per thousand employees per annum will consequently not indicate the same hazard in different occupations or in different communities. The computation of wage loss, moreover, presents numerous difficulties, more especially in the case of fatal and permanent injuries. Shall it be assumed that the particular wage rates prevailing at the time of injury will continue throughout the working life of the injured? Shall the prospective earnings of an apprentice be computed from his present earnings or from the wage which he would probably earn as a journeyman? Shall the foregone earnings of 20 years be taken at face value or discounted for interest?

Time loss, on the contrary, is relatively definite and stable. It relates directly

[1] A system of assigning time losses for a computation of accident severity rates was worked out by the U. S. Bureau of Labor Statistics in the early part of 1914, and was applied in the preparation of a group of charts exhibited by the bureau at the Panama-Pacific International Exposition. As first used, the time allowances, as fixed by the Wisconsin workmen's compensation act for specific injuries, were employed. Later, these time allowances were changed, death being based on life expectancy and permanent disabilities on the New York scale increased 50 per cent. This scale has since been used by the bureau in two reports—one presenting the results of a study of accidents and accident prevention in the machine-building industry, and the other, a similar study, covering the iron and steel industry. The method employed has been explained by the bureau in an article entitled "A new method of computing accident rates," in the July, 1916, issue of the Monthly Review.

The computation of an accident severity rate by the use of time losses has occurred to a number of other persons, independently. At the Third Annual Safety Congress of the National Safety Council, held in Chicago, Oct. 13–15, 1914 (Proceedings, pp. 133, 134), Mr. Dudley R. Kennedy, of the Youngstown Sheet & Tube Co., made suggestions in regard to severity rates along the same line, and early in 1915 submitted to the National Safety Council a plan somewhat similar to that adopted by the committee. A scale of severity weighting was worked out by the Wisconsin Industrial Commission in the latter part of 1914, and was applied to the accident statistics of that State in a bulletin issued Aug. 1, 1915. So far as can be ascertained, the above are the only published tabulations or suggestions for the compilation of accident statistics classified on the basis of time losses.

to the physiological results of accidental injury and is, by comparison with compensation cost or with wage loss, but little affected by the occupation of the injured, the prevailing rate of wages, the scale of legal benefits, or the spirit of courts and commissions. A month's disability per employee per annum means the same degree of occupational hazard, whether it occurs among lumbermen or locomotive engineers, in the State of Washington or the principality of Wales, in 1900 or in 1920. If, then, all injuries by accident can be reduced to this one common denominator, we shall have what has heretofore been wanting—an index of industrial accident hazard.

In the attempt to express accident severity in terms of time loss temporary disabilities present few problems. The duration of disability in these cases is shown on the face of the record. The only conversion required by the proposed plan is that from calendar to working days. Your committee having previously recommended, on grounds set forth in an earlier report, that exposures be expressed in man-years of 300 days each, it follows that the duration of disabilities should likewise be expressed in working days. It is therefore recommended that the number of working days chargeable to temporary disabilities be uniformly obtained by deducting one-seventh from the number of calendar days intervening between the beginning of disability and the recovery therefrom. Your committee is not unmindful of the fact that the seven-day week prevails in certain occupations and the five-and-a-half-day week in others. But it must be remembered that time loss is here used as a measure of accident severity. A disability of one calendar week represents the same severity of injury whatever the length of the working day or the working week.

More complicated questions arise in the consideration of fatal accidents. The governing principle, indeed, is easy of determination. Death entails a total cessation of labor power and the resultant time loss is evidently the working life expectancy of the individual concerned. It is in the detailed application of this principle that difficulties are encountered. To the discredit of our governments be it said that no American records exist to show the average age at which industrial workers cease to be employable, or the number of productive years which a wage earner of given age may reasonably anticipate. In the absence of such records, your committee was forced to rely upon personal judgment, checked and guided by several special investigations.[1] Working life expectancy is a function of mortality and superannuation; it is less than life expectancy by the interval between voluntary or enforced retirement from gainful employment and death. It is well known, however, that the life expectancy of our industrial population is markedly below that experienced by life insurance companies, while the evidence of accident statistics, as well as common knowledge, goes to show that relatively few wageworkers maintain a footing in industry beyond the age of 55. On the whole, it seems reasonable to assume that working life expectancy, between ages 20 and 50, is about two-thirds of the full life expectancy shown by the American Experience Table. The compensation experience of a number of States indicates that the average age of persons fatally injured by industrial accidents is approximately 33 years. Your committee, accordingly, adopted 20 years, or 6,000 working days, as the average severity weight of fatal accidents.

The question whether each fatal accident should receive a weight proportionate to the calculated working life expectancy of the individual involved was

[1] Mr. G. F. Michelbacher constructed a very ingenious table of working life expectancies from the ages of persons reported as injured by industrial accidents in California and Ohio. His results, while admittedly not conclusive because of inadequate data, were of special value to the committee. Collateral evidence, tending to support the committee's conclusions, will be found in the Invalidity Insurance Experience of the German Empire and in the investigations of the British Parliamentary Committees on Old Age Pensions.

considered at length. It is not doubted that significant differences exist in the average ages of workmen in different industries, in different occupations within the same industry, and in different communities within the same occupational lines. Nor is it disputable that more labor power is lost by the death of a man at 20 than at 50. But the age of the individual killed is, after all, not particularly indicative as to the character of the hazard which produced the injury. The proposed plan, moreover, is to be applied to industries by States, and the number of fatalities in most industry-State subdivisions will be small. Hence, if the severity weight were to vary with the age of the injured—if a death at 20, e. g., were to count for 10,000 days and a death at 50 for only 3,000—the resultant severity rates would be distorted by merely chance deviations. Your committee, therefore, recommends that a uniform time-loss value of 6,000 days be assigned to each fatal accident.

The severity weight of permanent total disability was settled upon the principles just discussed. Permanent total disability, equally with death, entails a time loss equivalent to the full working life expectancy of the person injured. For the reasons above recounted, it was deemed best to use an average expectancy rather than the actual (calculated) expectancy of each individual. Finally, it was resolved to recommend the same weight as for a death. Against this course may be urged that a permanent total disability entails a greater economic burden upon the sufferer's family and upon the community than a death. Were the question solely one of economic loss, permanent total disability might reasonably be valued at the full working life expectancy and a death at, say, two-thirds thereof. But the question is one of industrial hazard and not merely one of economic loss. Surely it can not reasonably be said that an accident which results in permanent total disability indicates a greater hazard than an accident which results in death. No injury can be more severe—and we are speaking of an accident severity—than a fatal injury. It so happens, furthermore, that the average age of those who are permanently totally disabled by accident is higher than that of persons who die from accidental injuries—about 42 as against 33 years.[1] The fact is that the natural powers of recuperation fail with advancing years, so that a given injury is more likely to cause serious permanent disability in an older than in a younger man. The use of actual working life expectancies would, on this account, give lower average weights for permanent total disabilities than for deaths. Lastly, it is by no means always true that a permanent total disability involves a net economic burden. A man may be incapacitated for employment and still contribute something to the family income. Taken all in all, therefore, your committee recommends that permanent total disabilities, like deaths, be valued uniformly at 6,000 working days each.

Permanent partial disabilities clearly ought to be rated in percentages of permanent total disability. Precisely here, however, is the nub of all severity rating, namely, the determination of the degree of permanent disability. It might well be supposed by one not familiar with the situation that the precise extent of disability, being a material fact in the fixation of compensation, would invariably appear on the face of the records. Such, however, is nowhere the case. In most American jurisdictions permanent disabilities are graded by a legislative schedule which assigns so many weeks' compensation to each enumerated physical injury. Even in those jurisdictions, as California, Washington, and Ontario, where no such schedule is established by law, the administrative practice is not widely different. Almost everywhere compensation is determined

[1] This difference is found in both American and European experience.

not by the actual impairment of earnings but by the loss or disability of specified bodily members.[1]

Such being the run of facts in the record, the statistician is constrained to follow the same course in the severity rating of permanent disabilities. He has no choice but to rely upon the actual bodily impairments which the records disclose as indicia of the extent of disability. Why not, then, rate these disabilities in accordance with the specific indemnity schedule, statutory or administrative, of each particular jurisdiction? Because the numerous American schedules differ widely among themselves in both the absolute and the relative rating of the same injuries; because certain jurisdictions have no official schedule, and the official schedules of other jurisdictions omit many permanent injuries of common occurrence; because, finally, no one of these schedules (unless it be Ontario's) attempts to give an adequate rating to permanent as compared with temporary disabilities. The use of any one of these schedules would understate the relative hazard of extrahazardous industries, while the use of all of them together would produce severity rates as little capable of combination or comparison as the official accident rates of Massachusetts and the German Empire.

Your committee, in the course of its investigations, carefully compared all of the American specific indemnity schedules as well as the French and German adjudications, the Austrian official ratings, the scale of the Italian law, the Russian scale, and the European scales of Imbert, Miller, Bähr, Thiem, and Könen-Köln.[2] It was found that none of the existing schedules is derived from a statistical study of loss of earnings as the result of injury. The best of the American schedules are based upon local investigations of limited scope or are borrowed from European scales, which in turn represent averages of awards in various countries more or less modified by medical or otherwise expert judgment.[3] Your committee, after mature deliberation, was unable to recommend any one of these scales in its entirety. It is the unanimous judgment of the committee that the American schedules, without exception, underrate the more serious permanent injuries, such as loss of hand, leg, or eye, and that the European scales overrate such minor injuries as the loss of fingers and toes. These considerations appeared to warrant the construction of the composite scale appended to this report.

The schedule recommended is less detailed than several of the extant lists, but is believed to be sufficient for its purpose. In adjudging compensation it is customary and proper to distinguish between the loss of an index and a ring finger and between the loss of one phalanx and an entire digit. But these refinements are quite unimportant for the calculation of accident severity rates by industries or occupations. Permanent injuries to the fingers are very numerous and they occur in an endless variety of combinations. In any considerable exposure, however, it will be found that the relative frequency of the many specific finger injuries do not greatly vary, so that an average value for all will give nearly the same aggregate time loss as a specific value for each.[4]

[1] Massachusetts is a partial exception, as are also Pennsylvania and other States, as respects nonenumerated injuries. Such exceptions, however, are rather de jure than de facto.

[2] For a comparison of these scales, see Bulletin 203 of the United States Bureau of Labor Statistics, p. 94 et seq.

[3] See article entitled "Determination of the consequences of industrial accidents in Austria," in Monthly Review of the United States Bureau of Labor Statistics, December, 1916, p. 731 et seq.

[4] The average values recommended for permanent injuries to fingers, thumbs, and toes were calculated from the very detailed statistics of the Industrial Commission of Wisconsin.

It will be observed that the scale recommended takes no account of occupational differences. Your committee recognizes, of course, that the same physical injury causes more serious disability for some occupations than for others, but these differences are believed not to be significant from the standpoint of accident severity or of industrial hazard. The committee scale is not intended to serve as a basis for awarding compensation but as a standard for comparing the severity of accidental injuries and the accident hazards of industrial employments. The loss of a leg indicates an accident of the same severity whether it befall a stevedore or an elevator operator, and the annual loss of 10 index fingers per thousand full-time workers points to the same degree of hazard in one industry as another. In fine your committee concludes that the severity of accidental injuries must be adjudged from their physiological effects and that the average time loss produced by each physiological class of injuries is the fairest common measure both of accident severity and of industrial hazards.

To sum up, your committee recommends that a severity weight be assigned to each industrial accident. In the case of a temporary disability this weight is the actual duration of disablement in working days. For a death or a permanent total disability the severity weight is the working life expectancy, which is taken at the average value of 6,000 working-days. For a permanent partial disability the weight is an aliquot part of 6,000 working-days, proportionate to the average degree of disability resulting from the particular bodily impairment involved. The aggregate time loss so obtained, divided by the number of 300-day workmen, is the accident severity rate, or time loss per full-time workman. The time loss so obtained is a common denominator by means of which the number and severity of accidents per unit of exposure are combined in a single expression.

The severity rate above described would serve all the purposes of an index number of occupational hazards. It would afford, for the first time, a common basis for the comparison of accident experience from year to year, from industry to industry, from establishment to establishment, and from State to State. It should prove a powerful stimulus to safety first by providing a concrete test of results. Applied to compensation insurance, it would furnish, what has hitherto been lacking, a statistical basis for both schedule and experience rating.

No one will claim perfection for the scheme here proposed. Intelligent opinions will differ on many of the points involved. The relative severity of accidental injuries must always be a matter for experienced judgment rather than mathematical calculation. For that very reason, however, the collective judgment of competent statisticians is a safer guide than the opinion of the best informed individual. Above all, the problem is one in which uniformity is more important than meticulous accuracy. If the schedule of relative weights is reasonable upon the whole, and is uniformly applied, the results will be sufficiently accurate for all practical purposes.

Your committee has now completed the preliminary work of standardization for which the committee was originally created. But accident statistics is emphatically a living subject, and the whole field of compensation is so new that two years' time has brought forth many changes. Experience in the several States already has developed the need of revision and extension in the standard classifications heretofore adopted. Continuous development besides will require continued interchange of views and experience. It is therefore recommended that the committee on statistics and compensation insurance cost be continued, with such changes in personnel as may be thought expedient.

APPENDIX A.—STANDARD DEFINITIONS ADOPTED BY THE COMMITTEE.

1. *Tabulatable accidents, diseases, and injuries.*—All accidents, diseases, and injuries arising out of the employment and resulting in death, permanent disability or in the loss of time other than the remainder of the day, shift, or turn on which the injury was incurred should be classified as "tabulatable accidents, diseases, and injuries," and a report of all such accidents, diseases and injuries to some State or national authority should be required.

2. In publishing the statistics of accidents, diseases, and injuries, clear definitions of the terms used in the tables should be given either in the tables, in prefatory notes thereto, or in readily accessible text.

3. *Reportable accidents, diseases, and injuries* should include all tabulatable accidents, diseases, and injuries, and all nontabulatable accidents, diseases, and injuries which require any medical expenditure.

4. *Compensable accidents, diseases, and injuries* as used in any report in accordance with the practice in the particular State, should be shown separately and clearly defined.

5. *Medical service.*—Information in regard to medical service expenditures should be given as fully as possible. If the statistics given cover only a part of the cases dealt with under the law that fact should be made clear.

6. *Permanent total disability.*—To this group should be assigned every accident, disease, or injury which is designated by statute as permanent total disability, or which permanently incapacitates the workman from performing any work continuously in any gainful occupation.

7. *Permanent partial disability.*—To this group should be assigned every accident, disease, or injury (less than permanent total disability) which results in the loss of any member of the body or part thereof, or in the permanent impairment of any function of the body.

8. *Accident frequency rates per 1,000 full-time workers.*—Accident-frequency rates should be expressed in terms of the number of accidents per 1,000 full-time workers, i. e., workers employed 300 days of 10 hours each.[1] The basis used for the average number of men should be the actual number of man-hours for the year; that is, the total working time for all employees of the establishment or the department for the year reduced to the number of hours required for one man to do the same work. This should be taken from exact records if such records are in existence. If this exact information is not available in this form in the records, then an approximation should be computed by taking the number of men at work (or enrolled) on a certain day of each month in the year, and the average of these numbers multiplied by the number of hours worked by the establishment for the year would be the number of man-hours measuring the exposure to risk for the year.

9. *Accident rates per $100,000 of audited pay-roll exposure.*—Accident rates should also be computed on the basis of $100,000 of pay roll. This information should be published for all State Funds and for the entire jurisdiction where practicable.

[1] This is in accordance with the practice of Germany, Austria, and a number of other European countries, and also in accordance with the recommendations of a joint committee of the Permanent International Committee on Social Insurance and the International Institute of Statistics. This method was used in Germany as early as 1897. See Germany: Amtliche Nachrichten des Reichsversicherungsamts, 1899. Beiheft. I. Teil, Umfallstatistik für das Jahr., 1897. Berlin, 1899, pp. 5 ff. See also Bulletin de l'Institut International de Statistique, Vol. XV, pp. 54, 55. London, 1906. Idem, Vol. XVIII, Part II, p. 461 et seq. Paris, 1909.

10. *Accident severity rates.*—Accident severity should be expressed in terms of days lost, computed in accordance with the table and explanations appended hereto (Appendix C).

Severity rates should be expressed in terms of days lost per 300-day worker.

11. In computing the duration of temporary disabilities, the day of the accident should be counted as the first day.

APPENDIX B.—STANDARD TABLES SUGGESTED BY THE COMMITTEE.

TABLE 1.—FREQUENCY OF ACCIDENTS, BY INDUSTRIES AND EXTENT OF DISABILITY.

Industries.[a]	Number of full-time workers.	Pay-roll exposure.	Number of tabulatable accidents.							Rates.	
			Total.	Deaths.	Permanent total disabilities.	Permanent partial disabilities.	Temporary disabilities.			Per 1,000 full-time workers.	Per $100,000 of audited pay roll.
							Over 2 weeks.	Over 1 to 2 weeks.	1 week and under.		
1	2	3	4	5	6	7	8	9	10	11	12

[a] For list of industries see Bulletin 201 of the U. S. Bureau of Labor Statistics.

NOTE.—This table should not include cases of nonaccidental injuries and occupational diseases, which are to be included in Table 2.

TABLE 2.—FREQUENCY OF INJURIES, BY INDUSTRIES AND EXTENT OF DISABILITY.

[This table should include all cases of injuries and occupational diseases not definitely assignable to accidents.]

Industries.[a]	Number of full-time workers.	Pay-roll exposure.	Number of tabulatable injuries.							Rates.	
			Total.	Deaths.	Permanent total disabilities.	Permanent partial disabilities.	Temporary disabilities.			Per 1,000 full-time workers.	Per $100,000 of audited pay roll.
							Over 2 weeks.	Over 1 to 2 weeks.	1 week and under.		
1	2	3	4	5	6	7	8	9	10	11	12

[a] For list of industries see Bulletin 201 of the U. S. Bureau of Labor Statistics.

TABLE 3.—SEVERITY OF INJURIES, BY INDUSTRIES AND EXTENT OF DISABILITY.

Industries.[a]	Number of full-time workers.	Payroll exposure.	Days lost due to—[b]							Rates.	
			Total days lost.	Deaths.	Permanent total disabilities.	Permanent partial disabilities.	Temporary disabilities.			Days lost per 1,000 full-time workers.	Days lost per $100,000 of audited pay roll.
							Over 2 weeks.	Over 1 to 2 weeks.	1 week and under.		
1	2	3	4	5	6	7	8	9	10	11	12

[a] For list of industries see Bulletin 201 of the U. S. Bureau of Labor Statistics.
[b] Days lost should be expressed in terms of working-days. Calendar days can be converted into working-days by multiplying by 6/7.

TABLE 4.—CAUSES OF ACCIDENTS, BY EXTENT OF DISABILITY.

Causes.	Number of tabulatable accidents.							Days lost due to—[a]						
	Total.	Deaths.	Permanent total disabilities.	Permanent partial disabilities.	Temporary disabilities.			Total.	Deaths.	Permanent total disabilities.	Permanent partial disabilities.	Temporary disabilities.		
					Over 2 weeks.	Over 1 to 2 weeks.	1 week and under.					Over 2 weeks.	Over 1 to 2 weeks.	1 week and under.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Machinery:														
Prime movers														
Steam engines														
Gas or gasoline engines														
Etc.														
[For full list of causes see Bulletin 201 of the U. S. Bureau of Labor Statistics.]														

[a] Days lost should be expressed in terms of working-days. Calendar days can be converted into working-days by multiplying by 6/7.

NOTE.—This table should be made for each industry schedule also and for all important groups.
Further analysis of causes of fatalities and permanent injuries is suggested. Analysis by location of injury is also suggested.

TABLE 5.—COMPENSATION AND MEDICAL AID INCURRED ON ACCOUNT OF ACCIDENTS, BY EXTENT OF DISABILITY.

Injuries causing—	Number of cases.	Benefits paid and outstanding.						
		Total amount.	Average amount per case.	Compensation.				Medical.
				Death and funeral.[a]	Permanent total disabilities.	Permanent partial disabilities.	Temporary disabilities.	
1	2	3	4	5	6	7	8	9
Deaths, with dependents								
Deaths, without dependents								
Permanent total disabilities:								
Loss of both eyes								
Loss of both arms								
Loss of both hands								
Loss of both legs								
Loss of both feet								
Paralysis of both arms or legs								
Loss of mental faculties								
Other permanent total disability								
Total permanent total disabilities								
Permanent partial disabilities:								
Dismemberments								
Loss of arm								
Loss of hand								
Loss of thumb								
Loss of index finger								
Loss of middle finger								
Loss of ring finger								
Loss of little finger								
Loss of thumb and 1 or more fingers								
Loss of 2 or more fingers								
Loss of 1 phalanx of thumb								
Loss of phalanx of index finger								
Loss of phalanx of middle finger								
Loss of phalanx of ring finger								
Loss of phalanx of little finger								
Loss of fingers with injuries to other fingers								
Loss of 1 leg								
Loss of toes								
Loss of 1 eye								
Loss of 1 eye with injury to the other								
Other permanent partial disabilities								
Total permanent partial disabilities								
Temporary disabilities:[b]								
1 day								
2 days								
3 days, etc., up to 14 days								
Over 2 to 3 weeks								
Over 3 to 4 weeks								
Over 4 to 5 weeks								
Over 5 to 6 weeks								
Over 6 to 7 weeks								
Over 7 to 8 weeks								
Over 8 to 9 weeks								
Over 9 to 10 weeks								
Over 10 to 11 weeks								
Over 11 to 12 weeks								
Over 12 to 13 weeks								
Over 13 to 26 weeks								
Over 26 to 39 weeks								
Over 39 to 52 weeks								
Over 52 weeks								
Total temporary disabilities								
Grand total								

[NOTE.—The action of the committee in regard to Table 5 provided for the use of a "standard list" of permanent total disabilities based on the "Standard accident table" and for a similar "standard list" of dismemberments under permanent partial disabilities.

The "Standard accident table" contains no list of permanent total disabilities but only a list of dismemberments. The list of permanent total disabilities here given is taken from some of the State laws. These standard lists have not yet been prepared.]

[a] Form of notes to be used whenever applicable, e. g., including —— cases of funeral benefits amounting to $——. Not reported in —— cases.

[b] In this table the duration of temporary disabilities should be expressed in calendar days, as the table is not intended for weighting purposes.

TABLE 6.—COMPENSATION AND MEDICAL AID INCURRED ON ACCOUNT OF OCCUPATIONAL DISEASES, BY EXTENT OF DISABILITY.

Occupational diseases causing—	Total cases.	Benefits paid and outstanding.						
				Compensation.				
		Total amount.	Average amount per case.	Death and funeral.[a]	Permanent total disabilities.	Permanent partial disabilities.	Temporary disabilities.	Medical.
1	2	3	4	5	6	7	8	9
Deaths, with dependents								
Deaths, without dependents								
Permanent total disabilities								
Permanent partial disabilities involving specified percentage of impairment:								
20 and under								
21 to 40								
41 to 60								
61 to 80								
81 and over								
Total permanent partial disabilities								
Temporary disabilities:[b]								
1 day								
2 days								
3 days, etc., up to 14 days								
Over 2 to 3 weeks								
Over 3 to 4 weeks								
Over 4 to 5 weeks								
Over 5 to 6 weeks								
Over 6 to 7 weeks								
Over 7 to 8 weeks								
Over 8 to 9 weeks								
Over 9 to 10 weeks								
Over 10 to 11 weeks								
Over 11 to 12 weeks								
Over 12 to 13 weeks								
Over 13 to 26 weeks								
Over 26 to 39 weeks								
Over 39 to 52 weeks								
Over 52 weeks								
Total temporary disabilities								
Grand total								

[a] Form of notes to be used whenever applicable, e. g., including —— cases of funeral benefits amounting to $——, not reported in —— cases.

[b] In this table the duration of temporary disabilities should be expressed in calendar days, as the table is not intended for weighting purposes.

TABLE 7.—PERMANENT PARTIAL DISABILITIES, BY LOCATION OF INJURY AND PERCENTAGE OF IMPAIRMENT OF MEMBER.

Location of injury.[a]	Total cases.	Number of cases (not dismemberments) involving specified percentage of impairment of member.					Number of dismemberments.
		20 and under.	21 to 40.	41 to 60.	61 to 80.	81 and over.	
1	2	3	4	5	6	7	8

[a] For classification of location of injury for use in the stub of this table, see Bulletin 201 of the U. S. Bureau of Labor Statistics.

TABLE 8.—PERMANENT DISABILITIES, BY PERCENTAGE OF IMPAIRMENT OF EARNING CAPACITY.

Location of injury.[a]	Total cases.	10 per cent and under.	11 per cent and under 20 per cent.	21 per cent and under 30 per cent.	31 per cent and under 40 per cent.	41 per cent and under 50 per cent.	51 per cent and under 60 per cent.	61 per cent and under 70 per cent.	71 per cent and under 80 per cent.	81 per cent and under 90 per cent.	91 per cent and under 100 per cent.	Total disability.
1	2	3	4	5	6	7	8	9	10	11	12	13

[a] For classification of location of injury for use in this table, see Bulletin 201 of the U. S. Bureau of Labor Statistics.

TABLE 9.—INFECTED INJURIES, BY NATURE OF INJURY AND EXTENT OF RESULTING DISABILITY.

1	Total. 2	Bruises. 3	Burns and scalds. 4	Concussions. 5	Cuts, punctures, and lacerations. 6	Dislocations. 7	Fractures. 8	Sprains and strains. 9	All other. 10
Total injuries									
Total infected injuries									
Infected injuries resulting in—									
Deaths									
Total loss of—									
Eye									
Arm									
Hand									
Leg									
Foot									
Fingers									
Toes									
Other members									
Permanent impairment of—									
Eye									
Arm									
Hand									
Leg									
Foot									
Fingers									
Toes									
Other members									
Temporary disabilities—									
Number									
Days lost[a]									
Average duration									
Total benefits, including medical, hospital, etc.									

[a] In this table the duration of temporary disabilities should be expressed in calendar days, as the table is not intended for weighting purposes.

TABLE 10.—NATURE OF INJURY, BY CAUSE.

Cause of accident. 1	Bruises. 2	Burns and scalds. 3	Concussions. 4	Cuts, punctures, and lacerations. 5	Dislocations. 6	Fractures. 7	Sprains and strains. 8	All other injuries. 9	Total injuries. 10	Infected injuries. 11
Machinery:										
Prime movers										
Steam engines										
Gas or gasoline engines										
Electric motors and dynamos										
Etc.										

NOTE.—For classification of causes, see Bulletin 201 of the United States Bureau of Labor Statistics.

TABLE 11.—ACCIDENTS, BY NATURE AND LOCATION OF INJURY AND EXTENT OF DISABILITY.

Nature and location of injury.[a]	Total cases.	Deaths.	Total permanent disabilities.	Number of permanent disabilities (not dismemberments) involving specified percentage of impairment of member.					Number of dismemberments.	Temporary disabilities.	
				20 and under.	21 to 40.	41 to 60.	61 to 80.	81 and over.		Number.	Average duration.[b]
1	2	3	4	5	6	7	8	9	10	11	12
A. Dislocations											
B. Fractures											
C. Burns											
D. See other											

[a] For classification of location of injury for use in the stub of this table, see Bulletin 201 of the U. S. Bureau of Labor Statistics.

[b] In this table the duration of temporary disabilities should be expressed in calendar days, as the table is not intended for weighting purposes.

NOTE.—Degree of impairment of member or degree of permanent incapacity may be used in this table according to the practice prevailing in the particular State.

TABLE 12.—SEX AND WAGES OF INJURED.

Weekly wages.[a]	Total cases.	Males.					Females.				
		Total males.	Deaths.	Permanent total disabilities.	Permanent partial disabilities.	Temporary disabilities.	Total females.	Deaths.	Permanent total disabilities.	Permanent partial disabilities.	Temporary disabilities.
1	2	3	4	5	6	7	8	9	10	11	12
Under $4.00											
$4.00 and under $5.00											
$5.00 and under $6.00											
Etc.											
$28.00 and under $29.00											
$29.00 and under $30.00											
$30.00 and over											
Total											

(a) For this table use the calculated wages upon which compensation awards are based, irrespective of maximum or minimum limits.

NOTE.—This table should be made for all industries combined and for important industry schedules. (Average weekly wages for the first and last groups would be useful for actuaries.)

TABLE 13.—SEX AND AGE OF INJURED.

Age.	Total cases.	Males.					Females.				
		Total males.	Deaths.	Permanent total disabilities.	Permanent partial disabilities.	Temporary disabilities.	Total females.	Deaths.	Permanent total disabilities.	Permanent partial disabilities.	Temporary disabilities.
1	2	3	4	5	6	7	8	9	10	11	12
Give ages by years, using age at time of accident.											

NOTE.—This table should be made for all industries combined and for important industry schedules.

APPENDIX C.—SCALE OF TIME LOSSES FOR WEIGHTING INDUSTRIAL ACCIDENT DISABILITIES SO AS TO SHOW SEVERITY OF ACCIDENTS.

Nature of injury.	Degree of disability in per cent of permanent total disability.	Days lost.
Death	100	6,000
Permanent total disability	100	6,000
Arm above elbow, dismemberment	75	4,500
Arm at or below elbow, dismemberment	60	3,600
Hand, dismemberment	50	3,000
Thumb, any permanent disability of	10	600
Any one finger, any permanent disability of	5	300
Two fingers, any permanent disability of	12½	750
Three fingers, any permanent disability of	20	1,200
Four fingers, any permanent disability of	30	1,800
Thumb and one finger, any permanent disability of	20	1,200
Thumb and two fingers, any permanent disability of	25	1,500
Thumb and three fingers, any permanent disability of	33⅓	2,000
Thumb and four fingers, any permanent disability of	40	2,400
Leg above knee, dismemberment	75	4,500
Leg at or below knee, dismemberment	50	3,000
Foot, dismemberment	40	2,400
Great toe or any two or more toes, any permanent disability of	5	300
One toe, other than great toe, any permanent disability of	0	.....
One eye, loss of sight	30	1,800
Both eyes, loss of sight	100	6,000
One ear, loss of hearing	10	600
Both ears, loss of hearing	50	3,000

(1) Injuries not involving amputation should be rated as a proportion of the weight assigned to the entire loss of the member involved, in accordance with the degree of impairment.

(2) The weighting for impairment of function of any member should be such percentage of the weighting for dismemberment as may be determined by the

adjudicating authority in fixing the compensation for such impairment—i. e., if loss of an arm is compensated by 240 weeks' indemnity, then an impairment of the arm for which 160 weeks' compensation was paid should rate as two-thirds of the loss of the arm in the above scale.

(3) Hernia should be included only as a temporary disability on the basis of the actual time lost.

(4) For the weighting of temporary disabilities the actual duration of disability in calendar days less one-seventh should be used.

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Special Deputy, Pennsylvania Insurance Department, Harrisburg, Pa.
P. A. BRODERICK,
Assistant Secretary, Massachusetts Industrial Accident Board, Boston, Mass.
W. H. BURHOP,
Member, Compensation Insurance Board of Wisconsin, Madison, Wis.
F. C. CROXTON,
Vice Chairman, Ohio Branch of Council of National Defense, Columbus, Ohio.
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Chief Statistician, United States Employees' Compensation Commission, Washington, D. C.
E. E. WATSON,
Chief Actuary, Industrial Commission of Ohio, Columbus, Ohio.

WEDNESDAY, AUGUST 22—AFTERNOON SESSION.

CHAIRMAN, RAPHAEL LEWY, M. D., CHIEF MEDICAL EXAMINER, NEW YORK STATE INDUSTRIAL COMMISSION.

III. MEDICAL ASPECTS OF COMPENSATION INSURANCE.

[In response to a vote taken in the morning, the president appointed the following committee to bring in a report on the officers of the association for next year and also as to the proposed place and time of meeting: Mr. Wilson, Mr. Andrus, Mr. French; and the following committee on resolutions: Dr. Meeker, Mr. Smith of Michigan, Mr. Andrus of Illinois, Mr. Armstrong, and Mr. Wilson.]

The CHAIRMAN. Before calling the medical session to order I would suggest, with your permission, that the discussion of the various subjects begin after the conclusion of the papers, so that the gentlemen may all take part in the discussion; and, as chairman, I should also like the privilege of taking part in the discussion, and if the time allows I have something that I should like to say to you. I think the time has arrived when we not only need to speak as to the compensation of visible injuries, so called—visible, palpable defects—but I believe the internal, pathological condition is beginning to be a big factor in the so-called measuring term—the dormant conditions, the predisposing conditions, and those things which are accentuated by injuries. I believe that it is time we turn our thoughts and minds to this all-important subject and see what can be done.

[A paper on "The value of the exact knowledge imparted by autopsy findings in clearing up fatal industrial accidents" was read by Timothy Leary, M. D., medical examiner, Suffolk County, but is omitted, as it has been impossible to obtain a copy.]

X-RAY DIAGNOSIS AS AN AID TO EFFICIENT ADMINISTRATION OF THE WORKMEN'S COMPENSATION ACT.

BY ARIAL W. GEORGE, M. D.

I have been asked to say a few words in regard to the use of the X ray in industrial accident cases, and its value in the practice of the workmen's compensation law.

It has been proved in the majority of cases that the use of the X ray gives a better knowledge or comprehension of the various injuries to the various parts of the body in industrial accident cases than does the ordinary clinical examination of civil or hospital practice. This has become so obvious that the better class hospitals throughout the State have equipped themselves with adequate X-ray departments and have made X-ray examinations an integral part of the hospital routine to such an extent that an examination by X ray is made in practically every case where a pathological condition is suspected, whether it be a case of injury to the bony skeleton, or some disease that may attack the lungs, or an infection or obstruction of the gastrointestinal tract, or disease of the accessory sinuses of the head, or new growth of the brain.

Very little progress, or at least exact progress, can be made without the use of the X ray. Fortunately for employer and employee, we have in this State a medical adviser who may be fairly called the father of medical reconstruction of the injured, and who from the very start of the practice of the act has insisted, in spite of criticism, on liberal examinations by X ray of accident cases. It has been my privilege to have been the impartial referee on a large majority of the Massachusetts board cases needing X-ray diagnosis, and it has been apparent from the beginning that the success of this act in this State must be attributed first of all to the efficiency of the medical men, aided by the very general use of the X ray.

Naturally in the beginning the cost was a factor, and it was against this perhaps more than against its systematic employment that objections were made, but we were able to overcome this objection by making the fee very little more than the average hospital would charge, at substantially only the net cost, at the same time giving the individual attention to the workman that he was deserving of and would be entitled to in civil practice.

The use of the X ray in individual cases necessarily plays two very important parts, according to its employment in the early or late

stages of any injury. We are sadly wanting in its early employment; that is, the early X-ray examination of every individual case, first, as an essential aid to diagnosis, and, second, as a necessary aid to proper and prompt treatment of these traumatic cases.

When for various reasons there has been no early X-ray examination, and permanent disability apparently develops, then an X-ray examination is made before the case is decided definitely as one permanently disabled. The latter practice has become common and has led to very excellent results in the reconstruction of individuals thought hopeless invalids.

In the early days the insurance companies were not as familiar with the value of the X ray as they are to-day. We have seen the time when the insurance company would neglect to have an X-ray examination of a fracture on account of cost, preferring that the medical man treat the injury for the two-week period, trusting to his unaided skill and that of nature to heal the fracture successfully, but it was very soon found in practice that the accepted treatment of injuries, without the guide of the X ray, did not always give the most perfect functional results, no matter how many modern appliances, in the shape of ingeniously contrived splints, etc., were employed. Even now the insurance companies, who bear the brunt of this act, are not quite prepared to say to their medical consultants—whether they be special examiners or physicians called by the individual—have X-ray examination early in every accident case.

What would be the value of such a procedure? It may be somewhat idyllic and not practical, owing primarily to expense, but what would be the outcome? Let me take as an example a man in an administrative position who slipped, fell, and injured his hand. It was a trivial accident and caused only a little annoyance at the time. He expected the swelling would go down in a few days and that he would have good use of his hand, and so practically ignored the accident. Ten days later the hand was still swollen, function was delayed or inhibited, and it became a source of annoyance and wonder to him as to just what had happened. He then submitted to X-ray examination and was found to have a fracture of the scaphoid bone of the hand. We know from a medical and surgical point of view that, for some reason, unless a fractured scaphoid heals immediately, it is not likely to heal, and becomes an irritation and eventually leads to a disability which may be of considerable importance. If this man had had prompt medical treatment, with the knowledge that there was a fracture, in from 8 to 14 days his hand would have been healed, the function would have been restored, and he would have forgotten the incident. As it is, he is extremely fortunate if he has good function of his hand, and more than fortunate if

eventually he does not have to have a surgical operation to remove one of the fragments.

If this had been an industrial accident case and in a routine way the insurance company had insisted on immediate X-ray examination, it is perfectly obvious that it would have saved a considerable number of weeks' compensation, and not only compensation but the economic loss to the employer of his employee, provided the examination was made by a competent Roentgenologist.

This is happening time and again, and if an estimate in dollars and cents could be given to you of the loss of the workman's time, plus the compensation that he receives, it would astound you.

It is often the simple injuries that give the most distressing and permanent results, because it is the wrist, the elbow, the shoulder, the knee, and the ankle joint that are commonly injured, and as these are the parts that come into play in the performance of manual labor, it becomes perfectly apparent that these are the parts of the human body that we must protect, just as you protect your mechanical appliances in your shops.

The injuries to the joints themselves, fractures especially, no matter how slight, are the injuries that may give rise to the permanent and difficult end results, and a delay in diagnosis and treatment sometimes means that it is impossible by future surgical procedure to return the joints to their original usefulness. Take, for example, a fracture at the wrist joint, which is so common. If there is a slight amount of impaction and this impaction is allowed to heal and becomes firm in its union, the functional result is permanently destroyed to a greater or less extent, and no amount of surgical procedure in the future will relieve this lack of function.

Even unrecognized fractures of the fingers, or those poorly corrected at the time of the injury by surgery, as simple as they may seem, destroy the perfect usefulness of the hand, but if recognized promptly from demonstration on the X-ray plate, the only excuse then in the evidence will be of poor judgment of the surgeon or lack of training, because, after all, with the X ray as a positive factor in the study of the injury, it becomes then only a mechanical procedure to reduce the parts that are fractured, and, fortunately, nature does not demand that the approximation be as it was previous to the injury, but, as we see so commonly, even a marked deformity will sometimes in individual cases give permanently good functional results.

Injuries to the chest have been a source of annoyance when the problem of resultant tuberculosis arises. The medical adviser of this board could report numerous cases of tuberculosis that have been claimed to have developed after injuries to the chest. We would have been certain of one fact if the injured workman had been examined

within a few days after his injury, i. e., of the condition of the lungs at that time, which would have been definite and positive, and no future claim could have been made unjustly either way when the question came up as to whether tuberculosis that had not theretofore given marked clinical symptoms existed at the time of the injury or was due to such injury or to change of occupation. The X-ray record of the patient's chest pathology would be at hand to help in adjusting the claim.

Injuries to the spine have become more common than we hitherto thought possible, and although perhaps the results of knowing that there is a definite injury to the vertebræ may not help in the ultimate treatment, there are some cases which, if found to have permanent injuries to the bones of the spine, can be relieved of immediate symptoms, and we can prevent, by surgical methods, the developing of future symptoms. Hardly a case can I recall that has been examined immediately after the injury—more commonly it is the following week or month or months, with possibly increasing clinical symptoms, and when examined by the X ray when the question of continued compensation arises, definite serious disturbance of the bones is found. Then it is almost always too late to do more than correct it by appliances.

As to injuries of the head in which claim of fracture is made, in a large percentage of these cases no fracture exists. If such a case were examined early perhaps treatment could be instituted, in which case the secondary results of this accident would not appear in the case, because after all is said and done a great many times the usefulness of the individual is lost if he even thinks he has a serious injury, and if he thinks of it long enough it becomes just as serious as regards his usefulness to his employer as if he had an injury. This we see so commonly in the court cases tried against corporations, and, incidentally, it has only been within the last year or two that the corporations have realized this, perhaps more definitely than have the insurance companies, and have insisted that they have X rays of the alleged injury.

In my own experience case after case has been found to be normal, and yet in the routine of legal procedure such patients would recover not only for the liability and for the suffering but for claimed permanent injuries of a nature which never actually existed.

The time must come, gentlemen, and it must be for the individual State board to decide how soon, when, in central locations, all cases must be examined immediately after the injury, and whether it becomes a great expense at first or not, the end results will, if you consider no other factor than the usefulness of the individual to his employer, soon become apparent, and this procedure of early and constant examinations will change the yearly statistics of cases being car-

ried on compensation, and if carried out for one year by the Massachusetts board, of which we are all very proud, will show a very real saving in dollars and cents in the compensation given to the individual, besides his early return to work and his usefulness to his employer.

One of the objections to the change in the law recently passed by our legislature—allowing the workman his choice of physician—is fundamental to this whole discussion—that the average general practitioner who is taking care of the individual workman is very often, for some unknown reason, loath to ask for early X ray; perhaps because he does not know that the insurance companies want it or will allow it—with the result that to-day hundreds of cases from the records could be shown to you of deplorable results of improper treatment which at the present time can not be corrected by surgical means.

The X-ray man can at least do this, he can be the buffer or adviser between the family physician and the insurance company, advising the physician of his first faulty treatment and the insurance company of the need of special consultation on the case.

No matter which way this subject is presented the fact remains undeniable that this board has to practice in this State, and that no matter how it compares with other States it will never reach the acme of perfection until there is a definite arrangement by which every individual workman, no matter how prolonged or how severe is his injury, can have thorough X-ray examination by a competent X-ray man. This must be insisted upon, and it must be done in the early hours of the injury. If the present system of impartial examination is outgrown, a very simple plan could be worked out by which a complete X-ray equipment could be operated in central locations, all the insurance companies paying their proportional amount of the expense of the operation of this department, and I am sure that its success would be so apparent in a very short time that the Roentgenologist would be as necessary to accident boards as the invaluable services of a medical adviser.

[At this point a paper on "The influence of alcohol in the prolongation of disability in industrial cases; how can it be minimized?" was read by J. W. Brickley, M. D., and one on "What constitutes adequate medical service in compensation cases," was read by W. Irving Clark, M. D., of the Norton Co., Worcester, Mass., but are not reproduced as copies were not submitted for publication.]

DISCUSSION.

F. D. Patterson, M. D., chief, division of industrial hygiene, Pennsylvania Department of Labor and Industry. We should all thoroughly realize how grave and serious a menace to this country are the present casualties of modern industry. I picked up a paper the other day and I saw featured there the fact that England had lost in killed, wounded, and captured some 40,000 men in a month. Why, it pales into insignificance compared with the killed, injured, and maimed in the ranks of American industry throughout our continent. We, one and all, should give very serious thought to this problem and ask our fellow practitioners in medicine who are in charge of medical schools in our country to give special thought to the education that is now being given to the men who are going to take our place in the fighting ranks of industrial practice. It seems to me from my experience in Pennsylvania that the average medical student has far more knowledge of the symptoms of some obscure disease than he has of the common industrial poisons that are being handled every day in some of our factories. So, too, it seems to me that he is much better qualified to tell you some one, two, or three ways of amputating a hip joint than to point out to you how to clean a wound that has occurred to a man laboring in industry. Here he is as much at sea as some mariner in a boat without the aid of a compass, and so I feel that the medical profession should take stock of those who hold the degree of M. D.

I believe, from my experience in the State of Pennsylvania, that we have an average of a thousand disability accidents a day, 10 of which are fatal, and that one of the most important things that we can have is competent medical attendance immediately after a man receives an injury; and, furthermore, that the sooner that man is enabled to get back into that plant and some kind of work—I don't say the position for which he was hired and at which he has been injured, but getting back into the plant, even if he does nothing but sit at the gate all day long—I contend it's a thousand times better than standing with one foot on the rail at the bottom of a bar. The most serious case, I believe, is the case of unreported accidental injury. The man who meets with an apparently trivial injury and who appoints himself a committee of one to treat himself, either by the use of the cobweb or the chew of tobacco, is the man who places himself in a most dangerous position.

Now, in regard to the subject of alcohol, I have hopes that we may get some help out of Congress, but, unlike my good friend, Dr. Meeker, I haven't much faith in Congress, though I hope we may get some help from them. I fully realize that it is no more possible to stop drinking by the mere enactment of law than it is to control accidents by the same method, and I say by that same process you can make drinking different, but you can't make it unpopular. Education is the solution of the problem, and we will have to educate the foremen and the workmen, the men that are laboring in the industries. Alcohol is a poison, and it doesn't take any professor of physiology to convince me of that.

A word on the subject of X rays. I hope that I may live to see the time in this country when every accident board in every State and Territory of our Union will adopt the use of the X ray, not only that we may have an adequate knowledge as to just what the pathological condition is which the doctor is called upon to treat, but so that we may have a more valuable record. The man who is incompetent to treat fractures ought not to be allowed within 50 miles of them. The compensation system has come, it seems to me, as the result of a feeling on the part of organized and unorganized labor that they were sick and tired of those three old bugbears, the common-law defenses of assumption of risk, contributory negligence, and negligence of a fellow servant, standing between a man who has been injured in the performance of his work and the recovery of compensation, and furthermore has come as the result of a demand on the part of the progressive lawyers and the progressive manufacturers, because they were sick and tired of the freedom with which juries disregarded these defenses. The State has a keen interest in the unfortunate man or woman who meets with an industrial accident, and is also keenly interested in seeing that that man or woman is returned to productive labor at the earliest possible moment. It is a question in my mind as to whether or not in a great many of the industries we have not too much first aid by incompetent people, and as to how far first aid should be allowed to go—whether or not a wound properly cleansed, in the absence of antiseptics, by a competent man will not be a great deal better than improperly cleansed by a man who believes he is competent and who puts on all the antiseptics he can find in the factory. I hope to live to see the investigation which is about to be begun, at the request of the Surgeon General of the Army, by the United States Public Health Service and a committee of the Association of Industrial Physicians and Surgeons into this question of first aid completed, and I believe out of that investigation there will undoubtedly come some great truths which have been obscured by the incompetent first aid that has been rendered during previous years.

In conclusion, it has been my experience that hospital records and factory records, valuable as they are to a certain extent, do not go far enough, and I trust that the compensation boards of this country will eventually require that records be kept so that they will show, in the first place, the personal-injury cases. I divide all cases coming to the factory physician or the hospital into three classes: First, personal-injury cases; second, those cases of disease which are dependent upon the occupation of the man or woman; and, third, those cases of disease which are not dependent and not connected in any manner at all with the occupation. I am convinced that when the records are kept in that way we will be able to get some real accurate statistics, which at present we sadly lack in this country. I will be glad to send to anyone who is interested the proceedings of the conference of physicians which has been held at Harrisburg, and in which you will find in detail what constitutes reasonable medical services. In conclusion, I want to leave with you the thought that if America is to win the struggle upon which we are now engaged it is going to be won by our men at the front in France and by our men and women here in the trenches of labor in America, and we owe it as a duty to our country, as loyal Americans, to do everything we possibly can to prevent our men and women in industry from being injured and to see that those who have the misfortune to fall by the industrial wayside shall fall into the hands of competent physicians who will give them proper care and restore them to their employers' service at the earliest possible moment.

Dr. DONOGHUE. May I insist that the chairman take part in the discussion now?

The CHAIRMAN. In referring to the paper on alcoholism, the gentleman dwelt on the toxic effect due to the injection of alcohol. Of the pathology of the change in the system, the effect in arteriosclerosis, the effect on the muscles of the heart, and the complicating kidney changes, we have no conception; but this much we may know, and it is important for us to know it: There are many people who are addicted to alcohol who do not show any of the manifestations of an alcoholic. Such a person, up to the time of an injury, may be a very useful working man, but the injury becomes the actuating factor in a condition of that kind to cause delirium tremens. You take, for instance, a man who goes to work on a certain morning. He has drank nothing and he did not drink for a few days before; he was not intoxicated. He meets with a fracture of his leg and he is removed to the hospital. The fracture is set, his leg is immobilized, and 24 hours later he develops delirium tremens. That case is compensable, no question about it; it always has been compensable in New York. If, although he drinks alcohol at a certain time, he can fulfill

his duty, he is a useful man in the community; you may not associate with him socially—he may not be a good associate—but he is a useful man, and the accident is the actuating factor in his permanent disability. The very factor that predisposes to his delirium tremens, perhaps with ultimate death, may be a factor in prolonging the stage of disability and the consequent defective healing due to lowered vitality—that's as old as medicine. Even then he must be compensated.

As to the paper on pathology which has been read, where the work of the pathologist comes in, as regards the compensation law, in making a diagnosis is this: Let us say that there is a differential diagnosis to be made between a hemorrhage, extra dural hemorrhage between the skull and the outside lining of the brain, and apoplexy—let us say that a man worked and suddenly fell down and in his fall he hit himself, but, to make the case more complicated, he died at once, and therefore there was no change. Some teachers will tell you that a traumatic hemorrhage is most often the consequence of a fall, or of the closing of the middle meningeal artery where apoplexy or hemorrhage of the cerebra occur, most often affecting the ventricles, and so sclerotic changes, and so forth, take place—that's a differential diagnosis. There is the importance of autopsy findings.

I heard the doctor speak of a miliary tuberculosis. It is a well-known fact all over the world that 50 per cent of people have tuberculosis without any evidence of it, and that in those few cases where autopsies have been made tubercular conditions have been found. Now, for instance, take the man who inhales nitrate and who has a latent tuberculosis. As a consequence of this inhalation he gets a cold, an inflammation of the windpipe, or acute bronchitis. If active tuberculosis sets in he is surely entitled to compensation, although he previously had latent tuberculosis. Take a man who has dormant tuberculosis; he doesn't cough, doesn't raise, and doesn't know that he has it. He is a perfectly healthy man. It is the inhalation that causes the acute condition. It was interesting to me to hear the doctor say that to cause a systemic infection in some animals you have to cause a fracture—fracture the leg. The experiments spoken of were done 15 years ago by Wassermann. He simply wanted to cause an artificial lowered vitality. That very same thing could have occurred in a human being. You don't need to break a man's leg to cause an infection. If there is an infection in the body in an inactive state, give it time and it will develop; that is, where you may have a latent infection. I remember very well the first case that was reported by Murphy, of Chicago; it was an infection in consequence of an abscess. The son of a doctor fell and suddenly developed a temperature. Everybody saw him and nobody knew what was the matter with him until they X rayed him, when they found a focus in his

femur, an abscess in consequence of a dormant infection in his jaw. That was the actuating condition—the fall. If this were the case of a workman, if you found an infection in his jaw, wouldn't he be entitled to compensation? That is the important thing, the differentiation between conditions that predispose and conditions that preexist, conditions that in their preexisting state are dormant, harmless to the individual, but are actuated by something that causes you to give him his compensation, and of right.

As to the X ray, I recall having seen doctors set fractures and make very wonderful diagnoses preceding the X ray, but we must all admit that the X ray is one of the most necessary and one of the most important things and a godsend to medicine and surgery. But the X-ray man must translate his own picture. I want his diagnosis on the picture—never mind what the surgeon said. I don't want him to ask me: "What was the matter?" He has the picture and he must translate what he finds.

The doctor spoke of a fracture of the scaphoid bone. There have been fractures that before the X ray have never been diagnosed, and that is one of the fractures. Although men like Stimpson, of New York, have described those fractures, they never could confirm their description. Stimpson was a genius in that work. But I take exception to the statement that if a fracture of the scaphoid is replaced immediately the individual will be well in 10 days.

Now, whether you use in first-aid treatment tincture of iodine, a sublimate solution, or a carbolic-acid solution, I believe the first-aid treatment which is successful is treatment and careful handling of the tissues and the proper application to and immobilization of the part involved. I was astonished at having seen a noted surgeon use nothing on his hands but alcohol, and use nothing on the abdomen but alcohol, and use nothing but dry sponges, and see him go into the abdomen with both hands and do whatever was necessary, and during eight months' time not have one case of infection; but he was a master. I believe the important thing in first-aid treatment is not to mutilate more than is necessary and then to give the parts a chance to heal naturally, unless there are distinct indications to the contrary at the time. If I were to be asked what is a good antiseptic or a good aseptic, I may tell you frankly that in an experience of over 20 years I have used nothing but sublimate. I mean that I use nothing but solutions of bichloride of mercury—corrosive sublimate. My grain is 1 to 2,000, about. I have used it as a packing; I have inserted gauze saturated with it in wounds. I have used it as a drain; I have inserted loose pieces of gauze to take away discharges from a wound; and if I were to be asked whether I would change it, I should say it has been good enough up to the present. Is iodine

good? If the other has been good enough up to the present, I don't need any better. That would be about as logical an argument as I could give. You may say, "Don't you get sublimate irritations?" Yes; I have had. But I believe iodine is so well thought of because it is so easy of application—you don't have to make any solutions. Its effect must be good, otherwise it would not be used.

Having spoken on first aid, I wish to say something on internal medicine, and the first disease I wish to speak of is syphilis, which is a very important factor in your compensation occupations. There are any number of cases of syphilis on record which show absolutely no evidences whatever—no chronic evidences. The individual does not complain; has no physical signs of the disease; and you may examine his blood and find no reaction there. This individual is a very useful worker in whatever capacity he is employed. He is slightly injured on a bone, which in the ordinary being and the healthy man would cause a very slight injury which might last a day or so. This man who is injured goes along and works, and four weeks after he develops an enlargement of this bone, which may be considered a good many things until he comes under the supervision of a careful doctor, who makes the diagnosis of a gumma—an enlargement of a bone, not exactly painful. It does not break down, and as the doctor goes into the man's history he establishes that he had syphilis. This man requires a long treatment; he is disabled. Is he to be compensated? Absolutely. That this syphilitic man is working is not his fault. He has been perfectly well—apparently well—and a very useful man to all intents and purposes. He meets with an injury in his vocation. Unfortunately his predisposition to disease makes him a very expensive workman, but he is entitled to compensation.

There is another set of cases. These are the persons who continually complain of headaches, and who say, "As I stoop down I get dizzy and fall," but they never fall. "When I come home at night—my head goes worse at night." You give one of these persons a thorough examination, from a neuropathological point of view, and he has not one organic sign of a nerve lesion; has perfectly normal reaction of the pupils; normal reaction of the knees; no Rhomberg; not too much sensation; no loss of sensation. Still, he is disabled. But he has no resisting power; he is not able to stand the shock the ordinary man would stand; in which case the emotional shock and its consequences must be considered.

I would like to say something on heart lesions. If you consider that there is such a thing as normal senile changes which come in old age, you must readily understand that the man of 50 years of age when he is injured is an additional risk as regards prolonged com-

pensation and as regards premature death in consequence of his age and condition. It is a peculiar thing that the very man who is injured may have that very morning done the most laborious work. He carried and shoveled and lifted, and his fellow workmen might say: "John wasn't sick this morning; I worked with him so long." This man lifts something in the afternoon; he is not disabled immediately; works that afternoon; goes home, and says, "I have an awful pain in my back"; and since then he has been disabled. When you examine him, you find a distinct myocardial change; you find a very slow pulse; the heart sounds are muffled; they are not distinct. You take his blood pressure, and it is low, and he is sick, and he proves to you that it was only two weeks since he was able to work, and so he was. Now, what caused it? What happened to this man? If he had an acute dilatation of his heart he should have been disabled at once, under our conception of acute dilatation. He could not have had an acute dilatation. He had a bad heart muscle, but he should have compensation, as his heart was strong enough to make up for that bad heart muscle until that heavy lift; and that lift, while it would not have knocked out 10,000 other men, knocked him out because that diseased muscle could not recuperate. I advise my commission to compensate these cases. I believe the most important thing for any commission to consider in the compensation of these cases is the most logical and comprehensive thing. How is it that this very sick man was able to work until that date if he is so sick to-day and is disabled? I believe that is more important than our diagnoses.

Mr. ARMSTRONG. What do you call the accident in that case?

The CHAIRMAN. The physical exertion—excessive lifting.

Mr. ARMSTRONG. The lift would not be the accident.

The CHAIRMAN. Why not, if the lift was too heavy?

Mr. ARMSTRONG. I should think it was the strain and consequence.

The CHAIRMAN. What caused the strain? I just wish to say one more thing on injuries to the back in conjunction with what we saw this morning. I do believe that the chief medical examiner of the Massachusetts board is to be congratulated. I think we saw this morning one of the finest institutions in the world, and when I say this I see before me some very large institutions in Europe. I think we saw one of the best-equipped institutions in the world this morning. There was one thing which appealed very much to me, and that was the kindness with which the patients are treated. That is a very important factor. We saw a room equipped with mechanical appliances which I think is as perfect as anything can be in that line. I don't mean to go on record to say that conditions can not be im-

proved, neither do I want to go on record as saying that improved conditions are perfect conditions. Well, now, as to the back injuries, in our profession they have taken up some terms like lumbago and neuritis, and so forth, and lately they have come forward with something new which means a separation of the joint between the sacrum and the hip bone. We have some men who do that kind of work—men who have learned it and who know how to do it. Our results are not very good. What we have noticed from manipulation is this: At the time when the patient is discharged from his treatment the manipulation in the joint is fairly good. After a few weeks we have noticed that the manipulation was not as good; that the mobility became lessened. Whether this was because the man did not use his joint, which had been artificially used by the machine, I do not know, but we have observed this condition so frequently that we do not now settle our cases so early after the patient is discharged from the mechanical treatment. We wait and see what will occur within a few months without treatment.

JOSEPH M. BURKE, M. D., chief surgeon, Seaboard Air Line Railway. I wish to say that I have enjoyed all of the papers presented here this afternoon. I was somewhat amazed at some of the statements made by our worthy chairman. As to some of them, I agree with him entirely; as to others, I do not. Of course, from a railroad standpoint, we feel that where a man has by his own will contracted syphilis, and received an injury, that there is reason for some litigation, but under the workmen's compensation laws I expect probably we are responsible. However, the paper presented by Dr. Leary I followed carefully, and I saw nothing in his paper but what was plain enough for any layman to understand; it was absolutely correct. The X-ray papers, as well as the pictures presented by our Army doctor, were excellent. Of course, we all know that the X ray is a great boon; in fact, we could not do without it. We also know that the X ray does a great deal of harm. Sometimes you will get a picture which is absolutely adverse to the truth. Another X-ray man comes along and takes a picture in a different manner; he will show a different factor; he will show something all wrong. For the medical man the X ray is a great thing.

TIMOTHY LEARY, M. D., medical examiner, Suffolk County, Mass. First, with reference to the theory of making diagnoses in autopsies: We are all human; medicine is not an exact science. I think, with my experience, that 2 to 3 per cent would be a large maximum for the cases in which a satisfactory diagnosis was not obtainable at the autopsy table. That is as it should be; we have material where we can take care of it. The gentleman made a statement that the middle meningeal artery was the artery usually ruptured. As a fact, that is not

true. The per cent of middle meningeal injuries, of traumatic injuries to the head, the brain, is very small. As a matter of fact, I should say that at least 80 per cent of the cases where the hemorrhage occurs are due to traumatism of the pia or the surface of the brain rather than the meningeal process.

A statement was made with reference to the cause of miliary tuberculosis. This was not a case of tuberculosis of the lungs from the inhalation of nitrate. I thought I explained that in great detail. Miliary tuberculosis is a different story; you are dealing with a closed process which is not in contact with bronchitis. It is a separate thing which can not arise from traumatism or as the result of irritation. As a matter of fact, this man was an engineer in a plant, employed at a considerable distance from the buildings where the nitrate fumes were produced, and while the claim was made we found he got no exposure whatever to them. On alcoholism I would like to say, as the result of a very wide experience, that the idea that alcoholism causes arteriosclerosis ought to be corrected. I have dealt with several thousand autopsies, in many of which cases—a large per cent—alcohol played a part. The claim that alcoholism is an important factor in arteriosclerosis is a mistaken one. We have come to recognize the importance of syphilis in this relation, and I believe that alcoholism is of minor importance. It is of minor importance in the production of chronic nephritis; quite a very important factor in the production of acute nephritis. You change the character of the alcohol and you will change the results of alcoholism. We used to get cirrhosis of the liver as a common thing. Frankly, cirrhosis of the liver is becoming unusual; to-day the man dies as the result of acute alcoholism. That's where the alcoholism played an important part. I do not think that alcohol should be placed as the cause of things where it is not responsible.

WEDNESDAY, AUGUST 22—EVENING SESSION.

CHAIRMAN, F. D. PATTERSON, M. D., CHIEF, DIVISION OF INDUSTRIAL HYGIENE, PENNSYLVANIA DEPARTMENT OF LABOR AND INDUSTRY.

IV. MEDICAL COMPETENCE AND HOSPITAL EFFICIENCY.

MEDICAL COMPETENCE AND HOSPITAL EFFICIENCY.

BY FRANCIS D. DONOGHUE, M. D., MEDICAL ADVISER OF THE MASSACHUSETTS INDUSTRIAL ACCIDENT BOARD.

Competent medical services must be the backbone of proper compensation.

At the risk of repeating perhaps some things that I have said before, I will endeavor to speak on hospital efficiency and medical competence. Many people might suggest that it would be better to speak of medical incompetence and hospital inefficiency, but we should look at the bright side of the shield and as much efficiency as we have on the side of the shield toward us, and not look for gloom. Perhaps in the beginning a consideration of the medical aspects of the workmen's compensation law from the standpoint of a medical adviser may be timely.

In the first place, it is inconceivable to my mind how a board administering an accident or injury law can get along without medical advice. I know that men can acquire wisdom. I know that men have acquired great wisdom, but to know medicine and its application to the things of industry without a technical training is absolutely impossible.

In the beginning we had as little provision for medical advice in our law as most States. The board in case of a dispute could pick its impartial examiners. It could pass upon the reasonableness of physicians' fees; it could pass upon the adequacy of hospital treatment, all after the results were attained. The time the board should have control, should have its finger in the pie, is before the results are attained, especially the bad results.

Not having any provision in the law, it is advisable to take the advice of a very distinguished Republican of the State of Texas, who once said, "What are we here for?" We are here to get out of the law all that is in it for the injured workman, and in getting out all that is in it for the workman, we get out all that is in it for the employer of labor and the best for the community. If it is a poor law, a good commission ought to stretch it to the cracking point. If it is a good law

with a poor commission, it will have a poor result. The application of common sense to the law is a necessary and desirable thing and the commissioners and laws which are burdened with legal precedents and the decisions of the House of Lords will not accomplish nearly as much for the rehabilitation of the injured worker as the commission which has in mind that merely paying the man is never adequate compensation and that he is only properly compensated when he is restored to his proper place in the community.

In the absence of any direct prohibition in the law we should go the limit in cure and rehabilitation. In Massachusetts, in the absence of a law giving the accident board such power, we have endeavored to build up through a system of impartial examinations and by a study of hospital results in cases which come before the board a procedure, which has led first to examinations of cases by experts in the particular disability claimed and secondarily to treatment. It would manifestly be a joke to refer an arthritic spine or an obscure back injury to a general practitioner whose treatment consists of sympathy and liniments. Our impartial examiners examined on the basis not only as to whether the man was still disabled when the case arrived, but also as to whether the case had been properly treated before it arrived, whether it had been properly diagnosed, and, if still disabled, whether it could be cured. The proof of the pudding is the eating, and our men, our impartial examiners, began to make good on what they said could and should be done, and the insurance companies gladly stood for it.

With the increasing payments for medical and hospital expenses and compensation, the agents of some insurance companies are becoming prone to seize upon some helpful point in diagnosis or treatment to "black hand" an injured employee with a legitimate claim. Because a man is suffering from an ununited fracture received in his employment, and a Wassermann is suggested, which may even be positive, that should not be a reason for intimidation, or, worse, misrepresentation as to his rights.

The objection to impartial examiners being paid by the insurance companies for the treatment of cases, under an agreement between all parties at a conference, is to my mind overbalanced by the positive good that comes from the rehabilitation of the man and his restoration to his place as a productive member of the community.

The various forms under which the compensation act is administered make it necessary for you to take the principles and apply them as best you can in the various places. The medical profession as a whole did not in the beginning grasp the importance of the movement which was instituted. Men here and there picked out the essence of the law and endeavored to put it into effect.

Can medical competence be obtained through a free choice of physicians or can it be obtained under competent specialists' work? You heard this afternoon of the results obtained in accident work by Dr. Clark. If we had enough Dr. Clarks to go around, the problem would be solved, but we must take and we must utilize the instruments and institutions we have at hand, because there is not enough money or time to furnish immediately what we actually need. The older men do not make the effort to grasp the salient points that are necessary in the treatment and rehabilitation of the workman or in the settlement of his claim. The work of the middle group, the family doctors, so called, who meet their patients face to face, is limited, but they can do most of the ordinary accident work, if you consider that of the cases with which we have to deal the trivial form the greater percentage. There should be some direct method by which the general man, who is a good, honest, conscientious man, could be supplied with the things he needs to remedy his deficiency. In other words, there should be trained consultants available, under some form of the administration, and there should be institutions for diagnosis and for checking up results. Those are essential with that type of man and perhaps with all men.

Shall we duplicate hospitals by having the insurance company or employers of labor again taxed for other institutions? As has been pointed out by Dr. Codman, there is already in Massachusetts $200,000,000 invested in plants for the purpose of cure. In addition to this investment there are thirty-odd millions a year appropriated or given for the treatment of the sick. Is that two hundred millions properly handled? Is that thirty or thirty-six millions properly expended? Who knows? And is there any way to check it up before we duplicate these institutions and spend another twenty or thirty millions in trying to arrive at perfection?

Again, this leads to the interesting question, Should charitable funds be used for industrial workers who carry insurance supposed to pay for medical treatment and care?

The small hospital, of course, has lack of equipment. It has a narrow-minded staff, as a rule. They don't let anybody in and they resist anybody with an idea.

We had a case in the accident board in which a man had been treated in a hospital and in general the diagnosis made was that he had an operative condition in connection with a Charcot joint. I sent an impartial examiner to Fall River to see the man, and our impartial examiner said that the man could be relieved by a brace of a simple character applied to the leg, and that it was not a "Charcot." The impartial examiner was called upon to make good, and he made a brace and the man was largely relieved of his symptoms and got about on his feet; but the day after the hearing in which that was determined the social-service worker of that hospital went to the man and

said that he must come in for an operation or he could not come to the hospital at all for any purpose, and that was a hospital that was supplied by the insurance company. Here was a case in which competent medical authority decided he could be cured, the board said he could be cured, and the hospital said, "You be operated on or you don't get any treatment of any kind."

Small hospitals and general hospitals also have a disadvantage in that the men who have been treated by private practitioners who are obliged to go into the hospital are given not only the "once over," but the once, twice, and three times over. Whatever has been done for them, to the mind of the interne, has been wrong, and between what the man was told by his attending physician and what he is told by what is known as the "pup" in the hospital, his mind is somewhat upset.

Shall we permit or have we got to permit that, and for how long? Injured workmen do fall down between the general practitioner and the hospital which will not give us adequate treatment.

Then there are a few large hospitals, and in this State they are good. They will be better and will do better work as time goes on, when the workman is taken into their confidence more and explanations made to him of the whys and wherefores of the treatment, and when he is urged to go back to work he will feel that he is not being urged to go back to work from a selfish standpoint without regard to his own physical welfare. Dr. Clark has suggested that men go back to work, but under medical supervision; that a man should be provided to whom the injured man may turn with his trials and tribulations, who will explain to him the meaning of the things that may happen to him after he returns, display a little human interest; and if the company hospitals do that, as they do in Worcester and in Lynn and as they do in some measure in Boston, the old feeling that the employer is an enemy of the workman will disappear and he will cooperate.

A study of hospital results showed that hospitals are distinctly undermanned in practically every instance. In one of the largest hospitals in the Commonwealth, through the action of the board by pressure but without law, that hospital reduced the number of beds to each visiting surgeon from 92 to 50; and 50 beds to a man giving part time is altogether too many, in my opinion, even to-day. The people who know most about hospitals have very little to say about them. The person who should know most about hospital needs and the efficiency of the hospital is the doctor, and the doctor is seldom one of the trustees, and, if he is one, he is very often more concerned with other things than hospital efficiency.

In the program to-day you were given a visit to the Massachusetts General Hospital, one of our largest and oldest institutions. You

saw many things there. You saw a great plant. There is little in that famous Zander room, so impressive to you and me, which can not be duplicated for small cost. The principle involved in every one of those motions can be made operative with a discarded bicycle, an old ladder, a few strips of plaster, a wheel tied onto the wall, an old rocking horse, etc., if you have somebody to put brains into it. The finest institution is not a substitute for medical competence, and you people who come from places where it is difficult to get these expensive equipments need not be discouraged, because these can be duplicated at very small cost—almost no cost. The blacksmith shop, which you seldom think of in connection with a hospital, is a rare thing in a hospital, and most doctors who prescribe braces and mechanical things seldom take the trouble to go into the blacksmith shop. Very often they do not know if these appliances are properly made, but kick if a brace is inefficient. You further saw the place where the orthopedic men go into the blacksmith shop brace-making department and learn how to fit braces.

The "low-back" question is one which everybody has difficulty with, and the question arose this afternoon about a heart case. The question often arises about a back case, and sometimes it is difficult to decide whether a condition is an accident or an injury. Massachusetts has a personal-injury law, and under that law personal injury means any injury which arises out of the employment. The law has been construed liberally, and an old back, especially where it has arthritis, or old-fashioned rheumatism, that back when it is strained—and it may be strained by a very trivial happening—is an extremely difficult thing to cure unless adequate medical attention is given; and most of these cases, in my experience, except with some people from warm climates, during cold months, can be cured, at a very much less cost than the cost of a hearing before the accident board, by braces and supportive measure, bearing in mind the patient's food, regime, method of living—and here must be taught the need as to the kinds of food and the elimination of food, in addition to local measures. The time may come that in industrial centers hospitals will be provided for technical industrial cases. I do not believe that that is necessary to-day. I believe that the thing that is more necessary, as indicated this afternoon, and which I indicated last year at Columbus, is that it would be a time and money saving thing if a man with a low compensation rate, with a family depending upon him, should be taken out and put on an industrial farm and allowed to work out his troubles to a greater degree of comfort, rather than to have the insurance company pay him money indefinitely while he is surrounded by conditions that obtain in certain parts of our great cities.

The next thing that I have in mind on the question of hospital efficiency is the rehabilitation of workmen, which has taken on a new significance. If we had a proper system in this country of workmen's compensation administration in all the States, there would not now be the feverish effort to provide reconstruction hospitals for the wounded that are to come. Dr. Patterson this afternoon said that we had just as many wounded every day in the United States as will probably be in Europe, and we have no adequate centralized system of taking care of these men. The Massachusetts Legislature authorized investigation as to how to rehabilitate the injured workmen, and this investigation was turned over to the State board of education. They reported a bill to the legislature calling for $15,000 for social service workers, but no doctor and no nurse. I think that speaks for itself.

I was in California last week, and I called on Mr. Pillsbury, the chairman of the California commission, and he told me that in California they found there were hospitals and hospitals, and at the last legislature he indicated a few of his ideas along this line, working for a change in the law. "There have been hospitals that were hospitals in name only, but in fact were mere bunk houses, rough and unsanitary and inconvenient, and with a medical staff that consisted either of some youth who had just got his 'shingle' or some old, broken-down practitioner who had not gotten anywhere. With the hope of putting an end to this condition, the legislature, in section 10 of the new act, gave the commission power to inspect and determine the adequacy of hospitals and hospital facilities supplied by employers or by mutual associations of employees for the treatment of injuries coming within the provisions of the act. Every hospital supplied by employers or mutual associations of employees must make reports from time to time to the commission, on demand, giving account of their receipts and disbursements and services rendered to or for employees, and if in the judgment of the commission the services or equipment of any such hospital is inadequate to meet the reasonable requirements of medical treatment contemplated by the act the commission may, after notice and an opportunity to be heard, declare such facilities to be inadequate, and thereafter injured employees of such employer may procure treatment elsewhere, and the reasonable cost thereof shall be a charge against such employer; but if, after finding by the commission of a condition of inadequacy, the institution shall be put in adequate condition, with an adequate medical staff, the former finding may be modified or rescinded and the hospital be reinstated in good standing.

"It is worthy of noting that no part of any contribution paid by the employees or deducted from their wages for the maintenance of

such hospital facilities shall be devoted to the payment of any portion of the cost of providing compensation prescribed by the act. It will be lawful to assess employees for sick benefits, but the employer must himself contribute enough to the fund, at least, to pay for the care of all those who are injured in his service."

That is the law of California. That ought to be the law in every State, and if, as Dr. Brickley indicated in regard to caisson workers, we struck before the effect, everywhere the number and causes of accidents would be reduced.

I want to say just one word before I point out a few concrete cases. I think we should not encourage the establishment of reconstruction hospitals except in connection with some institution already organized. We have poor hospitals enough. We have undermanned hospitals enough. We have hospitals with inadequate facilities for treatment. The money that is expended for war work, if expended judiciously, and if the ground has been properly broken by the accident boards, can be expended to greater advantage than now and be along the line of perfecting the institutions we already have by providing them with proper equipment for conditions under war or peace. We have power plants, administrative buildings, wards, out-patient departments. Have you an orthopedic department in your hospital? Have you a blacksmith shop? Isn't it cheaper to pay for the establishment of an orthopedic department and a blacksmith shop than it is to go out and build a new building with underground connections?

The freedom of choice should not take in all the paths that were indicated to-day by Dr. Patterson. It should indicate only the path of righteousness, and accident work must be carried out by men who have something else in mind than what is in it financially. The men in Massachusetts appreciate that they owe a duty greater than the money. They have accepted reductions in fees and the hospitals have contributed their services at less than cost to the end that the whole community might benefit, as the lesson of medical efficiency that can be realized under the act, with the opportunity to measure the time that it takes to cure, will have a determining influence upon any form of social and health legislation that is to come, and until the compensation law is properly oriented, until the hospital units are properly systematized and organized, it is folly to think of the duplication of effort and utilization of millions of dollars more in health insurance without standardization. We have the way now, we have the machinery, and we know what ought to be done. The advocates of health insurance, which is bound to come in time and ought to come in time, at this stage should work for standardizing of hospitals, the measuring of their output, not in the cost per day of milk, vegetables, and dressings, but by how many days it takes to put a man back to work. [Dr. Donoghue then showed some slides.]

THE VALUE OF DIAGNOSIS IN BACK LESIONS.

BY JAMES WARREN SEVER, M. D., JUNIOR ASSISTANT SURGEON, CHILDREN'S HOSPITAL, BOSTON; CONSULTING ORTHOPEDIC SURGEON, CAMBRIDGE HOSPITAL; ORTHOPEDIC SURGEON, WALTHAM HOSPITAL.

The title of my paper is a bit misleading and should read "The necessity of a correct diagnosis in back lesions." There is no question in anyone's mind as to the necessity or value of a diagnosis in any case, but it is essential that such a diagnosis be as correct as possible, not only to enable the medical man to treat it properly but also to furnish the compensation board and insurance company with correct information on which to base their findings.

For several years now it has been my good fortune, as an impartial examiner for the Massachusetts Industrial Accident Board, to have seen many cases with stiff and painful backs. These have originally been sent to me for examination and diagnosis in the course of some dispute as regards the individual's disability, which of course involves his being entitled to compensation.

It has been a great surprise to me to find that a large number of these cases showed fractures of one or more vertebræ—so-called crush fractures—which had wholly escaped notice, and therefore treatment. Many of these individuals had gone for periods of time varying from several weeks to even a year with no diagnosis and no treatment. It has seemed to me that to bring such a condition to your attention was well worth while, even if it does reflect somewhat on hospitals and the medical profession. First and last, it all comes down to an adequate checking up of the patient's complaint, by careful methods of examination, including the X ray, as well as careful consideration of the history of the accident.

Practically all of these persistent back disabilities of the severer type are the result of falls—from 10 to 60 feet—and careful questioning will bring out certain mechanical features in regard to the position of the patient's body at the time of impact which may go a long way toward making a correct diagnosis.

Simple back strains from lifting and bending are generally of short duration and do not lead to dispute, for the periods of disability are short. This paper, then, will be largely a discussion of the question of diagnosis in cases of compression fracture of the

spine, and, therefore, before going further it will be necessary to go into detail somewhat as to what constitutes a compression fracture, its method of production, the nature of the accident, diagnosis, the subsequent course, and the question of long-continued or permanent disability.

DEFINITION OF COMPRESSION FRACTURE.

A compression fracture of a vertebra is one where the body of the vertebra is crushed or flattened evenly, or more on one side than the other, depending on the direction of the application of the crushing force. As a rule it is more compressed or crushed in the anterior portion than in the posterior.

METHODS OF PRODUCTION.

Compression fractures of the vertebræ generally follow severe violence, applied through the long axis of the spine, or while the spine is forcibly flexed. Falls on the buttocks, shoulders, or back, or landing on the feet from a height, combined with forcible flexion of the spine, are the most frequent causes.

NATURE OF ACCIDENT.

In an analysis of the cases which have been examined by me the following accidents caused compression fractures, either in one or more vertebræ in the same individual:

TABLE I.

(1) Fell 23 feet, landed on feet; second and third lumbar crushed, kyphos.
(2) Caught under electric car, back forcibly flexed; fifth lumbar crushed.
(3) Fell 50 feet from a tree, landed on back; second lumbar crushed, kyphos, first to third lumbar.
(4) Jumped from burning building; fracture of fourth lumbar.
(5) Thrown from motor, landed on buttocks; fracture of fourth and fifth lumbars.
(6) Struck on back by planks falling off roof; fracture of first and second lumbars, kyphos.
(7) Fell 12 feet, landed on back; fracture of first lumbar.
(8) Fell 45 feet onto concrete floor; fracture of twelfth dorsal, first and fourth lumbars.
(9) Walked out of second-story window in sleep, fell 15 feet; fracture of twelfth dorsal, first and second lumbars, kyphos, twelfth dorsal, first lumbar.
(10) Fell 30 feet, landed on buttocks; fracture of first lumbar.
(11) Ran over by heavy truck; fracture of transverse processes of fourth lumbar vertebra.
(12) Fell 17 feet, landed on back; fracture of first lumbar, kyphos.
(13) Ran into second-hand Ford; fracture of fourth lumbar.

(14) Fell 14 feet down elevator well, landed on buttocks; fracture of second and third lumbars, kyphos.
(15) Fell with staging 50 feet; fracture of ninth, eleventh, and twelfth dorsal and first lumbar, kyphos.
(16) Fell with staging 40 feet; fracture of twelfth dorsal, first lumbar.
(17) Fell 27 feet, landed on back; fracture of first lumbar, kyphos, first lumbar.
(18) Fell with staging 40 feet, landed on feet; fracture of twelfth dorsal, first and second lumbars, kyphos, twelfth dorsal.
(19) Fell 15 feet; fracture of first and second lumbars.
(20) Doubled up under wagon; fracture of first lumbar, kyphos.
(21) Fell 12 feet; fracture of first and second lumbars, kyphos.
(22) Fell 10 feet through hole in stairway; fracture of first lumbar, kyphos.
(23) Bag of flour fell on back; fracture of first lumbar, kyphos.

Here is concrete evidence that falls will and do cause fractures of the spine, without in many cases other symptoms than that of a lame and stiff back.

It will be noted that almost twice as many fractures took place at the level of the first lumbar vertebra than at any other location. This is probably due to the fact that the center of greatest mobility of the spine is at that point, and also that it is an area not very well guarded, except by muscles, which do not offer the protection that is offered to the dorsal vertebræ by the ribs. (See Table II.)

TABLE II.

Location of fracture.	Individual vertebræ affected.
Ninth dorsal	1
Tenth dorsal	2
Eleventh dorsal	1
Twelfth dorsal	6
First lumbar	14
Second lumbar	8
Third lumbar	2
Fourth lumbar	4
Fifth lumbar	3
	41

That the fractures are not limited to one vertebra in any single case is evident from the fact that only 11 cases out of 23 showed that 1 vertebra alone was injured, 7 showed that 2 vertebræ were fractured, 3 had 3 vertebræ fractured, and 2 had 4 vertebral bodies fractured.

Certain cases showed a deformity of the back as a result of the bony destruction, known as a kyphos—a backward bowing at the point of fracture, due to a collapse of the vertebral body. This knuckle or kyphos is not a constant factor, but may result from the fracture of one or more bodies. It is a diagnostic point to bear in mind, and means, of course, only one thing, namely, destruction or distortion of the vertebral body. About 50 per cent of the cases showed this deformity, coming apparently in those cases where the

fracture was located near the dorso-lumbar junction. The kyphos may not make its appearance at once, following an injury, but may appear and increase somewhat during the convalescent period when the individual is up and about, especially when without proper back support.

SYMPTOMS.

The interesting thing about these cases, and probably the reason why so many of them are not diagnosed at first, is that they complain only of a stiff and painful back, generally with tenderness over the site of the fracture. Very few of the cases have any symptoms due to nerve pressure, and manifested as loss of sensation, or paralysis of the legs, or incontinence of the bladder and rectum, which are always seen in cases of complete fracture of the back, where the spinal cord is crushed. This lack of nerve involvement is probably due to the fact that the spinal cord ends at about the level of the first lumbar vertebra, the point of greatest frquency of fracture, and so escapes injury. Œdema and hemorrhage about the cord may lead to temporary paralysis from pressure, but the symptoms from this condition usually soon clear up.

Practically all cases complain of a stiff, lame, and painful back. They can not bend freely, and are more limited in side bending than in forward bending. Without treatment—that is, support to the spine—they go along complaining of the same conditions without relief until the fracture is discovered. Their disability at first is generally complete, but as time goes on they are able to be up and about, but not able to do heavy work.

TABLE III.

Date of accident.	Diagnosis made by X ray after—	Treatment before diagnosis.	Treatment after diagnosis.
July, 1910	5 months	None	None.
Oct. 7, 1914	6 months	Back brace	Back brace.
June 24, 1914	1 year	Belt for last 4 months	Do.
Feb. 18, 1915	4 months	None	Jacket.
Mar. 28, 1915	do	do	Back brace.
Apr. 2, 1915	6 months	do	Do.
Apr. 28, 1915	3 months	do	Brace.
Sept. 27, 1915	At once	do	Bed.
July 31, 1916	4 months	do	Jacket and brace.
Dec. 26, 1916	3 weeks	do	Corset.
Feb. 14, 1914	1 month	do	Belt.
Aug. 16, 1915	At once	do	Jacket.
Dec. 27, 1915	2 months	Bed	Brace.
Nov. 26, 1915	4 months	None	(?)
April 30, 1916	3 months	do	Brace.
July 31, 1914	At once	do	Frame and jacket.
Oct. 31, 1912	3 months	do	Brace.
Oct. 19, 1915	do	do	Jacket.
Sept. 24, 1915	4 months	do	(?)
Nov. 6, 1916	3 months	do	(?)
Average	4 months		

It might be of interest to you to learn that an analysis of 17 of the cases showed that no diagnosis was made of the fracture at an average of four months from date of the accident. Several cases went five and six months, and one a year, before a diagnosis was made. This is not because the diagnosis is at all difficult to make, but simply because reasonable and due care is not used in the examination of the patient. It is certainly striking and makes one think that the seeker after compensation is not always in the wrong, or that his symptoms are not always so subjective that they can not be pinned down to some adequate anatomical defect. (See Table III.)

In regard to some of the graver symptoms accompanying these fractures, certain of the cases showed definite signs of injury to the spinal cord, manifested by loss of sensation in one or both legs, not complete, and more or less paralysis, either early or late. Some of the cases which showed early loss of muscular power recovered it wholly, others have suffered permanent damage to the cord from pressure of the injured vertebræ, and will always have some paralysis of the legs.

Two of the worst cases, which showed paralysis from the first, are rather interesting. One was treated for pleurisy with effusion, or rather told that he had it but was not treated, and no examination of his back was made, and the other was treated in a hospital for seven weeks for hysteria, meanwhile suffering from urinary retention and paralysis of both legs, and no examination was made of her back until the end of that time, when an X ray was taken, which she was told showed nothing.

The treatment, of course, in all these cases should be adequate fixation of the spine, in a plaster jacket at first and later by means of a back brace. The whole period of treatment will probably cover a period of several years. The question of an operation on the spine designed to furnish support to the crushed vertebræ has been considered, and I believe has been done in some cases. The usual type of operation is that which uses a bone splint from the tibia inserted into the spinous processes. This procedure may shorten the period of convalescence somewhat, and may lead eventually to a somewhat stronger back in certain cases. Enough data has not been collected, however, to enable me to state definitely whether this operation should be used as a routine in all cases. As the callus forms about the fracture the spine loses its resilience and becomes stiff, especially to side bending, but the weakness and some soreness persist, especially after exertion, such as walking, bending, or lifting. It is obvious that these individuals are totally disabled from further heavy work. There may be exceptions to this statement, but it is a good rule to go by, that once a laborer has had a

compression fracture of the spine, he had better begin to look for some other kind of a job. The sooner he gets light work the better it is for him and for the insurance company, and here I might add that the sooner the insurance company takes an intelligent interest in the treatment of these industrial accidents, by seeing that first of all a diagnosis is made and then proper and competent after treatment is carried out, with as frequent medical attention as is necessary the better it will be for them and the injured parties. This may seem to be an addition to the already heavy medical expense they all claim they are under, but such a course would soon pay for itself and become a profit, if put in the proper hands, as eventually it would show a marked reduction in compensation allowances. Men would get back to work much sooner and would not drift about, as many do now, with little or no treatment, and continued inability to work because of their lack of treatment.

CASE HISTORIES.

The first 11 cases in this series have been reported in detail in two previous publications by the author[1] and may be consulted there. The rest of the cases will be reported in detail here in the order as shown in Table I.

J—— S—— (Case 12).

Male. Fell 17 feet when a ladder broke, July 31, 1916. Seen November 17, 1916. No leg paralysis; bladder and rectum not involved. For first two weeks after injury was treated by having back strapped. Then had high frequency applied for "neuritis" for several weeks without benefit. No further treatment until November, 1916, when back was X rayed and a plaster jacket applied which was worn three weeks. He complains of pain in the back, especially on stooping, and is unable to lift anything. Was in bed at first for three weeks. Following removal of jacket wore a narrow canvas belt around hips. Examination of back made June 2, 1917, shows that he had a small kyphos in the region of the twelfth dorsal and first lumbar vertebræ. He bends forward pretty well, but his back is stiff in bending in other directions. His nervous reflexes are normal, and he has no loss of sensation over any skin areas. The X ray shows a compression fracture of the body of the first lumbar vertebra. This man was later fitted with a proper spring back brace and was seen again in August, 1917, when he had improved sufficiently to do light work. His back still got tired and the kyphos still existed. His disability of course is permanent.

[1] Surgery, Gynecology, and Obstetrics, March, 1916; Boston Medical and Surgical Journal, Vol. CLXXIV, No. 17, April 27, 1916.

H—— H—— (Case 13).

Male; age 47. Struck in back by the mud guard of a motor car and thrown across a garage. He was able to go home and later had his back strapped, which gave him some relief. Has pain in the back all the time, low down, but it does not go into legs. Never had any paralysis or loss of sensation. The pain does not keep him awake, and he can lie on his back better than he can on his side. Comfortable when sitting down but goes up and down stairs only with difficulty. Been unable to work since accident three weeks ago.

Examination shows that his back is tender and sensitive in the middle line low down. He is stiff in bending in any direction. The sensation is normal except that there is some hyperæsthesia over the buttocks and upper sacral region. The knee jerks are normal. An X ray showed that there had been a fracture of the left-hand upper corner of the fifth lumbar vertebra, and a partial crush of the right side of the body of the fourth lumbar. There was also a slight lateral displacement of the whole spine above the fifth lumbar.

This injury was the result of a direct violence, and was completely disabling as far as his ability to work went. A heavy canvas corset was made for him, which he has been wearing now for about 7 months with great relief. He is able to do most of his usual work except heavy lifting. He has to wear the corset night and day, and still has a stiff, and occasionally painful, back.

H—— M—— (Case 14).

Male; age 44. Accident February 14, 1914. Examined May 5, 1917. Fell down an elevator well a distance of about 15 feet and landed sitting down. He was taken to a hospital, where he stayed a few hours and had no treatment, going home later on the electric cars. He was in bed for five weeks, during which period his back was strapped. He never has had any paralysis or loss of sensation. For the last year or so he has worn a canvas belt, which makes him more comfortable. He complains of pain and weakness in the back, and thinks that the condition is not better than after the accident. There are some days when he is free from pain, but when he has it it is localized in the small of the back. He is able to do light farm work, but can not lift or saw wood, and has been unable to go back to his previous occupation as a meat cutter. Examination shows that he is a well-developed and nourished man, who walks normally, and has a rather short, broad back. There is a small kyphos in the lumbar region about the level of the second lumbar vertebra. His back is not stiff, and he can bend fairly well in all directions. An

X ray shows that he has had a crush fracture of the second and third lumbar vertebral bodies, the second being crushed more than the third.

Here is an individual who has gone about for three and a half years with no more support than a light canvas belt partially to hold a fracture of two vertebral bodies. He has done pretty well in spite of this, but should have had a jacket or back brace. With better support he would even now be able to do more work. He is, of course, permanently disabled.

J—— B—— W—— (Case 15).

Male; age 44. Accident August 16, 1915. Examination March 14, 1916. This man fell with a staging a distance of about 50 feet. He was made unconscious and does not know how he struck. He was in a hospital for over three weeks, where he had a plaster jacket applied, which he wore only a week. Since then he has worn nothing to support his back except a narrow canvas belt. He was in another hospital, a large metropolitan one, for two weeks, some time later, where he had no treatment, but had a number of X rays taken for purposes of diagnosis. The first week following the accident he had to be catheterized, but since then has had good control over bladder. He complains of weakness in both legs, and both legs feel as if they were asleep. He can not stand well without support, and has a double toe drop. Examination shows that he walks with rather an ataxic gait. Both feet show no muscle power except very slight in toe flexors and moderate in gastrocnemius. The other leg muscles are of good strength. Double ankle clonus and knee jerks much exaggerated. No Babinski. Sensation to pin prick somewhat diminished over lower third of both legs. The back shows a kyphos in the region of the ninth and tenth dorsal vertebræ, not tender. The back is stiff and he can not bend easily on account of loss of control of the legs. An X ray shows that the ninth dorsal vertebra is crushed rather evenly and symmetrically. The tenth dorsal is apparently uninjured, the eleventh and twelfth dorsal and first lumbar vertebræ are crushed, especially the twelfth dorsal, which is markedly flattened and displaced laterally. In the low lumbar region the intervertebral space between the fourth lumbar and fifth lumbar is partially obliterated but no fracture can be made out. This man obviously has a permanent disability. The cord injury is slight, considering the number of vertebræ injured. The lack of treatment is not unusual, and he would be better with proper support. He will never be able to do much of anything in the way of work, except what can be done sitting down.

C—— B—— (Case 16).

Male; age 38. Accident December 27, 1915. Examined March 1, 1916. This man fell about 40 feet when a staging he was on collapsed. He was made unconscious and was taken to a near-by hospital. He had no trouble with his bladder or rectum, and could move his legs from the first, but stated that it hurt him to do so. He stated that he landed on his feet when he fell and became unconscious. In the hospital he had some X rays taken of his back, which he was told was uninjured and that the X rays showed nothing abnormal. He stayed in bed in the hospital for about 30 days and then went home. He had no treatment for his back. Since going home he has been up and about, although he has had to use a cane, on account of pain and swelling in his legs. He has not been able to go back to his work as a plasterer. Examination showed that his back was very stiff and tender. There was a slight kyphos in the dorso-lumbar region. The knee jerks were increased and he had a slight ankle clonus on the right and one more marked on the left. The sensation was normal. An X ray of the spine showed a crush fracture of the twelfth dorsal and first lumbar vertebræ, with a question of injury to the second lumbar. At this time he was wearing no support for the back and had never had any. This man was seen again a year later. He was still unable to work, on account of pain in the back. His legs are not strong and he has to walk with a cane, but can get about better than he could a year ago. He is now wearing a corset which he got through some magazine advertisement, in spite of the fact that he is also receiving back exercises at a large orthopedic clinic. His knee jerks are now normal and the ankle clonus has disappeared.

J—— P—— (Case 17).

Male; age 28. Accident November 26, 1915. Examination March 29, 1916. This man was working on a pile driver when he fell 27 feet and injured his back. His fall was broken somewhat by a cross bar which struck him across the back. He also broke his left leg at the ankle. He was taken to a hospital and a cast was put on the leg, but he had no examination or treatment for his back. Since leaving the hospital he has been at home unable to work on account of pain in the back and disability in the ankle. Examination of the back shows that it is very flexible. There is a small kyphos on standing at about the eleventh dorsal vertebra. His nervous reflexes are normal. An X ray showed a fracture of lamina of the first lumbar vertebra with displacement downward of the distal ends of the lamina and its attached spinous process. This man's back was not his principal difficulty but it is interesting that he never has had any treatment for it and has been able to get about without much discomfort.

F—— G—— (Case 18).

Male; aged 45. Accident, April 30, 1916. Examination February 10, 1917. This man fell about 40 feet when a scaffolding gave way. He landed on his feet, and was then bent forward violently, his knees coming in forcible contact with his ribs. He was laid up in bed at home for six weeks, not able to get up because of pain in the back. He has never had any trouble with his bowels or difficulty in passing his water. Has never had any loss of power in his legs or loss of sensation. Some time in July, 1916, he went to the Massachusetts General Hospital, where he was fitted with a back brace, which he has worn more or less ever since. This has given him some comfort and relief from pain. For the last four months he has been having massage and manipulation for his back by his own physician. He stated that he was getting better slowly, and was able to do chores around the house, but was not able to go back to his usual work as a laborer, on account of the persistent pain and weakness in the back. Examination showed that his back was flexible to forward bending without pain, but that side bending was stiff and much restricted and caused pain. There was a small kyphos in the region of the second lumbar vertebra. The legs and nervous reflexes were normal. The X rays showed a severe compression fracture of the first lumbar vertebra, possibly involving also the last dorsal and the second lumbar. There was considerable callus formation about the site of the fracture, which is not unusual and has been noted in some of the cases previously reported. This man was getting fixation by means of a brace, which was what he needed, part of the time, and then he was getting forcible manipulation every day, which was what he did not need. Rest and fixation do more good than active treatment and are sure to relieve pain.

T—— F—— (Case 19).

Aged 40. Accident, July 31, 1914 (longshoreman). Examination January 28, 1916. This man fell 15 feet and landed on his left hand and hip. He sustained a fractured wrist and injured his back. He was taken to a hospital, where he was kept on a Bradford frame for about five weeks and then wore a plaster cast for six weeks, since when he has worn a corset. He stated that at first, following the accident, he could not move his legs, and this condition continued for about four weeks. Whether this was due to actual paralysis or not I do not know. As he had no loss of sensation and no loss of control of the bladder or rectum, I question the existence of actual nerve injury. He has been able to do no work since the accident, and felt that he was not getting any better, or his back any stronger. He stated that the back gets lame and stiff,

and that he always gets a backache while sitting down. He is more comfortable lying down flat on his back.

Examination shows that he has a fairly flexible back. The movements were rather guarded. There was no kyphos. His reflexes were normal. An X ray showed that he had sustained a crush fracture of the first and second lumbar vertebræ. The right side of the first lumbar was broken, and the second lumbar was crushed down on itself evenly. There was considerable new bone deposited about the second vertebral bodies, especially on the right side. This man has, of course, a permanent disability, which will prevent him from ever doing his usual work as a longshoreman. An interesting thing about the case from the point of view of diagnosis was that previous X rays taken since he left the hospital were interpreted as showing no bone injury.

D—— McC—— (Case 20).

Age, 51. Teamster. Accident, October 31, 1912. Examination, May, 1916. This man had the true mechanical factors in his accident to produce the typical flexion fracture. He was caught under the front of an empty team, and in attempting to stop it put his feet against the front axle and pushed. The team was heavy and doubled him up as he lay on the ground on his back. He was taken to a hospital and kept on a Bradford frame for three weeks. X rays taken at that time he stated showed no abnormality. He was discharged from the hospital at his own request November 29, 1912. He was then treated by his own physician by sticking-plaster strapping. Later, early in 1913, he had a back brace applied, which he has worn since and which he stated he could not do without. He has never had any signs or symptoms of cord pressure. He complained of pain and soreness in the back and consequent inability to work.

Examination showed that while standing he was somewhat tender in the dorso-lumbar region, and that there was a slight kyphos which could be felt at the dorso-lumbar junction. He could bend forward freely, but could not bend very well to the side. An X-ray examination showed a fracture of the first lumbar vertebra with an obliteration of the space between the first lumbar and twelfth dorsal, with some callus formation. This man will be unable to do his usual work as a teamster, and should get some sort of light work to do instead of drifting about doing nothing, which is demoralizing physically and morally.

D—— C—— (Case 21).

Male; age, 39. Plasterer. Accident, October 15, 1915. Examination, October 30, 1916. This man fell a distance of 12 feet onto some stones. He does not know how he landed. He was taken to a hospital, where he stayed nine days, but had no treatment. An X ray of his

back taken there showed nothing abnormal he was told. After leaving the first hospital he went to another, where another X ray was taken and a plaster cast applied to his back. This he wore about 10 months. This was followed by a back brace which he is still wearing. He has been unable to do any work since the accident on account of pain in the back and some weakness. He is unable to get about without some sort of back support, such as the back brace gives him.

Examination shows that the back is rather stiff in bending. There is a moderate kyphos in the region of the dorso-lumbar junction, involving apparently one or two vertebræ. He stands with rather a rounded back, protuberant abdomen, and flat chest. His sensation and reflexes are normal and apparently always have been. Another case with total disability for heavy work. An X ray showed that he had sustained a compression fracture of the first and second lumbar vertebrae. The two bodies are jammed together, with a consequent obliteration of the intervertebral space.

W—— C—— (Case 22).

Male; age 42. Accident, September 24, 1915. Examination, February 26, 1916. This man stepped through an incompleted stairway in the dark and fell about 10 feet. He landed on his back. He was taken to a large hospital where he stayed four hours. While there his back was X rayed and he was told that there was nothing the matter. His back was strapped and he went home. He was laid up at home, but not in bed, for seven weeks, and did not go back to work for two reasons, i. e., (1) that his back hurt him and (2) that he could not get anything to do. He complains of pain in the back now, localized low down in the region of the sacrum. This pain is better some days than on others. He has some pain and discomfort when getting in and out of a chair. Examination showed that he could bend his back well forwards and sideways. There was a small projection backward of the spine in the region of the dorso-lumbar region, which was tender. X rays of the spine showed that there was a flattening and crushing of the body of the first lumbar vertebra, with some callus laid down between it and the twelfth dorsal vertebra above and the second lumbar below. There was an obliteration of the intervertebral space between the first and second lumbar vertebræ. This man had a not very severe fall, few symptoms following, except backache, and expresses a willingness to go to work, yet he has had a fracture of one of his vertebral bodies. He has also been without any real treatment since the accident. I believe that many of the unexplained backaches following falls and injuries of various sorts, which heretofore have been called "railway

spines," "neurasthenic spines," and "traumatic spines" may have well been fractures of the vertebral bodies of this type.

S—— A—— (Case 23).

Male; age 29. Accident, November 6, 1916. Examination, July 30, 1917. This man stated that a bag of flour fell from a height onto his back as he was stooping over. After the accident he was taken to a hospital, where his back was strapped, and he was kept in bed for 17 days, at the end of which time a plaster jacket was applied. This he wore for 32 days. No X rays were taken there, but he had some taken in Boston in February, 1917, which were reported as negative. He has been without support to his back since the plaster cast was removed. He complains of considerable pain and weakness in the back, more marked when walking around and when trying to lift anything than when sitting or lying down.

Examination shows that his back is flexible to all motions, but that he complained of pain in side bending. There was a small kyphos at the first lumbar vertebra. There was no evidence of any nerve involvement. An X ray showed that he had sustained a crush fracture of the first lumbar vertebra.

This man has a permanent disability which will prevent him from doing any heavy work in the future. He needs a support of some kind for his back, which will give him more comfort than he now enjoys.

Now what are the conclusions arrived at from a study of a group of cases like these? In my own mind they are as follows, namely, that first of all the necessity and value of a diagnosis is demonstrated; and second that few cases get a careful and adequate examination.

(1) Compression fracture of one or more vertebral bodies are not uncommon following falls on the feet or back or following the dropping of weight directly onto the flexed spine.

(2) The fracture is generally the result of forcible flexion of the spine.

(3) There usually is no nerve involvement or cord pressure.

(4) The injury results in a weak, stiff, and painful back.

(5) The examination of any back case, especially following an injury, is always incomplete without a good X ray.

(6) There is usually a kyphos present, not always appearing at once.

(7) The disability for heavy work is usually permanent.

(8) That in so far as the majority of cases is concerned, they go unrecognized as fractures of the vertebral bodies because of inade-

quate examination and consequently continue to suffer pain and disability, which is real and not feigned.

(9) No individual who complains of pain, soreness, or stiffness in the back following an injury or fall should go without careful examination of the back.

To quote from one of my previous papers in regard to the prognosis:[1]

> The bony repair is generally good in these lumbar cases, and although there may be a persistent stiffness, the supporting function of the spine is generally good, even in spite of a kyphos, which may tend to increase somewhat. Permanent disability, so far as doing heavy laborious work goes, generally follows such an injury, and as a rule a light back brace is needed for some time or always to give comfort and stability. The prognosis as far as life is concerned is generally excellent, provided no cord injury has occurred.

[1] Surgery, Gynecology, and Obstetrics, March, 1916.

RECONSTRUCTION AND THE HOSPITAL.

BY F. J. COTTON, M. D.

By reconstruction we mean that branch of surgery which makes possible the return of the injured workman to his work, that concerns itself with the salvage of the wrecks, the making whole of potential cripples.

Only of late have we come to realize what can and should be done in this direction; how defective our surgery has been in this regard; how largely it has concerned itself with the setting of fractures and the healing of wounds, to the neglect of any effective interest in restoring normal function.

Some of us have long known this and have preached, year in and year out, that the hospitals should cease to let patients become park-bench loafers and try harder to get them back as useful members of the community.

Social service efforts have done something to emphasize the situation, but the social service can not do the work which belongs to the surgeon, the orthopedist, the neurologist, and the masseuse. Codman's efficiency crusade has opened our eyes a bit also. The excellent plan carried out by our accident board, of impartial examinations of cases that "hang fire," the plan on which Dr. Donoghue has placed such stress, has helped still more. At last I think a good many people begin to know where we stand in this matter.

In this State we have had a workmen's compensation act for five years. Five years ago I thought I saw a very promising field for progress and could see for the first time the interest of the injured man, of the employer or insurer, and of the doctor and the hospital running parallel, with enough money assured to make things go, and everyone interested in getting the same result for this money, namely, the early and complete cure of the injured man wherever possible and his prompt return to work.

This was five years ago. Five years is long enough to show results. What have we to show—what progress made? I hate to say it, but with a considerable opportunity to observe from various angles I can not see any substantial progress, certainly next to none in the work turned out by the hospitals that are supposed to lead in medical progress. Nowhere any essential change in the handling of accidents or their after care, no provision for continuity of obser-

vation or responsibility, no serious attempt to make it possible or worth while for better men to interest and train themselves to do better work. Why is this so? Certainly not because there are not plenty of good men. Certainly not because we do not know or can not learn how to do the work. Within the last 10 years the results of fractures, for instance, in private work have vastly improved; burns can be healed in half the old schedule, and lately sepsis has become controllable to a great extent under the Carrel-Dakin technic. But this Carrel technic, for example, is not followed in any of our clinics; has hardly been tried out, at best, in any known to me.

What is wrong? Sheer lack of interest and of cooperation, I think, a lack due to various causes, impersonal rather than personal. In the first place, the splitting up of the work between various insurance companies makes effective cooperation difficult. In too many instances one finds companies who hold their agents down too close, agents who themselves can see little in the affair but the immediate dollar paid and who regard the dollar paid as a company loss pure and simple. Other agents there are who can see that compensation can be spelled reconstruction with profit all around.

The difficulty, then, is partly with the companies as units of varying quality; but even if they were all good and broad-minded the very number of the units would make cooperation difficult, and this work can only be done well, probably, on a large scale in big clinics.

The second difficulty is with the hospitals and the hospital staffs. Here we run promptly into the defects of our hospital organization. The hospitals are in this community primarily charity hospitals. The doctor is supposed to do his work partly as a charity, partly for the training and the prestige which should bring private practice. That he should be paid for his work is never thought of, or thought of with horror.

Now, so far as the proper care of industrial cases goes, a man may practice it for years without glory, may train himself very thoroughly, be compensated not at all for the training period, and so far as private practice is concerned in this line, his clients are the companies, his compensation meager, even when he gets paid at all. Moreover, even in training himself he is handicapped.

The hospitals never have cared for this sort of work particularly—stomach surgery, gynecological work, etc., are obviously more showy.

Reconstruction work calls for excellent surgery in the early stage, excellent judgment, and elaborate special care in the weeks and months that follow.

The visiting surgeon is not too deeply interested in the case, even if he operates (and usually he doesn't) himself, only to send it to the out-patient department and lose track of it.

The out-patient surgeon is apt to receive a case he didn't treat at the start, and to find himself handicapped, in a crowded clinic, by absolute lack of medical assistants with any real training along this line, by having none of the special equipment needed, and by a massage department not under his control.

For him there is neither any profit nor credit, nor is there any professional interest in doing this work under circumstances that make it almost impossible to do it well. Few men persevere.

Is it any wonder that the average able man turns his best attention to other branches less dependent on skilled assistance, showing results more immediately and more in line with what is interesting and lucrative in outside practice? This should not be so, but it is; and that is what we must understand.

Under these circumstances the injured man goes to an accident room or relief station, is seen and attended to by a young man well schooled but inexperienced, is operated on if need be by this man or a junior visiting surgeon, is transferred to a ward in the care of another man, who transfers him in time to a young out-patient surgeon, not very experienced, who gets some data, usually sketchy, and takes care of the case with a hundred others as best he can.

Is it possible under such a system to get real results? Is it strange that small town hospitals, not too well equipped, officered by surgeons of far less experience or skill in many cases—hospitals small enough to have one man see the case through—get results on the average about as good as those of our leading institutions?

What the results are our accident board knows. I am going to cite a small group of cases that have come under my attention within 10 days.

1. B——. Mediotarsal fracture luxation. Had an attempted open reduction, was allowed to fiddle along with hopeless attempts to better things by massage for nine months. Recently had to have a real operation, which should have been done at first.

2. P——; age 34. Hip fracture—intracapsular. In hospital seven weeks. Sent out as solid. Says the orderly made him help bathe himself and, as he had only sand-bag protection, thinks he damaged himself. At all events, after a year he now has a loose hip, is a cripple, and always will be, unless he may be helped by a serious operation entailing six to nine months of convalescence. This man, after long out-patient treatment with massage, went to another hospital where the condition was recognized, the proper operation proposed, then for some reason postponed. Since then nothing has been done at all.

3. F——; age 22. Had hands burned in hot rolls. Hospital treatment, cicatrization of both palms with such contracture as to make both hands useless. Nothing done or proposed until he was

examined for the board. Since then, as a result of a plastic operation, he has usable, nearly normal hands.

4. G——; age 26. Fracture of calcis from a fall. Treated merely in plaster. Nothing more than exercises done while in the hospital. Many months after was a cripple, mainly because of contact of the external malleolus with great masses of bone on the outer side of the calcis. Operation cleared this and he reported last week, now working steadily as a carpenter.

5. S——. Mangle burn, severe, of back and front of right hand. Went to a relief station and was dressed and turned loose. Two days later had severe cellulitis of hand and arm to the axilla. Had had nothing done save the outrageous old-time Carron oil treatment.

6. T——. Shoulder injury from fall—probable fracture of tuberosity of humerus. Developed a bursitis with adhesions, was operated on without result. Then was treated many months with massage. No improvement for three months—arm practically fixed at the side. An X ray by another surgeon showed massive bone formation in the short muscles at the shoulder, later removed by operation. Months were wasted in useless massage, which proper examination and X rays would have shown to be hopeless.

7. C——; man of 55. Foot crushed well back toward the ankle. Careful amputation done, leaving the heel—a perfectly respectable but utterly useless operation, leaving a stump on which in time a man could get around to the barber's but on which he couldn't work. Had to have a reamputation to get a stump to which an artificial leg could be fitted.

8. Dislocation and fracture of the astragalus—perfectly replaceable. I saw the plates. Had the astragalus removed. Cause given, the surgeon didn't want to cut tendons—a perfectly trifling procedure, if properly done. Will always be very lame.

9. Fractured ankle. Reduced by house officer—fair reduction only. Heavy man. Sent out as out-patient. Went to surgeon outside. Supporting apparatus and careful exercises have brought this man to near normal efficiency; with only the original hospital care he would have been a permanent cripple.

These cases speak for themselves—a chance collection, but I could wish them less representative than they are of the hospital standard. The blame lies not with any individual. The problem simply has not been tackled at all—we have let it drift.

These nine cases suffered in part from incompetent surgery—not, mind you, by poor surgeons but by good general surgeons without the special competency needed for this work; they suffered from being handled by house officers whose experience is necessarily limited; they suffered from lack of shop facilities for apparatus, from lack of

X rays, or, rather, failure to utilize them, but most of all they suffered from lack of responsibility, from lack of one man to see that the case was properly handled by himself or his assistants and to be responsible for results.

We are not going to get results in reconstruction so long as things are so chaotic. For a case of acute appendicitis or gallstones or a breast cancer the present system does fairly well; for the man with a delayed union in a fracture or with a bad burn, let us say, it does not work.

And yet this work can be done, and cases of this sort are being handled in all the armies of all the belligerents with marvellous success. Dr. Goldthwait is just back from England—it was hoped he could be here this evening—with wonderful stories of the English work. For instance, of 1,350 cases of this class at the Shepherds-Bush Hospital near London, 1,000 were returned to the army, 252 of them as class A men. And remember these were not the cases with slight wounds, but the discards sent home with useless limbs, men who would have been cripples without this special care.

Canada is salvaging about 70 per cent of such cases, sending them back to industry, if not to the trenches.

But such work requires careful, often radical and daring surgery; it requires unremitting after care, with special supporting apparatus, arrangements for massage and exercises and electrical treatment, sometimes the fitting of and education in the use of artificial limbs or other permanent appliances—and all this must be done or supervised by specially trained and specially competent surgeons.

This work has been classed as orthopedic; some of it is, and sometimes orthopedic methods are applied to cases scarcely to be so classed, but a very large share, perhaps most of it, belongs to what has been classed as general surgery of accidents and their results, rarely recognized as special work. Probably this work is due to merge with orthopedics. Whatever we call it, the work in civil life is almost exactly the work which has been so successfully done in this war.

How are we to secure like results in civil hospitals? Only in the same way—by concentrating; by recognizing this work as a separate problem; by understanding that a general hospital can not handle this work here any more than a regular Army base hospital can handle it in France. We must focus—we must have large institutions or departments in general institutions prepared in equipment and in personnel to do this work.

We must educate the public to rely on such departments. We must educate the employer and the insurer to see the eventual economy of doing their share in the financing of this work; must make them see that it is a waste to stop paying medical charges at the legal two-

week limit, and an economy to see to it that the later work, whether it involves only massage or apparatus or also surgical operations, is carried out and carried out as a continuous part of the treatment after the injury, not after months of futile neglect or unsuitable treatment.

Neither the problem nor its solution is new to me, but I have grown as pessimistic about its solution in practice as I was optimistic five years ago. Now I think I see light ahead. As yet the existing hospitals haven't waked up to the problem, and their losses in staff and personnel, owing to the war, have been such as to make effective work of this sort almost impossible just now.

But the Surgeon General's office has waked up and is very busy. Reconstruction hospitals are to be built at various points throughout the country and are to be run on a plan very like the English. One is to go up here on Parker Hill shortly. I'm very enthusiastic about this and feel sure that we are presently to have a special hospital to handle this work of reconstruction as it should be handled and to serve as a model professionally.

During the war the civil problem will have to wait, probably. After the war we shall have a standard; and I hope that means will be devised to continue all the special war hospitals and their professional and assistant staffs trained to this highly special work, for the avoidance of the wastage, not then of war, but of peaceful industry. It is for us to see that this is done.

[A paper on "Hospital efficiency and the end result system" was read by Dr. E. A. Codman, but is not reproduced here as no copy was received for publication.]

A REVIEW OF INDUSTRIAL ACCIDENT BOARD CASES EXAMINED AT THE PSYCHOPATHIC HOSPITAL.

BY E. E. SOUTHARD, M. D., PATHOLOGIST, MASSACHUSETTS COMMISSION ON MENTAL DISEASES, AND DIRECTOR OF THE PSYCHOPATHIC DEPARTMENT OF THE BOSTON STATE HOSPITAL, AND SIDNEY L. PRESSEY, PH. D., UNIVERSITY OF INDIANA.

I am the more glad to present a review of industrial accident board cases examined at the Psychopathic Hospital because of the breadth and liberality of view shown by the program committee of the International Association of Industrial Accident Boards and Commissions.

As you are aware, those of us who deal with mental diseases, whether practically or theoretically, as a rule find ourselves brought into medical councils, if at all, at the eleventh hour. The lack of progress in the psychiatric branch of medicine is due not entirely to the complexity of the topic, but largely to actual neglect on the part of those who are concerned administratively, either in medical schools or in medical institutes, with the development of departments and the choice of research lines.

Of course this neglect is in itself partly due to the feeling of the complexity of the topic, a feeling entirely out of proportion to its actual complexity. But if the heads of medical schools and of medical institutes for research are prone to neglect the nervous system and the mind, it is not at all true of such companies of practical men as are found in industrial accident boards and commissions, to say nothing of the practical workers in courts, schools, and prisons. We are just now in the process of seeing how much real attention is being paid to psychology and psychiatry in the Army, where it is often more easy to persuade the line officers of the value of mental examination than it is to convince the every-day medical officers. Probably, therefore, my hearers, interested in the whole problem of industrial accidents, would not appreciate how really honored a psychiatrist feels when called upon to say something of his work in connection with industrial accidents. Two successive chiefs of staff at the Psychopathic Hospital—Dr. H. M. Adler and Dr. H. C. Solomon—have been interested in these problems. The former has published a paper on "Unemployment and personality" which touches very intimately the industrial field. In that paper Dr. Adler called attention to three main reasons (feeble mindedness, paranoid conditions, and periodic emotional diseases) for difficulty in industries as

related to mental disease and defect.[1] How many industrial accidents are really due to psychopathic conditions it is impossible now to say, but it is clear that one of the major groups in Dr. Adler's analysis, namely, the feeble-minded group of workmen, must be responsible for a good many accidents, despite the fact that the higher grades of feeble-mindedness are entirely consistent with good routine industrial work for years and even decades.

Dr. Adler's work on "Unemployment and personality" has been followed by another communication from the Psychopathic Hospital of interest to those concerned in industry, namely, a paper on "The psychopathic employee," which carries these ideas further, and gives summaries of the actual cases on which many of our conclusions were founded. Of course, as you are aware, a good deal of our social work at the hospital consists in trying to fit psychopathic persons into such employment that their families can be reasonably well supported. This process of fitting the mentally handicapped into various forms of industry is one fraught with dangers, both for the psychopathic persons so utilized and for their neighbors in the shops, and the owners of machines and tools used. All these experiences will, of course, be of value in our work of coming years in fitting mentally handicapped ex-soldiers into civil life.

It appears to me that, in practical fields like that of industry in all its aspects, psychology and psychiatry are coming into their own. We shall, in this country at least, wait for a long time before an institution is developed like that at Milan, described by Devoto[2] in Kober and Hanson's work on Diseases of Occupation and Vocational Hygiene, wherein all kinds of work in occupational diseases, from out-patient and ward work on the one hand to autopsy and anatomical museum work on the other, can be studied. It has been a great pleasure to me, as director of the Psychopathic Department of the Boston State Hospital,[3] to encourage the use of the wards and out-patient department of the hospital for such purposes as those for which the Milan Clinic was built.

Dr. H. C. Solomon and I found ourselves greatly interested in industrial problems upon the occasion of our going over the entire literature of occupation neuroses for a systematic contribution to the work of Kober and Hanson above mentioned.[4] At the conclusion

[1] Adler, H. M.: "Unemployment and personality: A study of psychopathic cases." Mental Hygiene, Vol. I, No. 1, January, 1917, pp. 16–24.

[2] Devoto, L.: "The Milan Clinic for Occupational Diseases: Its Origin, purposes, and activities." Diseases of Occupation and Vocational Hygiene, by Kober and Hanson, 1916, pp. 765–776.

[3] Southard, E. E.: Annual Reports of the Psychopathic Department of the Boston State Hospital, 1912–1916.

[4] Southard and Solomon: "Occupation neuroses." Diseases of Occupation and Vocational Hygiene, by Kober and Hanson, 1916, pp. 270–295.

of our systematic review of "Occupation neuroses," in 1916, we wrote as follows:

> A note should be made of a new and practical phase into which the occupation neurosis question passes through the enactment of various workmen's compensation acts. Problems of a most intricate nature come up in connection with arbitration boards dealing with these questions. The whole topic of simulation enters to obscure the issue. It is too early to speak of the practical effect of these acts in this country. It is probable that the theory of the condition will be greatly benefited by the careful expert examinations which will be performed in these cases. We have already noted a tendency to greater care in these examinations as a result of the work of a commission like the Industrial Accident Board of Massachusetts.

In this mention of local contacts of the Psychopathic Hospital with the field of industry and industrial accidents, I must not forget to mention the work of Dr. Solomon in connection with the employment of syphilitics. In a work on Neurosyphilis: Modern Systematic Diagnosis and Treatment, 1917, Dr. Solomon and I have devoted a section to medicolegal-and-social problems, in which cases 90, 91, 92, 93, and 94 were cases of syphilis of the nervous system, brought to our attention through the work of the industrial accident board.[1] Some of these cases I shall refer to below; some of them are mentioned by Dr. Pressey in the paper which I concomitantly present with my own remarks.

The point I wish to make for the moment is, however, that with the modern treatment of syphilis of the nervous system we are placing in the community a certain number of persons who formerly would have shortly died or remained permanently incapacitated. These persons are, however, a potential danger from the industrial standpoint, and the men engaged in industrial accident work must, I believe, at no distant date, take account of this matter of syphilis in employees. Although the amount of syphilis in the community—I speak of syphilis in general, not of syphilis of the nervous system—is probably below 10 per cent, yet it may well be a question whether the community syphilis does not stand at a sufficiently high percentage to be taken account of by employers. Suppose, for example, 1 man in 20 at the age of 30 should be found afflicted with syphilis, would it not economically pay and be to everybody's interest to have such twentieth man picked out by blood test, so that he should either not be employed in industry (or in certain forms of industry) or should be employed only when special treatment is given? In short, with our Psychopathic Hospital experience,[2] and it may be with prejudice

[1] Southard and Solomon: Neurosyphilis: Modern Systematic Diagnosis and Treatment. Monograph No. 2 of the Psychopathic Hospital Series, 1917.

[2] Southard, E. E.: "Statistical notes on a series of 6,000 Wassermann tests for syphilis performed in Harvard Neuropathological Testing Laboratory." Boston Medical and Surgical Journal, Vol. CLXX, No. 25, June 18, 1914, pp. 947–950.

from seeing a good many wrecks from syphilis (15 per cent of our new patients appears afflicted with syphilis), we have wondered whether employers of great groups of men would not do well to make routine Wassermann tests of its prospective employees. Of course, the work of the Life Extension Institute might be cited in this connection. If a system of general medical examinations at stated periods were to be set on foot, according to programs proposed by the Life Extension Institute, then the matter of finding syphilis by means of Wassermann reaction-in-the-blood serum would not be thrown aside as impractical.

In these, as in many other matters, our prospective experience in the war will doubtless yield us many new points of view and practical social procedures. Such associations as the Association of Mechanical Engineers and the Association of Mining Engineers are placing on their programs for their annual meetings this season questions concerning the psychopathic fraction of their problems. The mechanical engineers are finding that their entire problem is not one of machines and construction, and the mining engineers are finding that their whole problem is not one of shaft sinking or even of transportation. They are finding that the problems of human character, especially as modified by disease, are practical problems in many of their fields. Psychological contributions to engineering programs are now quite the order of the day.

Turning to the review of material which I have made the occasion for these broader remarks, I shall leave to Dr. Pressey the important details of certain cases on which he based his conclusions as to reliability of the psychological examination in dealing with cases of industrial accident. I here insert Dr. Pressey's data.

THE RELIABILITY OF THE PSYCHOLOGICAL EXAMINATION IN DEALING WITH CASES OF INDUSTRIAL ACCIDENT.

Of the psychotic cases coming before the industrial accident board, a considerable number present problems which suggest mental measurement by means of psychological tests as an aid in diagnosis or estimate of amount of injury. There is sometimes a suspicion that the patient may originally have been defective mentally. Where the patient's own neglect or incapacity may have been a factor in the accident such a question is of no small importance. A somewhat similar problem arises if there is suspicion of a prior deteriorated condition, due, perhaps, to alcoholism. In other cases the psychological examination may be looked to for help in estimating the degree of incapacity resulting from the injury.

In such cases as these the interpretation and proper evaluation of the results of the psychological examination are usually very diffi-

cult. But not infrequently these results are of no small importance for an adequate understanding of the case. It has therefore been the practice at the Psychopathic Hospital to make psychological examinations on as many of the industrial accident board cases as possible, with a view to the accumulating of data for special study of this group of patients. The cases are particularly interesting, because of the immediate practical importance of the findings; legal considerations are involved, questions of recompense for injury, and the reliability of the methods employed for diagnosis must be thoroughly considered.

The case of J—— H—— is an excellent example of the possible value of a psychological examination where there is a question of original mental defect. The patient, a teamster, had been thrown from a motor truck when it was struck by a train. The left side of the skull was fractured, several ribs were broken, and there were numerous bruises on the body. The patient's head was operated upon, he was in a delirium for some two weeks, gradually recovered, but has been unable to work, easily tires, shows some memory disturbances, is irritable, depressed. He has been receiving $8 a week from the insurance company, and was sent to the Psychopathic Hospital for determination as to the relation of his incapacity to the accident.

The previous history shows that the patient completed only six grades of grammar school—was two years in the fifth grade—and had considerable difficulty in learning. Since leaving school at 15 he has worked, cleaning screens, in a machine shop, in a dye house, a rubber mill, and drove a milk wagon for a year. His wages have varied from $6 to $12 a week. This history naturally suggested that the patient might have been originally defective mentally. His present incapacity could not, then, be considered due altogether to the injury. A psychological examination was made and gave a mental age of 15.5.

The scale rating in this instance may be taken as decisive in ruling out the supposition of original feeble-mindedness. If the patient, in spite of the abnormal mental condition resulting from his injury, is able to earn a mental age of 15.5 on the tests, it is impossible to suppose him markedly below average intelligence previous to the accident. With such a rating no finer analysis of the examination is needed; the mental age alone gives the information desired.

In the case of L—— C——, a mill worker, aged 35, the psychological examination gave a different indication, resulting in a diagnosis of dementia præcox on a feeble-minded basis. The patient had been a worker in a cotton mill in Lowell at $9 a week and was struck by a flying shuttle which injured her breast and arm. She was given compensation for four weeks, but at the end of that time asserted that she was still unable to work. A psychotic condition gradually

developed. The patient told stories of attacks by mysterious persons hooded in black, of injury by a needle which a dressmaker snapped into her eye, causing a "bruised feeling in her head." Previous history was indefinite as to progress in school, but the school information was either very poorly retained or lacking. Knowledge of current events was very slight; economic efficiency had always been low. She was described as prior to the accident a "credulous, ignorant, simple-minded person." Original mental defect, as an important element in the case, was clearly suggested.

Psychological examination gave the patient a mental age of 9, a coefficient of 0.55; that is, her showing was only 55 per cent of the rating of the average adult. Further, the performance on the different tests was quite consistently at this level, there being little "irregularity." Since rating by the tests was uniformly at about the level which would be expected for a child of only 9 years, a conclusion that the patient had always been defective mentally seemed warranted. The importance of such a conclusion as determining the relation of the accident to the present mental condition is obvious.

If the examination had been markedly irregular, the above conclusion would not have been justifiable. The examination of M—— J—— C——, also showing a mental age of 9, is an example of such irregularity. The man was a plasterer, 60 years of age, who had fallen while at work. The final diagnosis was Korsakow's psychosis. Almost no history was obtainable. A psychological examination was given. The "mental age" obtained was 9.7. This mental age by itself would suggest that the patient might be a moron addicted to alcohol. But closer study of the examination shows a marked irregularity. That is, M—— J—— C—— fails in some tests which the average 9-year-old child does with ease, and succeeds on other problems which even a 12-year-old child finds difficult. A method has recently been worked out at the hospital[1] for the calculation of this "irregularity," as it appears in the point scale used there, in "points." The average feeble-minded case shows an irregularity of 17 "points." But M—— J—— C—— gives an irregularity of 28 points, or some 65 per cent more than the average for the primary aments. Work with the "supplementary tests" (puzzles, brief memory passages, learning tests, and so on) was also irregular. The patient failed, after five minutes' work, to complete a simple puzzle which the average 9-year mentality puts together in 1 minute and 15 seconds. He could give back only three details of a simple story, immediately after reading, where the average child rating at the same mental age remembers 9 details.

[1] S. L. Pressey: "Distinctive features in the psychological examination of dementia præcox and chronic alcoholic patients." Journal of Abnormal Psychology, July, 1917.

To say in this case that the examination shows a "mental age" of 9 is clearly absurd. The examination is altogether different in the make-up from that given by the average mentality of 9 years. The "coefficient of intelligence" expresses the significance of the findings much better. M—— J—— C—— obtains a coefficient of 0.64; that is, he obtains 64 per cent of the score of the average adult. The 28 points irregularity clearly indicate that he obtains this 64 per cent of what he should if normal primarily because of mental disturbance. From the psychological examination itself, therefore, an indication can be obtained as to whether the mental age rating is reliable. In this instance it clearly is not.

The examination of an Italian laborer, struck on the head by a plank while working in a sewer, was useful chiefly in emphasizing and giving some definite indication of the marked incapacity resulting from the accident. Little history was obtainable, but previous to the accident the patient had been an average Italian laborer so far as could be ascertained. Following the injury he became depressed, irritable, could not work, had visual and olfactory hallucinations—at the Psycopathic Hospital was diagnosed as a case of traumatic psychosis. In giving the psychological examination the "Knox" scale was used, since this is especially adapted for work with such illiterate foreigners.

The examination gave a mental age of $5\frac{5}{7}$. The showing was extremely irregular, with failures in the four-year group of tests and a success in the 13-year group. So far as evidence went concerning the level of the patient's mentality prior to the accident, the examination was plainly useless. But as an indication of the marked incapacity following the injury it is of distinct significance. It is of especial interest, since a second examination was made five months later which gave a mental age of $7\frac{2}{6}$. The patient had improved slightly, but still showed most of the previous symptoms to a considerable degree. The second rating gave an expression of both these facts.

These four examples will serve to illustrate the ways in which psychological tests in their present stage of development may be of use in analyzing or estimating the amount of mental incapacity due to injury. Roughly, it may be said that (1) a mental age above 12 may be considered to exclude the supposition of an original feeble-mindedness; (2) a mental age below 11 with slight irregularity would suggest such a feeble-minded basis for the psychosis or neurosis; (3) a marked irregularity (over 2 points on the point scale as figured by the method at present in use at the Psychopathic Hospital) would indicate that other factors than original mental defect have brought about the low rating. In such instances the "mental age" (or, better, the "coefficient of intelligence") may be

thought of as in a rough way suggestive of the amount of this acquired impairment.

Some 30 cases coming from the industrial accident board have to date been patients at the Psychopathic Hospital. Satisfactory psychological examinations have been obtained with only 12 of these. The material is of course not sufficient or homogeneous enough for satisfactory statistical treatment. But it is interesting to note that the average mental age is 10.3, and that only two grade above 12. Though 10 of the 12 grade at or close to feeble-minded age, it can hardly be supposed that this is the proportion of mentally defective, and that not all of these 10 give examinations such as are shown by the feeble-minded as indicated by the irregularity. The average irregularity of a group of 156 primary aments was 17 points, but the irregularity of this group is 22 points; only one case gives an irregularity of 17.

The essential difference between the showing of this group and of a similar group of the feeble-minded is further brought out by a study of the records on the supplementary tests. These industrial accident board cases average less than half as many correct moves, and take twice as long, in filling in the Healy Apperception Puzzle as would be expected of a similar group of feeble-minded cases. They take 25 per cent more moves and twice as long to solve Healy Puzzle B, and make 8 times as many failures. On the Healy Picture Form Board they fail 9 more times. They remember 60 per cent less of the logical memory passage, learn 30 per cent less in a learning test, though they take 40 per cent more time in the learning, and in another learning test retain about half as much. There should then in most cases be no difficulty in distinguishing cases grading at feeble-minded age solely because of mental derangement from those primarily subnormal, if irregularity and supplementary tests are thus studied in every case.

The importance of these cases and the somewhat special problem they present to the psychological examiner have suggested this brief study of the data already at hand. A wrong evaluation of the findings with the psychological tests is in such instances very easy, and the importance of taking into account the make-up of the examination, the irregularity, not generally understood. A concept of irregularity as a measure of the reliability of the examination seems likely to prove decidedly valuable. Where an examination is irregular, certain tests are affected much more than others. Those tests which are most sensitive have been combined in a differential group, for which norms are now being worked out at the Psychopathic Hospital. The value of a psychological examination in such cases as have been just described has been discounted in the past because of

the difficulty in distinguishing results of original defect and of acquired mental disturbance. The use of exact measures of irregularity and of special differential groups of tests makes possible some such analysis. Such special methods can be used only by trained examiners, thoroughly familiar with the tests and experienced in work with patients abnormal mentally. But under these circumstances the psychological examination is capable of making a distinctive contribution to the total study of the case.

It will be evident from Dr. Pressey's remarks that he, as a psychologist, is still working toward a greater reliability of methods in the field of psychology. As a Psychopathic Hospital director and psychiatrist, however, I want to make the point that we could not at all get on with our work nowadays without the mental tests even in their present incomplete state. The Psychopathic Hospital methods have been those developed by Prof. (now Major) R. M. Yerkes, who was for five years psychologist to the Psychopathic Hospital before he was called to Minnesota and then forthwith into the Sanitary Corps as head of the psychological work under Surg. Gen. Gorgas. Prof. Yerkes' monograph on "The Point Scale"[1] indicates the direction in which the work ran, although numerous improvements have been made by Prof. Yerkes and his coworkers since that time.

We have placed under review some 31 cases sent to us by the industrial accident board for special examination on account of difficulties in the interpretation of their mental capacities or status. I may remark that of these 31 cases, 17 eventually received compensation, partial or complete; that in 11 cases findings were made for the insurer, leaving 3 cases for the moment unsettled.

Concerning these cases, I will first make a number of remarks showing some of the oddities and difficulties of the field. I have before me a case in which the finding was for the insurer, although there is some evidence, not denied by anyone, of organic disease, possibly involving the cerebellum and due to the accident. However, the man refused to make an effort to return to work and refused to go to the Psychopathic Hospital for our examination. His is a case of what the French would term mauvaise volonté such as is not infrequently found in the shell-shock group. We need for a case of this sort a social service[2] which shall go deliberately out after the patient and alter, if possible, his attitude and that of his family as

[1] Yerkes, Bridges, and Hardwick: The Point Scale for Measuring Mental Ability. Monograph No. 1 of the Psychopathic Hospital Series, 1915. Warwick & York, Baltimore.

[2] Jarrett, M. C.: "The psychopathic employee: A problem of industry." Medicine and Surgery, St. Louis, September, 1917.

regards the situation. Whether such work in a given case shall be done under the auspices of the industrial accident board itself, or under some other auspices, seems to me to be a question not to be settled by formula.

I have before me another case in which delirium tremens entered to obscure the result. The case is theoretically subject to review but as the man has dropped out of the field of attention, either of the insurance company or of the accident board, nothing is being done about the man or his family. Most social agencies dislike to enter a case of this sort on account of the prior authority of the industrial board and the peculiar financial and legal aspects that such a case presents.

I have before me another case, probably of dementia præcox, in which the interesting finding for the employee is as follows:

> Insurer to confer with State insanity authorities to see whether or not arrangements can be made to continue treatment of the employee without cost so that the fund may be retained intact when he is discharged from the insane hospital.

In a case of general paresis, some compensation was given, but the finding was that the accident was not causally connected with the illness, and medical testimony indicated that compensation should never have been given.

However, with respect to general paresis and other syphilitic diseases of the nervous system, there are other cases in which the finding has been for the employee. Allowance has been made for total incapacity in a paretic. This kind of finding has relation to what I said above concerning the possibility that employers in the future may demand a nonsyphilitic record from employees. If, as I understand it, a man blind of one eye can receive compensation for total blindness if his other eye be blinded, how does the situation differ from that of syphilitic infection? The company accepts a man with a blind eye; the company accepts a man with syphilis. An injury destroys the sound eye; an injury liberates, aggravates, or accelerates syphilitic disease of the nervous system. There does not seem to be any logical difference between the two liabilities.

In one case the question of feeble-mindedness was raised as having a bearing on the amount of compensation. Mental tests, however, showed that the patient was mentally normal; feeble-mindedness could be safely ruled out. The incapacity to work was in this case mental, but it was not due to mental defect so much as to mental disorder.

In another case feeble-mindedness was proved to exist. The patient made a scoring to correspond with the ninth year of age and the scoring was consistently at that level; that is, the patient did not show the irregularity to which Dr. Pressey has above called atten-

tion. The attorney for the claimant, however, contended that a condition of neurosis had followed the accident. There were no features of neurosis in the classical sense of the term. The patient, however, had a conviction of inability to work, and it remains doubtful whether he ever will work. The patient's conviction that working capacity was gone (despite entire neuromuscular capacity) was doubtless a matter of poor judgment and insight, the result of feeblemindedness.

We have had a number of lessons concerning mental tests. In another case, making but little over the grade of the case just mentioned, there was a marked irregularity demonstrated by the psychologists after the manner of Dr. Pressey's statements above, and the psychiatrists, on the basis of the psychologist's results, were enabled to make the diagnosis of dementia præcox. Making this diagnosis had an important bearing on the findings of the industrial board.

Another important value of mental tests lies in the evidence they may give of improvement. Spaced tests, perhaps six months apart, may show signs of great improvement. We have an instance in which $5^5/_7$ was made at a certain period and $7^2/_6$ five months later. Industrial boards, insurance companies, and employers may perhaps utilize these mental tests to gauge the amount of compensation that should be paid. In some instances we have made the recommendation that the cases should be sent to us for further examination at set periods merely for the purpose of gauging the amount of improvement. Indeed the utility of mental tests in general industry is great. At one time we made such mental tests for the attendants in our own hospital and were able to exclude and include a number of men whom offhand judgment might have wrongly diagnosticated.[1]

To sum up, then, I have mentioned a surprising number of points of contact made of recent years by psychiatry and psychology with industrial problems.

I have presented a special report of Dr. S. L. Pressey showing the reliability of psychological tests in industrial accident cases, and Dr. Pressey has included in his report a number of special instances in which the working of these tests may be seen.

A few instances from our review have been given, showing the decided bearing which psychiatric diagnosis may have upon the findings for claimant or insurer, as the case may be, and on the amount of compensation when rendered.

A number of the pitfalls of the work have been enumerated. I have laid the greatest stress upon psychometric ("mental test")

[1] Rossy, C. S.: "The Yerkes-Bridges Point Scale: As applied to candidates for employment at the Psychopathic Hospital." Boston Medical and Surgical Journal, Vol. CLXXV, No. 23, Dec. 7, 1916, pp. 822–824.

work because of its quantitative nature and its relatively recent developments. In the industrial accident board group, from the psychiatric point of view, I find cases of syphilis of the nervous system, of feeble-mindedness, epilepsy, alcoholism, focal brain disease, dementia præcox, and manic-depressive psychosis, to say nothing of the traumatic variety of psychoneurosis and a number of odd cases difficult to classify.

I think there is no doubt that just as this work will benefit those physicians and psychiatrists that are going to deal with the shell-shock wrecks of this war, so the entire work of industrial accident boards throughout the world is going to prove of most concrete value in the whole field of after-war reeducation.

THURSDAY, AUGUST 23—AFTERNOON SESSION (LUNCHEON).

CHAIRMAN, DUDLEY M. HOLMAN, PRESIDENT, I. A. I. A. B. C.

The CHAIRMAN. We have with us this afternoon Mr. Edwin Mulready, the commissioner of labor of Massachusetts, who will give us a brief talk upon Massachusetts factory inspection.

MASSACHUSETTS FACTORY INSPECTION.

BY EDWIN MULREADY, COMMISSIONER OF LABOR OF MASSACHUSETTS.

Before speaking upon the topic assigned, "Massachusetts factory inspection," may we not consider for a moment the great value of factory inspection in general?

This is the age of specialties, and in no field of endeavor more so than in that of medicine. Not long ago the family physician was called in every possible health contingency. Gradually, but none the less surely, the medical fraternity has turned to the specialist, and while the physician may have a great fund of general medical knowledge, he will, under the new régime, use that knowledge simply as an adjunct to his specialty.

We are told that such progress has been made in this direction that a certain class of medical men have been educated to specialize in the diagnosis of the case which other specialists may afterward treat. This brings into the field of medical practice men who are really the determining factors in the field of pathology, for upon their scientific standards is founded the treatment which the patient shall receive. It is their business to determine the disease by means of its distinctive marks or characteristics, and the other fellow's job to treat the disease.

May we not, therefore, direct our attention to the great importance of factory inspection by comparing the factory inspector to the great specialist sitting in his office or laboratory, determining the disease with which his patients are afflicted? Most interesting studies have found a place upon the program of this convention, but in the last analysis the facts upon which these studies are founded come to us from the studious and energetic inspector, who goes out into the field of industry and determines the cause of the trouble which we seek to remedy.

Our good friend, Dr. Beyer, who has been such a large contributor to the cause of accident prevention, called our attention to the fact that the "mere number of accidents from a given cause is not a satisfactory basis when determining the seriousness of that cause as an

accident producer, since in considering only the number of accidents the same weight is given to a cut finger as to a fractured skull; that the money cost and the lost time are the real measures of the seriousness of accidents; that while mechanical accidents in Massachusetts were but 33 per cent of the total number of accidents, they were responsible for less than 7 per cent of the fatalities."

Sometime, I trust, we shall be able to go further with this study and determine with some degree of accuracy the proportion of accidents which we consider purely mechanical to those which are really caused as the result of fatigue, or improper lighting, or poor ventilation, or the occupational disease, if you please, of the person who is operating the machine.

The State of Massachusetts has provided by law for meeting the three elements of industrial accident work which were mentioned by the president in his annual address. While Mr. Holman did not attempt to place the three elements in their true relative positions, I am inclined to mention them in the order of their importance, as they appear to me—prevention, rehabilitation, and compensation.

Prevention—a precautionary measure which would stop or hinder the thing from happening. To prepare for emergency before it occurs, to educate the employer and the employed—these and many more are the methods which prevent. Surely prevention should be number one in our minds, as we prepare for industrial accident work.

Rehabilitation—an attempt to restore the capacity of the injured party, to reinstate, if such a thing is possible, the injured one in the position which he occupied before; if not possible, then to create an opportunity for such a one. This should surely be number two in our calculations.

Compensation—that which seeks to make good the injury which has been done; to give something which may be equivalent to the thing which has been lost. We know how futile our efforts must be in this direction, for there are many things which money can not buy, and losses which can never be met by compensation. The measure of compensation may be hard to fix, but the more difficult it is to establish the standard the more necessary that industry should meet its obligation by proper substantial compensation.

The Board of Labor and Industries of Massachusetts has recently been charged with the preventive side of this work. The industrial accident board has the duty of adjudicating payments for compensation, and incidental to this task, the very important duty of rehabilitation of the injured person.

Is it an exaggeration to say that success in all this work is based upon satisfactory inspection service, and that laxity on the part of the inspector will inevitably delay the time when success shall crown our efforts in the cause of accident prevention?

The State board of labor and industries has not only the duty of factory inspection, but has included with that the duty of inspecting

workshops, mechanical establishments, laundries, foundries, tenement-house workshops, and all other buildings or parts of buildings in which manufacturing is carried on, including mercantile establishments—the estimated number of all being approximately 70,000. Twenty-four inspectors—18 men and 6 women—are employed in this work. During the year 1916, 41,329 inspections were made. Over 12,000 orders were issued as the result of these inspections, and nearly 11,000 of these orders affected dangerous machinery, this number being considerably smaller than might be expected, for the reason that a very competent committee, acting under the direction of the board, has been engaged in preparing safety rules and regulations and machinery standards.

There were 2,398 homes visited in order to determine their suitability for industrial work therein.

The object of factory inspection must not only be the detection of certain defects in machinery, but it should also include the education of those who control factory organization to a point where they will recognize the great value, not of orders given, but of suggestions made for more improved conditions in the different establishments.

In this great educational movement the factory inspector becomes an important factor. Factory inspection, undertaken with this attitude, is not looked upon as an intrusion on the personal rights of the employers, but really is a contribution to the success of every element in the business enterprise.

I firmly believe that the time will come in the very near future in Massachusetts when men will appreciate that the greatest asset in their factory organization is the number of contented, healthy, well-paid, and properly protected workers.

The question of machinery safeguards will be settled when the manufacturers of machinery shall consider their machines imperfect if they are not properly safeguarded before they leave the machine shop.

Massachusetts is a great industrial State. It has not reached this position by very rapid strides, but was known as an industrial center many years ago. Great industrial changes contributed to this condition long before we began our public-safety campaign. It is easier to establish a new plant on correct lines than to change the lines upon which an old plant has been running fairly successfully a great many years. Notwithstanding this fact, we are encouraged to believe that intelligent factory inspection and the study which shall follow the factory inspection will lead to improved conditions in the future, and we are strengthened in this opinion by the fact that manufacturers all over our State are cooperating to the fullest extent with the different boards who have charge of this important work.

ROUND TABLE DISCUSSION.

[The chairman referred to an informal discussion begun during the inspection of the plant of the General Electric Co., Lynn, Mass., in the morning, and asked Dr. Frank E. Schubmehl, of the General Electric Co., and Dr. Rubinow to continue the discussion.

Dr. Schubmehl mentioned a card that had been passed around in the morning. This card contained a compilation of the medical supervision in 99 plants in the United States, comprising every kind of industry, which was, he said, a very complete record, and would give a basis upon which to answer the question so often asked, "What is the average adequate medical care in the various industries?" He believed that free choice of physician should not be placed in the hands of employees, as so many are not reasonable or careful in their choice, and their health and welfare are too important to allow of such a risk being taken when their earning capacity is at stake.

Dr. Rubinow said that the question of free choice of physicians was not a political problem. He had been through 20 or 25 States in the year previous and had found everywhere a very strong sentiment for the free choice of physician and he predicted legislative action in an increasing number of States giving such choice. The workers want such a provision because of the greater confidence they place on physicians of their own choice. The physicians who are private practitioners are also asking for such a provision. Dr. Rubinow said, however, that in passing such legislation in connection with medical aid the interests of those particularly concerned—the employers, the employees, and the medical profession—must be considered. The employer wants the man to be cured as rapidly as possible, so that he may get back to work, and to have it done as economically as possible. Employers, of course, differ as to the most economical way, some saying "What's the use of paying high fees? Get a cheap doctor. He will be all right," while others argue that it is to their interest to get good medical aid, as the quicker the recovery the less there is to pay. The employee, of course, has but one interest—to get well as soon as possible. No human being wants to be a cripple. He wants to choose his own physician because he will then have greater confidence in him. The only trouble with allowing him to do so is that he may not know the good doctor from the bad one. As to the medical profession, if you put into the hands of the employers the right to have their physicians do much of the work that has been done in private practice, the compensation of the physicians will be dependent on the generosity of the employers or

the limit imposed by the legislature. Dr. Rubinow thinks that, all things being equal, the employee should have the right to select his own physician. The employee should not be allowed to suspect that the physician is acting for the employer rather than in the interests of the employee, and the industrial physician, no matter how interested he may be in most cases, still is acting for the employer. The psychological effect of the confidence of the patient in the physician of his own choice tends to reduce the period of disability. As to how to avoid the selection of an incompetent physician, Dr. Rubinow thinks free choice should be limited to physicians who are qualified to do industrial surgery, and that this means the formation of a panel of industrial surgeons in every community, to be open to all who meet the requirements, such requirements to be established by consultation between the medical profession and the industrial accident commission and possibly by an amendment to the law.]

Capt. William P. White, of the Associated Industries of Massachusetts. I would like to ask a question. Why shouldn't you have the same panel for the employer to select from?

Dr. Rubinow. After you get that panel, what right, socially or morally, have you to take away the choice of men? All that is imposed on the industrial accident boards and commissions. Making a very definite statement, it is no use talking about industrial surgery so long as these qualification limitations are upon the statute books. Only four or five States have yet seen fit to give a sufficient amount of medical aid. Most of the Western States have, because there are no limitations on the amount that can be given. There are California and Wisconsin and a few others. In other words, you have to conduct your campaign for the improvement of the service side by side with that for the removal of the limitations.

Capt. White. As an employer, I would like to raise two or three questions in regard to what Dr. Rubinow has said. In the first place, the individual who comes into the employment has not the same kind of opportunity for selection as the person who is employing him. The man who has enlisted in the United States Army or Navy in his enlistment gives up his freedom of choice. It is the same way in every country. If the law compels the employer to provide adequate medical services, the employer should certainly have some say in regard to the character of the services, as between the work that the industrial physician is doing and that of the surgeon that may be selected by the injured employee. The fact remains that the medical practitioner ordinarily is not properly equipped to do the work that can be done by the industrial physician, and the answer to the question why the employer has not adequate equipment in his

own establishment is, that he should have recourse to a hospital where proper and adequate means may be taken for discovering the character of the injury and where a proper force is already equipped for treating such injury to the best interest of the employee. Psychologically, there is great reason for the employee selecting his own physician, but as far as injuries are concerned, he should be treated by a surgeon and not the ordinary doctor, and the ordinary employee does not know whether his physician is a good surgeon or not.

[The chairman, speaking of some of the problems relating to medical aid that confront industrial accident boards and commissions, and referring especially to the experience under the Massachusetts law, said that it had been found that physicians and hospitals charged exorbitant fees and that major operations were performed by physicians who were not experienced in surgery but whose charges were startlingly high. As illustrative of this, he said that in Massachusetts the last year under the employer's liability act there was paid to physicians and surgeons $150,000, while for the year ending November 30, 1916, there was paid to doctors and hospitals for medical treatment under the compensation law over $834,500. On the other hand, where the insurance companies provide doctors, they are frequently incompetent, being employed because they will work for a certain salary, or they have contracted to care for so many employees—in one instance 30,000—that it is impossible to take care of them and give them adequate treatment. Many thousands of dollars could be saved by the provision of competent medical aid. In Massachusetts, as a means of solving this problem of incompetent physicians and of exorbitant fees of physicians and hospitals, a meeting of delegates of all the medical societies of the State was called and the situation presented to them and their assistance asked. A committee was appointed which investigated conditions, and as a result what is known as an industrial rate was devised. This has been satisfactory to the physicians. Free choice of physician Mr. Holman thought an ideal condition but hardly practical, because of the tendency of employees to go where they could get cheap treatment, to doctors who speak their own language, or to lodge doctors. He thought Dr. Rubinow's idea of a panel of physicians a good one if it could be established, but questioned if a physician entitled to practice in Massachusetts, for instance, could be deprived of the right to care for a man if such man has free choice and comes to the physician for treatment.]

Dr. RUBINOW. The legal right to practice remains undisturbed. Any man has a right to treat any patient who is willing to come to him and pay, but if a patient comes to him and says, "You treat me, somebody else is going to pay for it," you establish a third interest;

the practice then becomes in three parts, not two parts. A man has a right to practice any sort of medicine he wants; he can practice any branch of medicine he wishes to practice.

The CHAIRMAN. Well, then, I am the family physician, we will say, of John Smith. Now, John Smith is injured in the General Electric Co.'s works, and I am not on your panel, and the General Electric Co. says, "We do not recognize you as a man qualified to treat these cases." How are you going to prevent my treating him? How are you going to prevent him from consulting me?

Dr. RUBINOW. I assume the legislature will pass laws to that effect. John Smith can go to his physician if he wants to pay for it, and the third party is his insurance company.

The CHAIRMAN. He always has that right. The individual, under instructions here in Massachusetts, always had the right to select his own physician, if he so elected, but then he paid the bills.

Dr. RUBINOW. Under the law at present he has the right to select his own physician and he has the right to pay the bill, but the only remedy is, instead of transferring the right to select, transfer to the third party and agree to a panel. The legislature will transfer to your industrial commission the right to establish standards for persons to practice industrial surgery at the cost of this third party.

Dr. MEEKER. I want to ask Dr. Rubinow if he thoroughly digested the statement he made to the effect that industrial physicians were the most competent physicians in the country?

Dr. RUBINOW. I did.

Dr. MEEKER. It is not in accord with my experience. I am not speaking of the General Electric Co. or the United States Steel Corporation, or a number of other great big corporations, but speaking of industry in general. You certainly have met different plant physicians from those that I have met if you really wish to stand by that statement. I would like to hear what Dr. Schubmehl would say as to that.

Dr. SCHUBMEHL. I think that those physcians I have had an opportunity to come in contact with are doing good industrial work. In regard to other physicians, I would have to agree with Dr. Rubinow. Now, that does not mean physicians that are being employed at so much per day to see how much industrial work they can get away with—those are not industrial physicians. They do not come under that rule at all. I was very much impressed with Dr. Rubinow's talk, and I think it has weight, but my idea is not to allow the employee to get into the hands of a man who will do him injury. Of course, that is well looked out for by our very efficient industrial accident board, which is already making itself felt along these lines.

I believe we will have this law reversed or repealed here in Massachusetts because of the attitude that the industrial accident board of this State is taking towards these cases. I think the thing is going to eliminate itself. It looks that way now. We may be more than fortunate with our board, but from the evidences we have seen from other boards in the country, I think they are all following us.

Dr. CHANEY. I am thoroughly interested in this medical problem. The United States Bureau of Labor Statistics considers the question of adequate medical service as one of great importance, and because of this I come in contact with a very large number of physicians who are employed by iron and steel industries in taking care of their personal injury cases. I have to confess that the average physician who is so employed with whom I come in contact is a poor kind of a physician. He is a sort of a contract physician who has no real interest. In a great many cases he has been a failure. Men who could not get practice enough on their own merits were taken by the employer to take care of their people. Now, the average physician of that kind that I have come in contact with is below par. He is not up to the standards of the average doctor. Different, of course, is the physician in large companies like the General Electric Co. and the steel corporations, but the present status of the medical practitioner who is in industrial work, in the sense of being employed, in my judgment is very low.

[Mr. Kingston said that what had been said as to industrial physicians not being up to the standard was not true of such physicians in Ontario, and spoke of the splendid work of their physicians who had gone to the Western front and were carrying on the work in France and Belgium, telling of the pride Ontario took in her doctors. As to free choice of physicians, he said their law had just come into effect as far as medical aid is concerned. The law provides that the doctor must be agreeable to both the employer and the employee, thus giving neither the exclusive right of free choice. If the employee and the employer do not agree, it is left to the board to appoint the doctor. The result so far has been that there have been no applications to the board, as the employer and employee always agree. If it is a serious case, and the employee is not able to make a choice, the employer sends the man to the nearest physician, it may be the contract physician, but it will be the doctor who will take the best care of the employee. Mr. Kingston thought, personally, that free choice of physician was a mistake, and that there was much to be said in favor of giving the employer some say as to who the doctor shall be.

Mr. William M. Smith, chairman, Michigan Industrial Accident Board, thought that medical and hospital treatment should be unlimited as to time, but that the amount should be reasonable. While he had previously been of the opinion that the employer should select

the physician, he thought Dr. Rubinow's argument rather convincing, but that his solution was impractical. He said that in his State (Michigan) there is to be a commission, appointed by the governor, to recommend changes in the workmen's compensation act, as, while their law is pretty satisfactory as a whole, a good many changes should be made. The legislature has provided a certain method by which the medical practitioner can be paid less. As the medical profession has had much to do with what the law is, he wondered if the medical profession in every village in the State would not protest if the legislature should attempt to classify physicians and surgeons that have already been licensed to practice medicine in the State, and say that only a privileged few or a certain portion shall be permitted to practice this particular kind of industrial surgery. He thought such a solution absolutely unworkable and impossible as a governmental or political proposition, and asked if there were not some other way of getting at it. He also questioned whether the industrial accident board, composed of laymen, not physicians, were better fitted than the medical colleges and the State board of medical examiners to determine who shall and who shall not practice industrial surgery.]

Dr. RUBINOW. I want to say in regard to the rights of employers, that I do recognize that the employer who pays the bill has an interest in the matter. Does it follow therefrom that he must have the right to select the individual physician? I think you allow that right. Just what is consistent as compared with the right of the injured employee? The employer has the right to see that the work is done properly, because, unless it is done properly, he has to pay more compensation; but, of course, the competent physician has a right to say something as to the cost of the medical service, though that doesn't mean that any man can charge anything he wants to charge. The employee should have a right to select a man with whom he can get along, and since the injured employee may often select a physician who speaks his own language, I say he has a decided right to have a doctor to whom he can talk, rather than have a good doctor that can't talk his language. The employee has the right of individual choice.

The CHAIRMAN. On behalf of the association, I feel that we should extend our sincere thanks to the General Electric Co. for their courteous treatment of our association, for the opportunity that they have afforded us to see the work that is being carried on—and successfully carried on—not merely in safeguarding but in their medical department. I am sure we have all benefited greatly by the opportunity that has thus been extended to us, and I will ask the association to give a rising vote of thanks to the General Electric Co.

[The chairman announced that William H. Tolman, Ph. D., who was to read a paper on "Educating the employer and employee," was unavoidably absent on account of illness.]

THURSDAY, AUGUST 23, 1917—EVENING SESSION.

CHAIRMAN, ROYAL MEEKER, U. S. COMMISSIONER OF LABOR STATISTICS.

V. ACCIDENT PROBLEMS.

RESTORING THE DISABLED TO INDUSTRY.

BY T. NORMAN DEAN, STATISTICIAN, WORKMEN'S COMPENSATION BOARD OF ONTARIO.

To assemble the exact figures of synchronizing European and American accident data is a task beside which the Herculean labor of renovating the Augean stables was a positive sinecure, European statistics, as far as comparable values go, being in much the same fragmentary and chaotic state as are American figures. Therefore, let the following assumptions be qualified:

1. The annual industrial death roll of the now belligerent countries is 100,000.

2. Death frequency is 2 in each 100 accidents.

The annual toll is 5,000,000 industrial accidents. Halve this estimate, if you will; quarter it, you who will; and the figure is 1,250,000.

The greatest horror of the present European struggle is in the appalling casualty lists. In that alone war has passed beyond the conception of man. But conjure, if you can, one such war in each generation of 30 years. The total number of industrial casualties for a century exceeds three times the total number of men engaged in the three wars of that century, the total being 125,000,000, and that a 75 per cent discount of a conservative estimate carefully calculated from existent data. If this war be Armageddon, then our industrial Moloch has squatted on the hills surrounding the Valley of Jael!

Our superlative sensitiveness to our soldiers' welfare causes us to stand aghast at the blood price of war; our sublime indifference to our neighbors' weal has caused us to stand aloof from the blood price of peace. Yet, if magnitude of economic loss be the criterion, our sentiment finds the narrow channel while the broad one is ignored.

Why are disabled soldiers restored to industry or pensioned for disability? Is it from a purely sentimental standpoint of abstract duty or because of the nearness and acuity of the problem? If the theory of obligation obtains as the individual viewpoint, it is lost in the national standpoint of economic loss. The former theory of pensions as rewards for service or for woundings has changed; today belligerent nations are paying pensions on the theory of compensation for definite loss.

For this idea workmen's compensation has been responsible. There is, however, a fundamental difference—this is equality of losses, physical mutilation being the test.

The army is a homogeneous wage group, the only difference being that of rank. Each man in war service has offered to the State he serves a bodily perfection, which is exemplified by the medical examination which permits his entry into that service. The obligation of the State has to do with the persona of its military servants, and that obligation ends with that with which it begins. The persona is the common attribute of all soldiers, being brought to the service equally by the farm hand and the skilled artisan, by the lord and the laborer, by the righteous and the unsanctified. The sacrifice of private remuneration or professional capacity is the social risk, war in itself being a social hazard, which like the Lord's rain falls alike on the just and the unjust.

If some part of the persona be lost through service to the State, the State rightly has concern with that which has been lost. The obligation devolves upon the State to place all its servants on a parity as to that which it demanded of them. The unwounded soldier returns with his perfect body, the State has used nothing of that which it demanded of him, and hence the obligation in that direction has ended. In respect to the partially or wholly disabled soldier the obligation is equally definite, to restore that which it not only demanded but used.

Obviously, no governmental interference can make good physically "the limb that trailed, the hand that failed, the bloody finger tips," but the State can compensate—truly never adequately, for the suffering endured, nor for inconvenience—but certainly for the material loss on the economic side, the power of securing maintenance in decent comfort, or at least in like standard to that which prevailed prior to war service. Manifestly, the first thing is to reduce disability to an absolutely irreducible minimum. The successive steps involved in this are necessary medical and surgical attention to relieve physical disability as far as possible, proper fitting and instruction in the use of artificial appliances to overcome bodily disadvantage, reeducation to hasten and encourage social and economic rehabilitation, and governmental facilities and aid to insure employment consonant with disability. Finally, all things humanly possible being done, there remains the subtraction of the new from the old, in most cases a positive result. For this loss the only compensation is, of necessity, a money consideration for a physical condition which persists to the death of him who has been disabled. That compensation, if it is to cover the persistence adequately, must be in the form of a pension.

This, then, is the theory behind efforts to rehabilitate disabled soldiers into the normal activity of peace times—the reduction of disability to an irreducible minimum. It is an entirely new idea in social progress, not even to be found in workmen's compensation. Indeed, so belated have we been that, on this continent at least, the ordinary interpretation of "permanent disability" has been "permanent injury of anatomical extent." Again, the theory of specific indemnity schedules, so many weeks' compensation for such and such a loss, connotes rehabilitation. If there be complete rehabilitation within the specified time, then at the expiration of that time there is no disability, and since the disability has passed away its permanency has dissolved into thin air. If the disability is permanent, then the specific indemnity does not cover the disability, for the compensation will have passed away and the disability will remain.

It may be urged that the specific indemnity gives the injured man his money when he needs it most. But the man suffers a reduction in wages by receiving only a fractional compensation and that on an average of wages he has earned, predicating a functional and professional reeducation with a fractional part of his wages, when it has already been postulated that with full wages and without any disability, mutilation, or injury he could not have advanced his economic position.

Nor do life pensions meet the situation. The injured worker when surgically discharged goes back to industry, on his own initiative and generally ignorant of where to go, with always the percentage reduction of the compensation for the loss he has sustained, without assistance and without guidance, to do the best he can, irrespective of his present or possible social value. It is wrong, of course, to say "compensation for the loss he has sustained"; it is rather the average loss of workers of his occupation, as in California and Ontario, or of all workers, as in every other jurisdiction. If occupation be the test, the man in the higher class of work drops down so that his superior intelligence may, to some extent, offset his handicap in competition; but the men in the lowest classes of work are forced to meet the competition not only of men of superior intelligence with equal disablements, but of men of equal intelligence without any disablements. And from the bottom of the scale this runs to the top in varying intensity.

While the average is perhaps the only practical basis of administering permanent disability payments, the individual is concerned with his own amount. It is rarely and coincidentally that the average is encountered as a real quantity. Selecting a half dozen figures at random, 7, 8, 9, 10, 11, 12, adding them, 57, dividing to get the average, $9\frac{1}{2}$, a result is obtained that does not appear in the figures, yet

that is an average. If the 9½ be the compensation payment that is absolutely necessary to maintain life, then half of the cases would starve to death. That is an extreme example, yet it is the theory behind payments for permanent disability; and in the case of commutations the average lifetime is taken, not the equal chance of living nor the most probable lifetime, and this is promulgated as a "just and proper" payment to the individual for his loss!

Go where you will to-day and dig beneath the ramifications of variant factors and you will find that the physical mutilation is the basis upon which all permanent-injury payments are made, irrespective of disability accruing therefrom. The individual is received direct from surgical treatment, often crippled more from inadequate and ignorant attention than by injury, generally without proper prosthesis, and always without special knowledge being applied, without any time for readjustment to the changed conditions, without either functional or professional reeducation, given a pension, and, without aid or assistance except from benevolence or shame of employers or charity from outsiders, is thrown upon his own resources and allowed ignorantly and passively to rehabilitate himself as best he can.

Sir H. Rider Haggard said of the Canadian system of restoring military cripples to industry: "I make no comparisons. We are taught that comparisons are odious. But I have traveled through the Empire, and I know of no system which approaches that which you are fortunate enough to have in Canada." In the restoration of its disabled men to industry, the Canadian idea is that soldiers are citizens and must be treated in the light of their citizenship.

The organization of the Canadian system is threefold: 1. Dominion: The department of militia and defense, under which the soldier is from enlistment to discharge; the military hospitals commission, for providing convalescent homes, medical treatment, and vocational reeducation for disabled returned soldiers; the board of pensions commissioners, which has exclusive jurisdiction over gratuities, allowances, and assistances to members of the Canadian forces and their dependents. 2. Provincial commissions in each Province to provide employment for discharged soldiers. 3. Voluntary: Welcoming committees, philanthropic organizations, employment bureaus, visiting committees, etc. Besides these, various departments of Federal and provincial governments aid in land settlement schemes, employment bureaus, etc.

A Canadian casualty is handled at the front, in England, and across the Atlantic to the Canadian receiving depot by the department of militia and defense. The military hospitals commission takes charge of him through the hospital and convalescent homes

up to discharge, then through reeducation. The board of pensions commissioners and the provincial commission deal with the man after discharge.

Up to discharge, pay and allowance, field and separation, continue. On discharge, accrued arrears and three months' pay are given. If the soldier goes into reeducation, he is put into the military hospitals command, a unit of the service, and pay and allowances are restored. As long as a man is in service his dependents, if needy, are looked after by the Canadian patriotic fund, which, although supported by voluntary contributions, is under Dominion charter. It is to be noted that enlistments in the military hospitals commission command are for treatment, not for service.

The service pay and allowances for rank and file are: Pay, $1 a day; field allowance, 10 cents a day; separation allowance, $20 a month. Up to $20 a month pay may be assigned to dependents. At discharge three months' pay and allowances are given. During reeducation, if not in hospital, subsistence allowance of $1 a day is given, besides separation allowance up to $35 a month, less pension, for wife, and varying sums of from $3 to $7.50 a month for children, the maximum allowance for wife and children being $55 a month.

The hospital and convalescent home organization comprises special hospital cars, sanitariums for cases of tuberculosis—for incipient and for incurable cases—hospital for psychiatric treatment, hospitals, convalescent homes, hospitals for cases of rheumatism, special treatment, and rest and summer camps. When thought advisable men are allowed to recuperate in their own homes, subsistence allowance being made.

The medical and surgical treatment is the best and most effectual that science can offer; it includes functional reeducation as well as treatment. From the medical side, radiograph apparatus, active and passive mecanotherapy, galvanic, static, faradic, and high-tension currents, vibration, electric massage, baking, hot-air blast, continuous hot-water baths, and the balanced magnet are some of the methods and devices used. From the functional reeducational side, Dr. Botts's apparatus, modification on the Amar principle to restore lost functional motion and to cure hysteria, torsion machines, exercises, and gymnasiums are illustrations of the care taken. In amputation cases every effort is made to get the patient to evolve as much functional movement as is possible in the stump. It is alike the French, the German, and the Canadian idea that work properly selected and graduated has a high psychic value and constitutes the best possible means of reaccustoming muscles to action. The power of balancing on the good leg and swinging the stump of the amputated leg is promoted, for example, by hundred-yard dashes, crutches being dis-

carded. Every effort is taken during treatment to convince the men that they should and can become self-supporting, and indeed the professional reeducation is commenced and sometimes finished during the time of active treatment.

The discussion of prosthesis is one that must be approached with care, for some excellent French opinion is rather skeptical of the economic success of artificial attachments, especially if highly standardized. There is, of course, always the conflict of the cosmetic and economic viewpoints. The Canadian policy has been to assemble all the amputation cases in orthopedic hospitals, where functional and professional reeducation is carried on. Thus the individual case—his power of adaptability and his attitude toward economic rehabilitation—can be studied. All limbs are made at these hospitals; thus benefits are obtained of the latest improvements, some of which are not available from individual firms. No expense is being spared in obtaining the most suitable attachments, bearing in mind the prior or possible occupation of the injured man himself, developing the functional use of the stump, and considering the adaptability of the patient. It has been recognized that the most expensive arm or leg is not always the most serviceable and that ordinary ingenuity quickly devises appliances for making easy operations which a physical loss has made difficult. One thing can not be overemphasized—the success of the one-armed or one-legged man is vastly increased when he learns and acts on the knowledge that power and skill can be developed in the remaining stump. Functional reeducation is most valuable.

The purpose behind professional reeducation is that the disabled man be restored to industry, given back his power to work, which constitutes his manhood, to the end that he be not thrown into the garbage can of civilization—poverty relieved by charity. Private Pat is quoted as saying—

> It's a long trench that has no turning,
> A piffling wage that takes no earning,
> And a lazy loon that wants no learning.

The man chooses his own occupation, being adroitly "steered" by the visitors of the local committee and the vocational officers, who act upon the reports received during functional reeducation. The work is commenced during convalescence and continued, if necessary, beyond. The general training comes first: Instruction in English for non-English speaking persons, language, penmanship, and arithmetic. The vocational retraining covers many fields, including bookkeeping, shorthand, typewriting, telegraphy, woodworking, light-metal work, leather working, automobile and internal-combustion engineering, shoe repairing, gardening, poultry keeping, beekeeping, vegetable and flower raising, road building, and general

farming. Every effort has been made to secure experts in the various lines as instructors. In some cases—the practice, it is understood, is to become more general—apprenticeship contracts are secured in industrial establishments. The training given is not given merely as training, but as a power to secure livelihood, and as such the demand is carefully watched and the supply regulated. It would be possible, given time enough, to make over disabled men into professors of Hindu philosophy—but to what avail? Again, experience has shown that inconsequential training, as tatting, knitting, or basket weaving, etc., is of little value except as treatment.

Special methods are employed for the reeducation of the totally blind and totally deaf, converting these from the category of totally disabled to self-supporting.

The work of reemployment is carried on under provincial organizations, commissions appointed by the local governments. Their work is supplemented by the efforts of municipal, local, voluntary, and philanthropic organizations. The end in view is to get the soldier into industry, finding him a position which he is capable of filling, so that he can meet the competition of men who have not been disabled. By keeping careful record of the man, by visiting him, and by encouraging him much is being done. The idea is that a soldier naturally suffers from war shock and comes back mentally and physically changed, accustomed to waiting for and acting on specific orders, and hence is lacking in initiative, and because of this must be encouraged and aided. Job after job must be found suitable to his disabled physical structure and changed psychic conditions, till at last time obliterates his restlessness and rehabilitation restores his industrial power to compete in the open market.

To date, in Canada there are more jobs than jobless, the positions filled paying from $10 a week to $150 a month. The Canadian Manufacturers' Association is interesting its members, publicity agencies are cooperating, and investigative talent is preparing a list of occupations in which disabled men may compete, so that a complete industrial survey may be made. Steps are also being taken to regulate the problem of compensation, and accident and life insurance premiums in respect to disabled men.

To the maximum pensions for total disability is added an allowance for attendance, if the disability is such that it necessitates attention. The maximum pension in Canada, $40 a month (rank and file allowance) for a man without children, is increased $6 a month for each child. The $40 a month is the figure which, in the best judgment, is the amount requisite to maintain the average worker in a standard of decent comfort. The rating schedule and the monthly maximum are, it is understood, to undergo a change, and provision for constant revision is to be made, revision being based,

as are initial allowances, on physical injury alone, no deduction to be made for any earnings which are the result of reeducation.

The land settlement schemes of the various governments comprise free land, free farming instruction, free supervision, and substantial assistance in the form of stock. lumber, implements, and cash.

On the eve of America's active participation in the European war and by reason of Canada's efforts, this continent has been shocked into endeavor to restore disabled soldiers to industry. To-night it is urged that the work of rehabilitating industry's cripples be hastened. From the economic and national standpoint a cripple is a social loss, whether military or industrial. The problems go hand in hand, even if through the military—

> There runs
> The red resentment of the guns,
> And you, yourself, would mutter when
> You took the things that once were men
> And sped them through that zone of hate
> To where the dripping surgeons wait,
> And wonder too, if in God's sight,
> War ever, ever can be right.

—and the industrial is buried in hopelessness, suffering, and despair in the cottages of the toilers.

* * * * * * *

Statistics is the science of counting. The importance of counting can not be overestimated. The first mention of counting is in the first chapter of Genesis. Everything was divided into periods—regular intervals. So in counting, no matter where you begin or what you are doing, you have got to know how much you have done and how much remains to be done. That statistics can be applied to almost anything is illustrated by a curious fact. For the first time in the history of Great Britain the Scottish soldiers have discarded the traditional kilts and are fighting in khaki. There is a reason for that, I am given to understand by those in position to know. It was found that cases of arthritis of the knee were most prevalent among the Scottish soldiers and this led to an investigation. It was found that the slapping of the mud-caked kilts on the knees set up a condition of the joints that necessitated, sometimes, the discharge of the Highland soldier from the service. That is one example of the use of statistics. In diagnoses, as almost any practitioner will tell you, statistics are absolutely the whole thing. Of course it is unnecessary to speak of the importance of statistics in accident prevention work, and in every problem which an industrial accident board meets. It has been found in the Canadian military service that statistics, the constant reporting of statistical data,

is the basis upon which so many of these wonderful things that they are doing in restoring the injured to industry have been arrived at. If you are going to have real statistics in this work, I think that a uniform, concrete policy is the only thing. We in Ontario can go on for years and centuries and we can not get together as much data as we can in a single year in the United States and Canada. One type of industry in New York necessitates a higher rate than the same type of industry in Ohio or Massachusetts, or any other State. There is only one way in which we can find out the reason for it. It is not by the experience of any single man or five or ten men, but by the experience of the country as a whole. I am asking, nay, pleading with the commissioners here to-night that they take up this question of statistical work; that the efforts of the committee already appointed be continued; that the committee itself be continued—if necessary, be put upon a permanent basis. Some of the ablest men in statistical work on the American Continent to-day, some of the ablest men in statistical work in relation to workmen's compensation, are members of this committee. You have an opportunity, through the committee, to gain the information you may wish you had now or had had years ago. Also, do not so limit your statistician in money or help or appliances that he can barely get together a few miserable, paltry figures to represent all the experience of the State. Why hamper your statisticians by giving them a few pages in the back of the book. I would like to say that it has been this hampering that has brought the statistical profession into the awful condition in which it now is. I urge two things: First, that this committee on statistics be continued, perhaps permanently, if you so feel; and, second, that when you go home and come to the actual work that this committee has accomplished don't throw the reports on the side of your desk and say, "This means nothing. That's all right for a few jurisdictions that want to spend a lot of money." We are striving to get together data that is going to help in the administration of compensation laws. I ask you to do what you can toward helping the statisticians in this country to get data that are not meaningless, but have some real bearing on the solution of the problems before us.

INDUSTRIAL SAFETY THROUGH STATISTICS.

BY CHARLES H. VERRILL, STATISTICIAN, UNITED STATES EMPLOYEES' COMPENSATION COMMISSION.

For the organizing and carrying on of effective accident-prevention work the first essential is an accurate knowledge of where, how, and why accidents occur. No compensation commission and certainly no experienced safety man needs to wait for accident statistics in order to recognize the common danger points in industry, such as unguarded saws, gears, or shafting. But employers, especially in small establishments, are sometimes blind to even such dangers as these, or are slow to recognize them as actual dangers in their own plants. But the obvious dangers are only a small part of the whole, and for progressive results there must be educational work, with a continuous study of the causes of accident occurrence.

The safety man must know in what department and in what occupation or process accidents are occurring, and in connection with what structures, machines, or appliances, whether from defect of design or material, of structure, machine, or appliance. The lack of practicable safeguards, the improper use of material or appliances, or the ignorance or lack of care on the part of the employee is a frequent direct or underlying cause of accidents. He must, in short, know whatever it is possible to ascertain in regard to the manner in which the accidents are occurring.

Causes of accident, if imperfectly described, are of limited use for accident prevention. For example, if the cause is given merely as "flying particles," unrelated to any particular machine or kind of work, it furnishes a very imperfect guide to accident prevention. We know that some machine or work should have been so guarded that particles could not be thrown off, or, if that was not possible, that an employee at some work should have worn goggles, but neither the machine nor the work can be definitely located so that the necessary steps may be taken to prevent other similar accidents. Again, an accident said to be caused by a fall from a ladder may be due to the fall of the man, owing to loss of balance, to breaking of a round of a ladder, to the slipping of the ladder, or to its twisting or turning and throwing the man. If the records are to be useful for accident prevention, the causes should be specifically stated.

Everyone who has had occasion to study accident causes, or, in fact, any phase of industrial conditions, is familiar with cases where employers have been wholly unaware of serious and easily remediable

dangers in their plants. Only investigation and the summarizing or the statistical presentation of the results have been able to mass the evidence so as to bring home the need of the proper corrective measures.

I refer briefly to several examples. The danger of the new employee has not always been recognized as it is now. In a report which the United States Bureau of Labor Statistics published early in 1911 the hazard of the new man was brought out more strikingly than ever before or since, I believe. The investigation showed that among stamping and punch press hands, 329 were injured during their first day on the machine, as against 46 during the remainder of their first week and 7 during the remaining weeks of their first month. You are all familiar with the excessive number of accidents among non-English-speaking employees, a special hazard not generally recognized before its statistical demonstration.

Even more striking instances of the success of investigations are to be found in some of the occupational-disease studies of the Bureau of Labor Statistics. Before the bureau's investigation of phosphorus poisoning in 1909, it was the claim of American match manufacturers—and there was a popular impression—that the trouble had not existed in this country in a serious form for 20 years. The records of more than a hundred cases of the disease were discovered in a very short time, with the result that most match manufacturers joined in the movement for the legislative prohibition of the use of the poison in the industry.

Even more striking was the ignorance shown by owners or managers in the white-lead industry as to actual sickness among their men. "Several times men, apparently quite sincere, maintained that there was no lead poisoning at all in their factories. In one instance the manager said that they had had but 2 cases in 7 years; 17 cases were found in the hospital records of some 15 months. Another manager challenged the writer to find 1 case for which the factory was responsible, and 21 were found, scattered through two years' time. The manager promptly installed a physician as medical examiner, a measure he had, up to that time, considered quite superfluous." (Bulletin No. 95 of the U. S. Bureau of Labor Statistics, p. 190.) To many other of the employers the results of the investigation were a revelation, and immediate steps were taken to remove or to minimize the dangers which had become so clearly apparent.

In a recent investigation by the Bureau of Labor Statistics of anthrax, a disease reputed to be prevalent only in foreign countries, "one Delaware physician was able to furnish from his own practice data on 48 cases treated within six years." "During the same period a single Philadelphia hospital treated 32 cases, 6 of which were fatal."

The recommendations of the committee on statistics of the association provide for the analysis of causes in groups and in detail, according to the list of causes submitted at the Columbus meeting of the association and printed in Bulletin No. 201 of the United States Bureau of Labor Statistics. In this analysis the accidents are distinguished as resulting in death, permanent total disability, permanent partial disability, and temporary disability, the last class being subdivided into those of one week and under, over one to two weeks, and over two weeks. For each cause and each kind of disability days lost as well as number of accidents are to be shown. Such an analysis will show the numerical importance and the importance from the standpoint of severity of each accident cause, thus identifying the causes most urgently calling for corrective measures.

The committee has recommended that this form of analysis should be made for each important industry and for each important industry group. The committee suggests further the analysis of the causes of fatalities and permanent injuries by location of injury.

A further analysis of causes recommended by the committee is according to nature of injury, and a special analysis of infected injuries by nature of injury and extent of resulting disability. This analysis of infected injuries distinguishes between injuries resulting in death and those resulting in total loss or in permanent impairment of specified important members and those resulting in temporary disability, giving to the last class days lost as well as number of disabilities.

It is hardly possible to overstate the importance of prompt and efficient first aid to shorten and minimize the effects of accidents. In some establishments the records show infection in more than 10 per cent of the injuries, permanent disability and even death resulting from injuries which, without infection, should have been only trivial. Contrast with this "the records of the plant of the Norton Co., at Worcester, Mass., where first-aid work has been in charge of Dr. W. Irving Clark, which show that there was not a single case of infection following injury during five years."

ACCIDENT RATES SINCE 1914.

BY DUDLEY R. KENNEDY, ASSISTANT TO THE PRESIDENT OF THE YOUNGSTOWN SHEET & TUBE CO.

It is almost an axiom that a person in preparing an address, or a paper, acquires more light upon the subject than he is able to put upon paper or convey to an audience.

If the foregoing statement were ever true, I have found it so in this instance. To marshal enough honest and trustworthy information so as not to impose upon the time of experts with a rambling generalization, where the little meat of facts is about in proportion to the meat in the present high-priced hotel sandwich, has been quite a task.

Some of you perhaps know—and my good friend, Dr. Meeker, knows too well—that I personally have been almost a nuisance for the last three or four years, in trying to bring about some sort of standardization of statistics. I have had the matter up at different times for the last four years with the National Safety Council, the Ohio Industrial Commission, and more fully with the United States Department of Labor, through Dr. Royal Meeker.

In justice to the Bureau of Labor Statistics of the United States Department of Labor, it must be said, however, that they have labored long and earnestly in this behalf. In its Monthly Review, July, 1916, Volume III, No. 1, you will find a very lucid explanation of the bureau's ideas, showing the mature thought expended by Dr. Meeker and his bureau upon the problem. Even such recommendations are of small value unless applied, and it appears as though the only method of application was through this organization. If you would appoint a committee to confer with the United States Bureau of Labor Statistics and agree upon some standard of compilation, and then revise your various State statistical departments accordingly, so as to be in harmony, it would be in my judgment the greatest single advance in a tremendously large problem.

Those of us who have been searching for the facts, regardless of whether or not the facts were pleasing and flattering, have constantly been balked by the absolute lack of statistics, and by statistics which were carelessly prepared, to say the least, if not deliberately compiled for the purpose of flattering the individual in charge of the work or the concern which employed him.

In addition to all this, a great many concerns, especially the larger of them, are trying to keep real statistics, and are as anxious as it is possible to be to agree, through some medium, upon a standard way of keeping statistics, in order that they may make comparison with other factories in the same or similar lines of business, not at all for vainglorious reasons, but because they are giving to accident prevention more and more importance every day, and hence more and more real analytical study. But these concerns, in many States, are compelled to keep their records in accordance with prescribed rules of the State accident board or industrial commission, and if there are any two States whose requirements are the same, nobody within my acquaintance has been advised of the fact.

It is my misfortune perhaps to be blunt and state the case as I see it, rather than to try to please you by talk of a complimentary nature. I have regretted a thousand times that I could not bring to bear before you to-day some convincing logic, some forceful argument, some silver-tongued oratory that would spur you, through your organization, to some such tangible form of procedure or action as to give promise within the near future of some uniformity of accident statistics as between the States. You must understand that this criticism is not directed against the personnel of the various boards, or the persons whom they represent, but you certainly must be aware that the various State boards, and the United States Bureau of Labor Statistics itself, are constantly subjected to an avalanche of criticism at the hands of the large employers of labor in this country, because of their tremendous and constant demand for statistics, so called, which many, many times, or in fact a large percentage of the time, have little or no meaning or consequence even after they are prepared with great time and effort. You must also bear in mind that the man on the job, who prepares these statistics, is usually much more interested than the clerical force who receives and compiles them as a part of the day's work in more or less perfunctory manner.

In order to get some concrete and reliable information as to what has happened to our accident frequency in this country, by reason of the tremendous increase in production incident to the war and the unprecedented expansion in business in the last three or four years, I wrote to almost 100 of the large representative concerns in the United States, asking them, in a confidential way, for their experience over this period. I promised them that the information thus obtained would be compiled in composite tables in such a manner as to preclude their identity becoming known. Only in this manner was it possible to obtain this information, and almost all of the concerns who have given me this information have thanked me for approaching the matter as I have indicated, because they felt that it

was unfair to give information that might be compared and contrasted with statistics that were based upon entirely different conceptions perhaps or deliberately painted to convey certain impressions.

I wish at this time sincerely to thank all of these concerns and the individuals who prepared the information for your consideration, and I desire to thank you for honoring me in asking that I prepare a paper on a subject so interesting and vitally important in our economic transformation now in process.

We have reduced the data obtained from interested manufacturers to composite tables and charts, which are, after all, the most terse and striking mode of expression, as well as the most brief. The conclusions reached, and the tendencies as clearly shown, may or may not be pleasing, but they are as nearly honest and reliable as it was possible to obtain. The searcher for facts often finds facts not pleasing.

The following concerns were kind enough to furnish the information requested by the writer, and I shall crave your indulgence in enumerating them for the reason only that their size and importance and the well-known interest displayed by them give considerable weight to the conclusions reached:

United States Steel Corporation.
The Bethlehem Steel Co.
The American Rolling Mill Co.
Republic Iron & Steel Co.
Commonwealth Steel Co.
Inland Steel Co.
The Youngstown Sheet & Tube Co.
American Steel Foundries.
Winchester Firearm Co.
Scoville Manufacturing Co.
Goodyear Tire & Rubber Co.
The Republic Rubber Co.
The Norfolk & Western Railroad.
Westinghouse Co.
General Electric Co.
The New Jersey Zinc Co.
Raritan Copper Works.
Fairbanks-Morse Manufacturing Co.
International Harvester Co.
The Ford Motor Co.
Eastman Kodak Co.
Corn Products Refining Co.
Omaha Gas Co.

Also—

National Safety Council.
United States Bureau of Mines.
Department of Labor and Industry of Pennsylvania.
Industrial Commission of Wisconsin.
Industrial Commission of Ohio.
Industrial Commission of New York.

These 23 concerns employ, as of July 1, 1917, one-half million employees, and you will notice that almost every large group is included; that we have endeavored to obtain the worst possible phase of the situation by using statistics from the industries and concerns which have had the most rapid and phenomenal growth through the demand for munitions proper or for products bringing them more or less within the newly coined group "war brides."

There has been much speculation, and a few statistics, mostly of individual concerns, tending to show a proportionate increase of accidents due to increased production. It is indeed pleasing to find that this tendency has been greatly overexaggerated, although the increase is regrettably true. The charts present some interesting contrasts and not a few apparent paradoxes, which are usually present when a large number of factors, without a common denominator, are sought to be compared.

It is impossible and somewhat mystifying to attempt to analyze several of the things which appear; for instance, it is the almost universal experience that accidents started to increase early in 1914, reaching their peak in 1916 and receding rather sharply in the first half of this year, in spite of the fact that the employment roll of the industries involved is still mounting in the same or more pronounced proportion. Hundreds of reasons could be properly advanced for this apparent phenomena, and all might be applicable in specific instances, but the most plausible answer, in my mind, is the fact that not until some time in 1916 had this tremendous increase of production been efficiently organized. When additions began to spring up like mushrooms overnight, when new men began arriving literally by trainloads, who were more or less unfamiliar with the new type of employment, lured on by wages in many cases beyond their wildest dreams, when safety departments were absolutely lost in the maze of new construction and doubled or trebled production, it was not surprising that the accident rate should mount rapidly and steadily. That the "new man" problem had much to do with the situation is very graphically shown in volume 4, No. 2, of the Bulletin of the Pennsylvania Department of Labor, by a chart of the Cambria Steel Co., showing that the liability to injury of the man of less than 30 days' employment was 6 to 1 as against a man of 30 or more days' experience. Many persons have taken the manufacturers severely to task for so-called "speeding-up" measures supposed to have been employed, but in my humble opinion most of the "speeding up" has been entirely voluntary, because the bait of war-time wages hung continuously in front of the worker's eyes as the tempting feed hangs before the horse in the treadmill.

It is indeed regrettable that some standard of computation for these statistics should have been lacking for the last three years, because more information could have been made available than was ever possible before or may be again in the future. It was necessary to leave out of different charts many companies who furnished valuable information, simply because their statistics absolutely could not be contrasted through their lack of a common denominator. It was impossible, of course, to contrast two concerns where the data of one is in terms of accidents, and of the other in terms of days lost from accidents. Even where the data of the two concerns were for accidents, the definition of accident itself was apparently not the same, as one might keep all accidents, excluding minor accidents not reportable to same commission, while the other for its own information recorded every accident, even though it be a mere scratch.

It is really deplorable that such a mass of information as was offered for this purpose should be susceptible of such little comparative value.

After trying to adapt every recognized standard of comparison, we found that the only method adaptable for enough concerns to make a representative showing was to reduce it to terms of accidents per 100 employees, using the years 1914, 1915, 1916, and 1917. Of course we had only one-half of 1917 available, but we multiplied the figures for the first half of 1917 by two, after justifying the same in a manner which I shall later show you upon a chart.

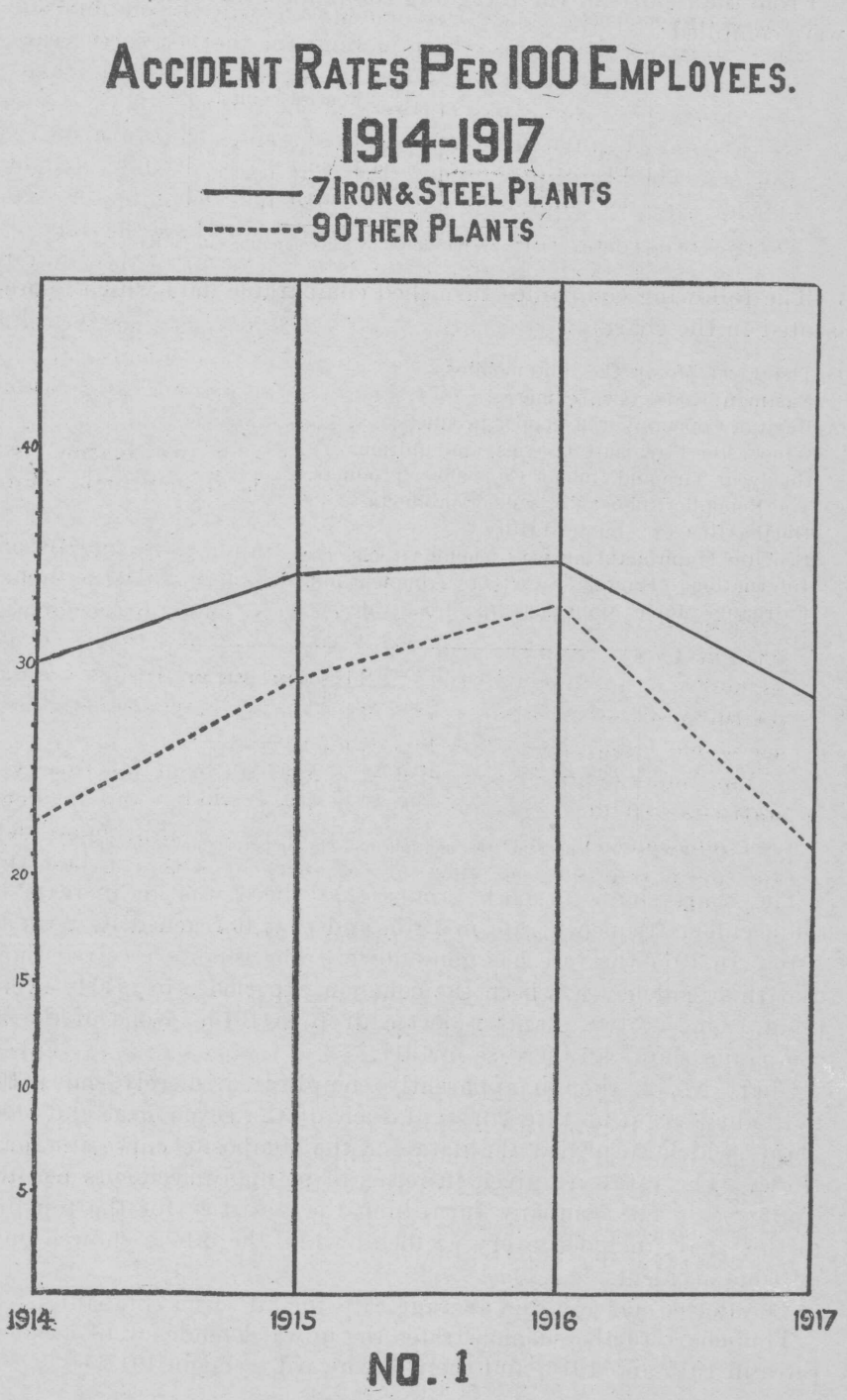
You understand, of course, that I hold no brief for this type of statistics, but until the good Lord in His wisdom (and incidentally you gentlemen in yours) permits us to have something more definite and more tangible, we must all be satisfied with the best that is available.

I shall now proceed to the showing of the charts which I have here.

Chart No. 1 shows the accident frequency rates per 100 employees for seven large iron and steel plants, and for nine other plants manufacturing various products. The rates cover the years 1914, 1915, 1916, and 1917. The top line is the curve for the iron and steel plants; the bottom line is the curve for the other plants.

The iron and steel plants which furnished the comparable statistics which make up the composite figures for this chart are as follows:

The Commonwealth Steel Co.
American Rolling Mill Co.
American Steel Foundries.
Republic Iron and Steel Co.
Inland Steel Co.
A subsidiary plant of the United States Steel Corporation.
The Youngstown Sheet and Tube Co.


ACCIDENT RATES PER 100 EMPLOYEES.
1914-1917
7 IRON & STEEL PLANTS
90 THER PLANTS
40
30
20
15
10
5
1914
1915
1916
1917

NO. 1

From the reports of the foregoing companies, the following figures were compiled:

Year.	Number employed.	Number injured.	Rate per 100.
1914	24,802	7,445	30.0
1915	26,740	8,157	34.2
1916	37,049	12,951	34.9
1917 [1]	45,945	13,104	28.5

[1] Data for the first half of 1917 were multiplied by 2 in computing rate for this year.

The following companies furnished comparable data which is presented in the chart:

The Ford Motor Co., automobiles.
Eastman Kodak Co., cameras.
Raritan Copper Works, copper products.
Winchester Firearm Co., arms, ammunition.
Goodyear Tire and Rubber Co., rubber products.
The Republic Rubber Co., rubber products.
Omaha Gas Co., public utility.
Scoville Manufacturing Co., machine tools, etc.
International Harvester Co., farm implements.
Fairbanks-Morse Manufacturing Co., scales.

Year.	Number employed.	Number injured.	Rate per 100.
1914	58,240	13,124	22.5
1915	71,005	20,789	29.2
1916	95,902	31,635	32.9
1917 [1]	136,999	29,315	21.3

[1] Data for the first half of 1917 were multiplied by 2 in computing rate for this year.

The chart shows in both groups that there was an increase in the accident-frequency rate in 1915, and that it reached its peak in 1916. In 1917 the rate has gone down. The reports received show that this tendency has been the common experience in nearly every plant. One or two plants report a drop in 1916. None of the 23 companies shows an increase in 1917.

Chart No. 2, though apparently complicated, merely shows the individual accident rate curve of each of the seven iron and steel plants which furnished the data for the composite curve in Chart No. 1. The rates are given in terms of so many accidents per 100 employees. The company furnishing the statistics for the top line in this chart included every accident, while the others showed only off-time accidents.

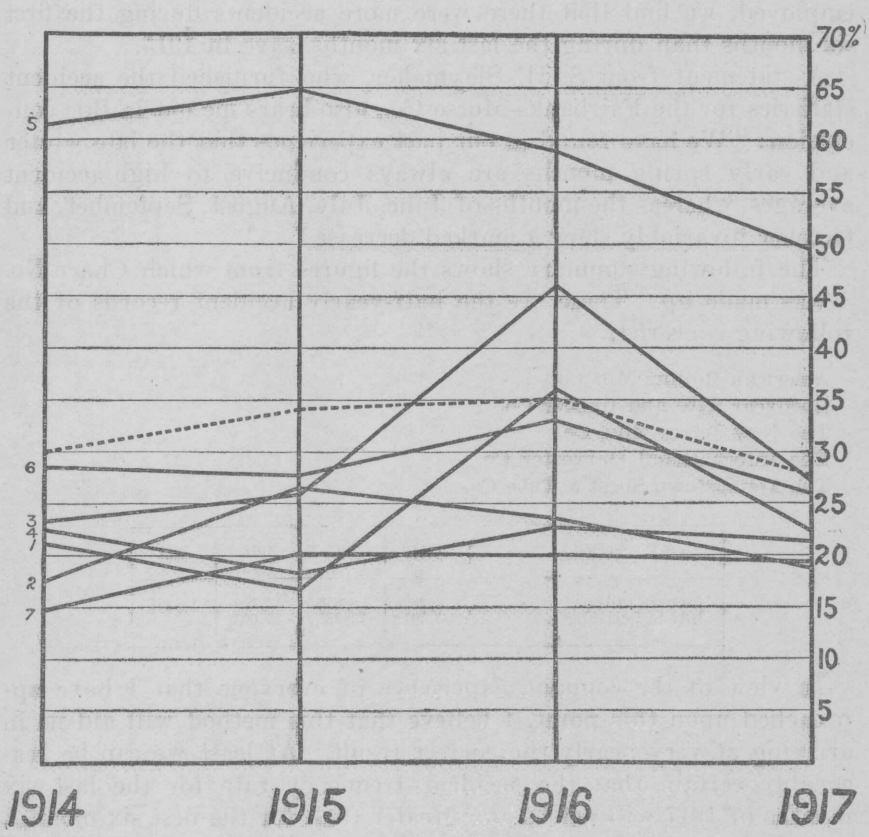
The dotted curve is the average rate for all seven companies.

This chart further demonstrates the upward tendency of accident rates in 1915 and 1916, and their downward trend in 1917.

ACCIDENT RATES PER 100 EMPLOYEES.

7 IRON & STEEL PLANTS.

1914-1917



NO. 2

In order to arrive at the total accident figures for the year 1917, which was necessary to furnish comparable statistics with the figures for the preceding years, some method had to be devised that could be taken as a fair basis for approximating the figures for the last six months of this year, based upon data of the first half of the year. The statistics of the companies, who had given them to us in a monthly summary, were carefully studied. As a result of this conclusion, we became convinced that it would be reasonable to multiply the figures for the first half of the year by two to arrive at the year's figures. The records showed that the rate for the first six months of every year was higher than for the last six months. And as to the actual number of accidents, regardless of the number employed, we find that there were more accidents during the first six months than during the last six months, save in 1915.

A statement from S. H. Slaymaker, who furnished the accident statistics for the Fairbanks-Morse Co., also bears me out in this conclusion: "We have found in our past experience that the late winter and early spring months are always conducive to high-accident averages, whereas the months of June, July, August, September, and October invariably show a marked decrease."

The following summary shows the figures from which Chart No. 3 was made up. These are the half-yearly accident records of the following concerns:

American Rolling Mill Co.
Goodyear Tire and Rubber Co.
The New Jersey Zinc Co.
The International Harvester Co.
The Youngstown Sheet & Tube Co.

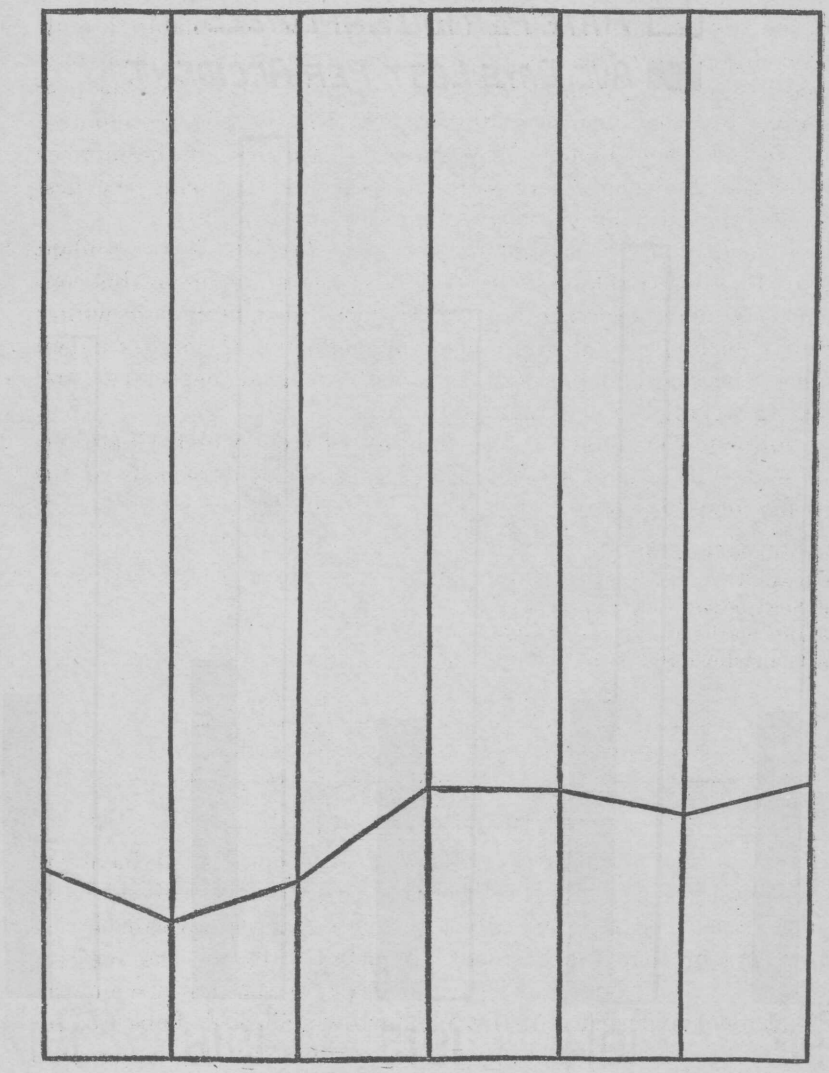
Period.	1914	1915	1916	1917
January to June	9,282	8,859	13,199	13,437
July to December	6,791	13,285	12,093	.....

In view of the common experience of everyone that I have approached upon this point, I believe that this method will aid us in arriving at very nearly the correct result. At least we can be reasonably certain that the accident frequency rate for the last six months of 1917 will not be any greater than for the first six months.

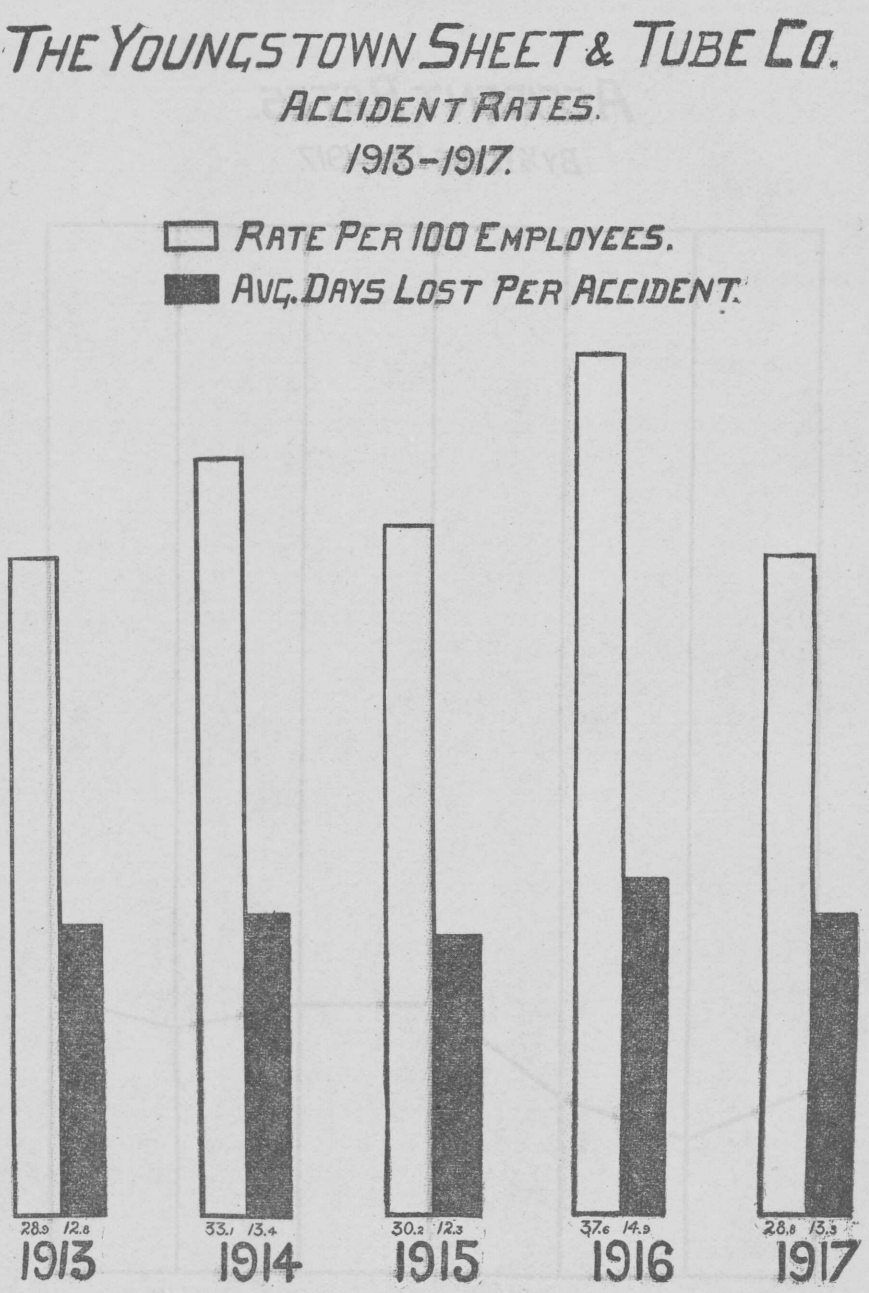
The accident experience of the Youngstown Sheet & Tube Co. for the last four years has been similar to that of the other iron and steel plants studied. Chart No. 4 shows the rate of off-time accidents per 100 employees since 1913, and also the average number of days off for each off-time accident.

ACCIDENT RATES.

BY ½ YEARS 1914–1917.



NO. 3


THE YOUNGSTOWN SHEET & TUBE CO.
ACCIDENT RATES.
1913-1917.
RATE PER 100 EMPLOYEES.
AVG. DAYS LOST PER ACCIDENT.
28.9 12.8
1913
33.1 13.4
1914
30.2 12.3
1915
37.6 14.9
1916
28.8 13.3
1917

No. 4

These rates and averages are as follows:

	1913	1914	1915	1916	1917
Rate of accidents per 100 employees	28.9	33.1	30.2	37.6	28.8
Average number of days lost	12.8	13.4	12.3	14.9	13.3

The original statistics which furnished the basis for these rates are as follows:

	1913	1914	1915	1916	1917
Number employed	7,963	5,648	6,500	8,000	10,500
Number of off-time accidents	2,302	1,690	1,804	2,669	2,732
Number of days lost	29,432	22,715	22,300	39,256	36,472

These statistics also show the importance of the "new man" problems. The increase in the number employed has been—

1914 to 1915	852
1915 to 1916	1,500
1916 to 1917	2,500

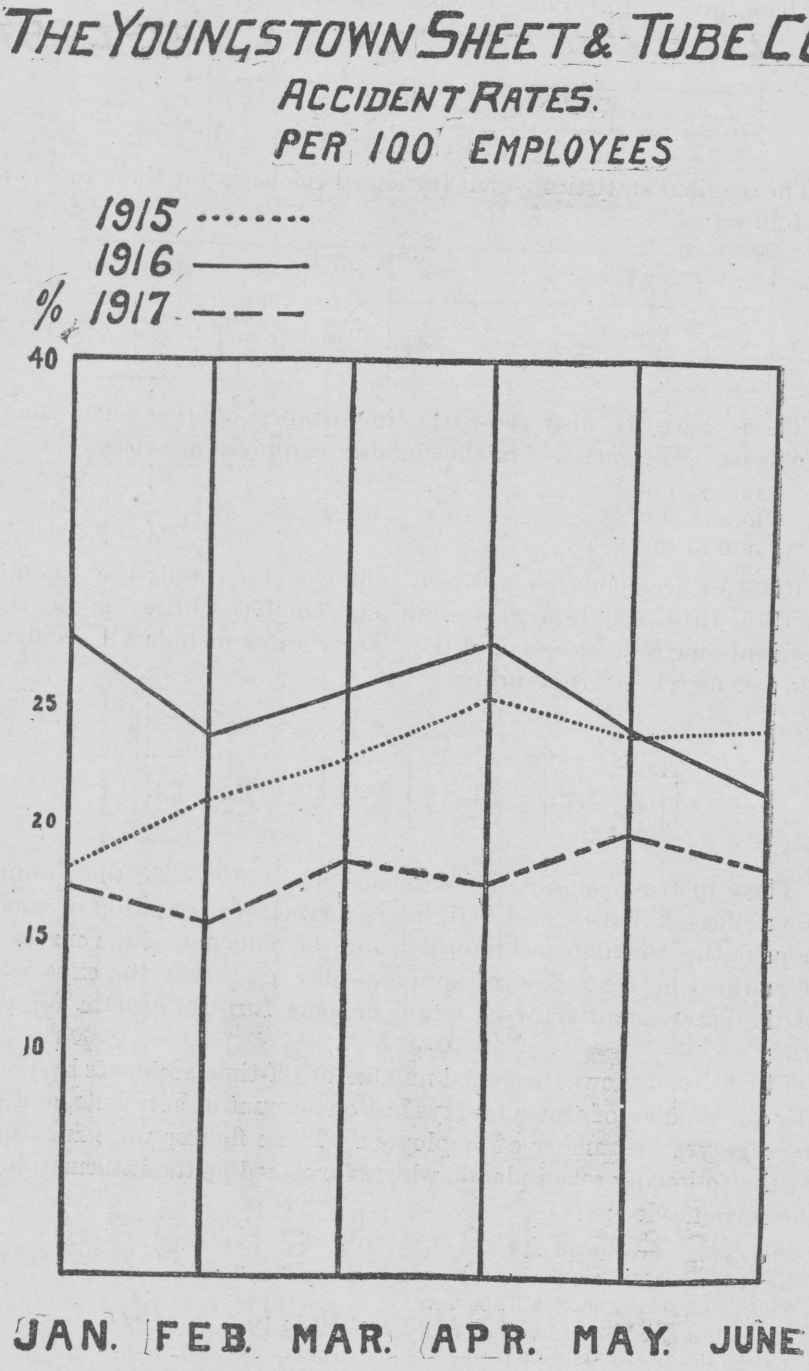
Rates of accidents per 100 men employed for the first six months in 1915, 1916, and 1917 give additional emphasis to my point, that accidents have decreased in 1917. These rates include all accidents and not merely off-time injuries.

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.
1915	17.9	21.0	22.8	25.3	23.7	24.1
1916	28.0	23.6	25.7	27.7	24.0	21.3
1917	17.0	15.5	18.3	17.3	19.5	18.2

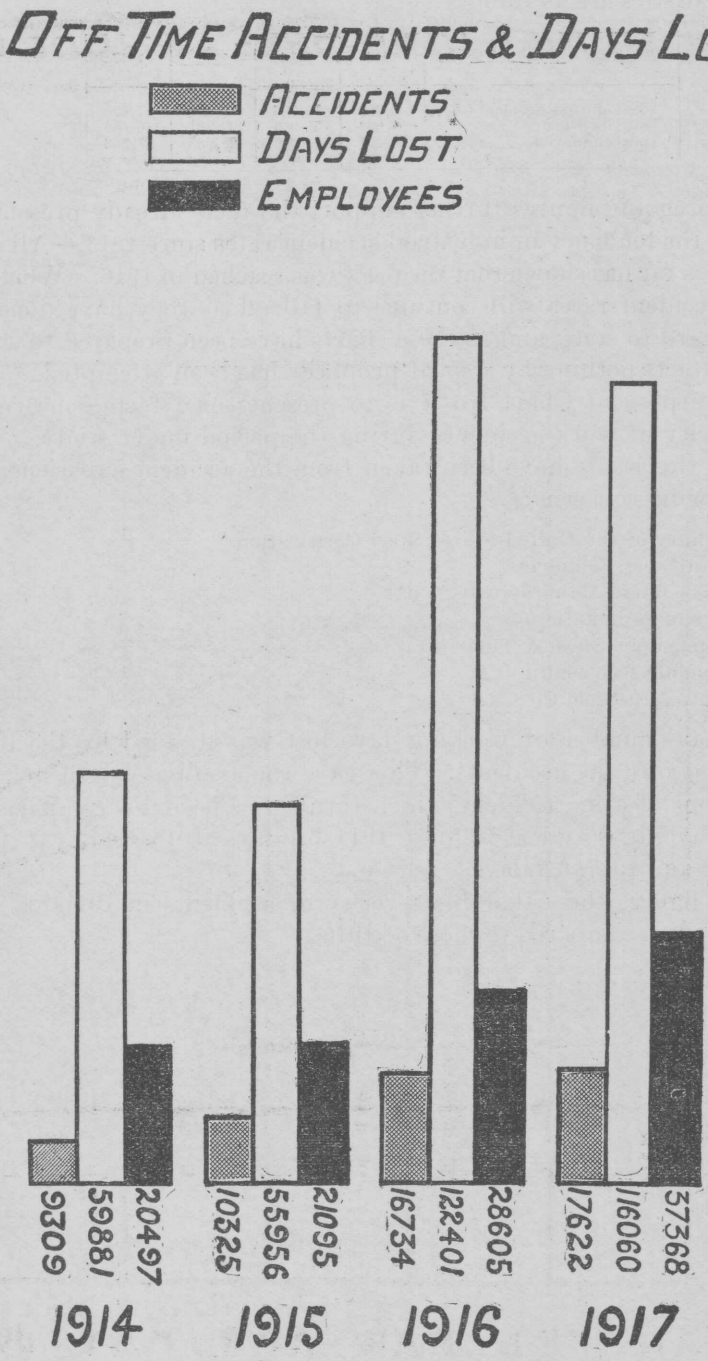
These figures, compiled from the accident statistics of the Youngstown Sheet & Tube Co., I believe are a true representation of conditions in the iron and steel industry, and the tendency of the curves, as shown in Chart No. 5, also represent quite accurately the experience of the other manufacturing establishments furnishing data for this study.

Chart No. 6 shows the actual number of off-time accidents by years, also the number of working-days lost on account of accidents, and the average yearly number of employees. These figures were furnished by the following seven plants, which furnished us the information in the form needed:

The Commonwealth Steel Co.
American Steel Foundries.
The Youngstown Sheet & Tube Co.
A subsidiary of the United States Steel Corporation.
Fairbanks-Morse Manufacturing Co.
Corn Products Refining Co.
The Republic Rubber Co.


THE YOUNGSTOWN SHEET & TUBE CO.
ACCIDENT RATES.
PER 100 EMPLOYEES
1915 .....
1916 ———
% 1917 — — —
40
25
20
15
10
JAN. FEB. MAR. APR. MAY. JUNE

NO. 5


OFF TIME ACCIDENTS & DAYS LOST.
ACCIDENTS
DAYS LOST
EMPLOYEES
9309
59881
20497
10325
55956
21095
16734
122401
28605
17622
116060
37368
1914
1915
1916
1917

NO. 6

The statistics are as follows:

	1914	1915	1916	1917
Total off-time accidents	9,309	10,325	16,734	17,622
Total days lost	59,881	55,956	122,401	116,060
Total employed	20,497	21,095	28,605	37,368

The foregoing figures further support the facts already presented, showing the tendency in industrial accident rates since 1914. All evidence thus far has shown that the peak was reached in 1916. Whether or not accident rates will continue to fall off as they have done in 1917 is hard to state, and as these charts have been prepared to show existing facts nothing by way of prophecy has been attempted.

The purpose of Chart No. 7 is to present some facts concerning the severity of work accidents during the period under study. The data for this study have been taken from the accident experience of the following concerns:

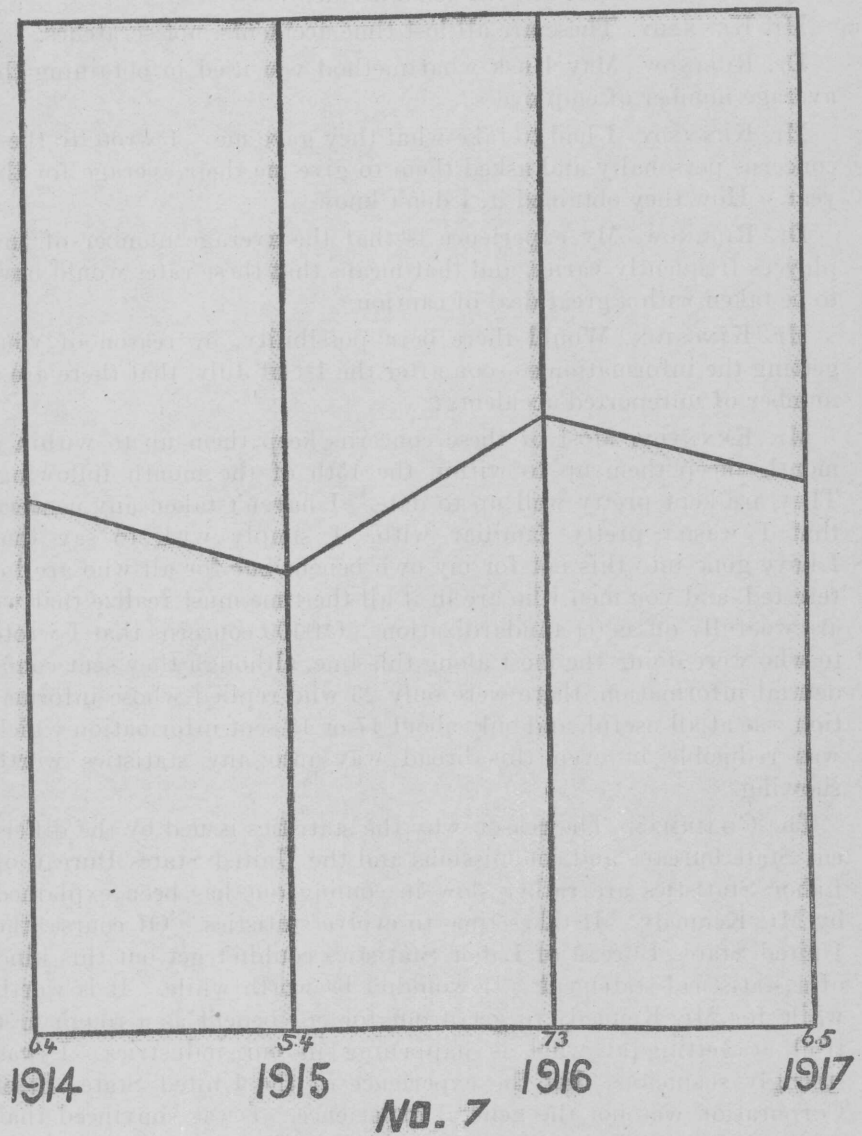
A subsidiary of the United States Steel Corporation.
American Steel Foundries.
Fairbanks-Morse Manufacturing Co.
Corn Products Refining Co.
The Youngstown Sheet & Tube Co.
The Republic Rubber Co.
Commonwealth Steel Co.

The total number of working-days lost was divided by the total number of off-time accidents. This gave the average length of time lost for one off-time accident, which furnishes a basis for comparison.

These averages were as follows: 1914, 6.4 days; 1915, 5.4 days; 1916, 7.3 days; and 1917, 6.5 days.

These figures show that the severity of accidents in 1917 has decreased, when compared to those of 1916.

AVERAGE DAYS LOSS FOR ONE OFF TIME ACCIDENT.



NO. 7

DISCUSSION.

Mr. KINGSTON. Are you calling everything an accident? Some people refer to a mere scratch as an accident.

Mr. KENNEDY. These are all lost-time accidents, not scratches.

Dr. RUBINOW. May I ask what method you used in obtaining the average number of employees?

Mr. KENNEDY. I had to take what they gave me. I wrote to these concerns personally and asked them to give me their average for the year. How they obtained it, I don't know.

Dr. RUBINOW. My experience is that the average number of employees frequently varies, and that means that these rates would have to be taken with a great deal of caution.

Mr. KINGSTON. Would there be a possibility, by reason of your getting the information so soon after the 1st of July, that there are a number of unreported accidents?

Mr. KENNEDY. Most of these concerns keep them up to within a month—keep them up to within the 15th of the month following. They are kept pretty well up to date. I haven't taken any concern that I wasn't pretty familiar with. I simply wish to say that I have gone into this not for my own benefit but for all who are interested, and you men who are in it all the time must realize that we are woefully off as to standardization. Of 100 concerns that I wrote to who were doing the most along this line, although they sent confidential information, there were only 23 who replied whose information was at all useful, and only about 17 or 18 sent information which was reducible in even this broad way into any statistics worth showing.

The CHAIRMAN. The reason why the statistics issued by the different State bureaus and commissions and the United States Bureau of Labor Statistics are rather slow in coming out has been explained by Mr. Kennedy. It takes time to evolve statistics. Of course, the United States Bureau of Labor Statistics couldn't get out this kind of a statistical statement. It wouldn't be worth while. It is worth while for Mr. Kennedy to get it out for our benefit as a rough first trial at getting at what is happening in our industries. I was strongly suspicious that the experience of the United States Steel Corporation was not the general experience. I was convinced that their accident rate was tending downward. Their trend began, if I remember it correctly, in 1916. About the middle of the year it began to go down, and went down and down and down, and from all

the information I could get from talking with people who know and from observation in industry, I felt that that was not the typical experience. I felt that the accident rate was a very serious problem, indeed, and was not growing better. I think Mr. Kennedy has shown that in the plants from which he got returns conditions are very commendable. But the plants that are having bad experience and that are not bettering their accident rates don't report. I think you would agree with that, Mr. Kennedy.

Mr. KENNEDY. That statement you made is true, and therefore I couldn't get any statistics from such plants because they don't even report to your bureau, let alone an individual.

Mr. E. H. DOWNEY, special deputy, Insurance Department of Pennsylvania. I was extremely glad to hear what Mr. Kennedy said in regard to the abominable condition of statistics in this country. Everything that he said was not only merited, but a good deal more severe criticism was merited. Even though we recognize that he doesn't have an accurate comparison and a complete basis of comparison, it is really indicative of what the actual complete figures would show if we could get them from the plants. I want to say incidentally that the bituminous coal mine industry in 1916 showed a decrease in the fatality rate and a very considerable increase in the production of coal; there was a much larger production, with the lowest fatality rate in the history of the State. So that the increase of accidents in 1916 from the general experience of the country was not the universal experience. Supplementing what Mr. Kennedy said in regard to lack of any standard basis of comparison, I know from experience that it is a good deal easier to lay plans for the statisticians than it is to induce the States to make any practical use of anything that has been suggested. There are few of the States which have workmen's compensation acts that have made any attempt to compile any kind of statistics, good, bad, or indifferent. There are very few of the States that are willing to spend enough money to hire even one man who knows the difference between statistics and bunk.

I was in the State of Wisconsin and made an attempt to obtain figures from a small number of employers. I succeeded in obtaining from 25 employers a report of the number of man-hours for which they paid. There are a number of operators who can give the number of men who draw pay each pay day, as, of course, they all have pay-roll records. They do not know the number of days each man worked, unless such men were company men, and they do not know the number of hours that they actually worked each day. There are few establishments of any kind which have those records unless the men are paid by the hour, and then it is quite a job to get up the

number of actual hours that are paid for. And there are very few employers who for the sake of statistics will go to the trouble of getting up the number of man-hours, but in every jurisdiction where there is a workmen's compensation law the pay-roll part can be obtained. It is also possible to obtain a pretty good indication of the average wages of each industry from the accident statistics in every compensation jurisdiction, because the average weekly wage must be determined in the fixation of compensation. It is possible, from that basis, to obtain the average number of men employed, and that is the only basis upon which we could arrive at any approximate estimate of the number of full-time workers in any jurisdiction in this country, so far as I know.

Dr. CHANEY. I want to say one word about the use of average days lost from time-off accidents. My own experience is that this is absolutely misleading unless taken with something else, and that it will not do to draw any conclusions from it. Throughout the experience of a large company the average loss per accident steadily increased during the whole time when their average frequency rate was declining. If you went on the basis of the average loss per accident, you would think they were getting worse and worse; if you went on the basis of their frequency from year to year, it would appear that they were getting better—the point being that the first accidents to disappear are those of short disability, and when you cut those out and leave the long disability the average disability rises. That is the tendency always. In many cases, and I think in all cases, it is an unsafe index as to what is occurring.

On the point raised by Mr. Downey, so far as the iron and steel industry is concerned, the figures gathered by the Bureau of Labor Statistics represented at least 80 per cent of the workers in iron and steel establishments, and whose time was recorded by hours. I was certainly surprised to find how large a number of manufacturers in other lines did the same thing. Of some 200 manufacturers of machinery 175 had records of time worked by hours. The place where I couldn't find the record by hours was in Wisconsin.

Mr. KINGSTON. I want to say that I do not think we should run the risk of deceiving ourselves. It is a fair inference to be drawn from Mr. Kennedy's chart and figures that accidents on the whole are on the downward grade in frequency for the first half of the year 1917. This, however, is not in accord with our experience in Ontario. I think Mr. Dean will agree with me in that statement, that the compensable injuries in the aggregate are not on the decrease. I suppose in this list Mr. Kennedy has probably included the 17 or 18 firms who are doing most for accident prevention and most first-aid work to minimize the severity of accidents. You add

those 17 to the sum total of all the others and take the average, and it is my guess that the line for 1917 is not going to bear downward. I rather think the tendency would be upward.

Mr. DEAN. The experience in Ontario for the first seven months of the year 1917 is keeping about even, with the same firms reporting, as the total experience for the year 1915 and over three-quarters of the year 1916. I merely suggest the fact that perhaps a good bit of the increase in the rate is due to the change of character of the working population, and I venture to say that in the next half of 1917 you will see a tremendous increase in the accidents reported in the United States, simply because of the changed character of the working population.

Dr. RUBINOW. The number of employees given in 1917, in July, isn't characteristic of the number of average employees. The figures of July 1, 1917, represent the maximum number of employees, and the plants have not been given the opportunity of figuring out the average number of employees; and even if they did, I would be a little suspicious of the figures. The figures given as of July 1, 1917, are not given as constituting any basis of comparison.

Mr. KENNEDY. I think all the criticism is well taken. I started out by explaining that the charts were just what they were and the best I could get. They are worthy of all the criticism and more than has been given.

The CHAIRMAN. Mr. Kennedy prepared this at my special request. I felt that we didn't know much about what was actually happening, and I knew it would be a long while before the Bureau of Labor Statistics could get accurate data. I wanted to get at the trend from such data as could be obtained, and I am personally very grateful to Mr. Kennedy. He took up an extremely hazardous occupation, and he has escaped remarkably well. I don't think he has sustained a compensable injury. I want to suggest that we listen to Mr. Price's excellent paper now, and begin at 9 o'clock to-morrow morning, as per schedule, and get through with our business meeting. We have real business to transact. I would suggest that you read the bill that has been prepared for presentation in Congress, providing compensation and insurance for the soldiers and sailors of the United States. Copies may be obtained here at the desk; also communications and some of the hearings that have been held on that bill. They are contained in a pamphlet. I think it is highly important that this body take some stand on that question. Don't forget that war is merely specialized industry. A new occupation has sprung up—the occupation of killing and disabling as many Germans as possible with as small a casualty list on our part as we can manage to escape with. It is an extrahazardous occupation, you will admit, and is a

necessary occupation. You will admit that we ought to provide compensation for this new hazardous occupation. We ought to provide it on a compensation basis, as I see it. I wish you would think that over. You have ample leisure between now and 9 o'clock to-morrow morning to absorb the general tenure of the bill, and be prepared to act finally as to whether you want to appoint a committee to take this under consideration to further the measure at Washington, or whether you want to resolve in favor of or against it. For myself, I want to state again that it is the only sensible and right thing to do. If we can wipe the old pension system off the map, let's do it; it's the best work we could engage in. And let us not forget that the men who go to the trenches, who encounter these special hazards, should be taken care of as the industrial army is taken care of in some of our States, only a good deal better than any of the States are doing.

SHOP LIGHTING AS A MEANS OF ACCIDENT PREVENTION.

BY C. W. PRICE, UNITED STATES EMPLOYEES' COMPENSATION COMMISSION.

The Travelers' Insurance Company recently analyzed 91,000 accidents which occurred in factories and discovered that 10 per cent were caused directly by poor lighting, and in 13.8 per cent of the accidents poor lighting was a contributory cause. A study of industrial accidents by the British Government revealed the fact that 39.5 per cent more men stumble and fall during the winter months than during the summer. This class of accidents, more than any other, it was contended, is due to improper lighting.

All of the companies which, during the past five years, have made the largest reductions in accidents, testify that good light is indispensable to safety—a dark shop is a dangerous shop.

LIGHT AND EFFICIENCY.

"Adequate light will increase the total output of such plants as steel mills 2 per cent, and in plants such as shoe factories and textile mills it will increase the output 10 per cent," is the statement of Mr. C. L. Eshleman, a prominent electrical engineer, published in the proceedings of the American Institute of Electrical Engineers.

The experience of a large number of plants reveals the fact that the total cost of furnishing adequate artificial light in an average plant does not exceed one-half of 1 per cent of wages. For instance, it will cost just 1 cent a day to furnish ample light for each man earning $2. This is proof positive that good light is a paying investment.

STANDARDS FOR EQUIPMENT.

Amount of light.—The following standards are based on the experience of such companies as the International Harvester Co., the Pfister & Vogel Leather Co., and the Kimberly-Clark Co. These standards are embodied in the orders of the Industrial Commission of Wisconsin:

In shops where there is no smoke or gas there shall be provided for each four square feet of floor space light equivalent to the light produced by a 1-candlepower lamp hung 10 feet from the floor, or to put it more simply, one-quarter candlepower per square floor foot. A 100-candlepower lamp will illumine 400 square feet of floor space.

One-eighth candlepower per square floor foot is required for warehouses.

On machines and benches, where close work is done, sufficient light must be provided to prevent eye strain.

Experience has demonstrated that the above standards for general illumination, included in sections 1 and 2, are not only adequate for safety, but in all departments where ordinary work is done, such as paper mills and woodworking and coarse metal working shops, these standards provide sufficient light for a fair degree of efficiency and make unnecessary the use of individual machine lights. When finer work in done one-half to 1 candlepower per square floor foot is necessary.

LAMPS AND REFLECTORS.

Lamps.—The tungsten lamp is recommended as the most efficient type of lamp for all conditions in shops. The name "tungsten" is not a trade name, but applies to all lamps made with filaments of tungsten metal. There are a number of competing companies which manufacture these lamps.

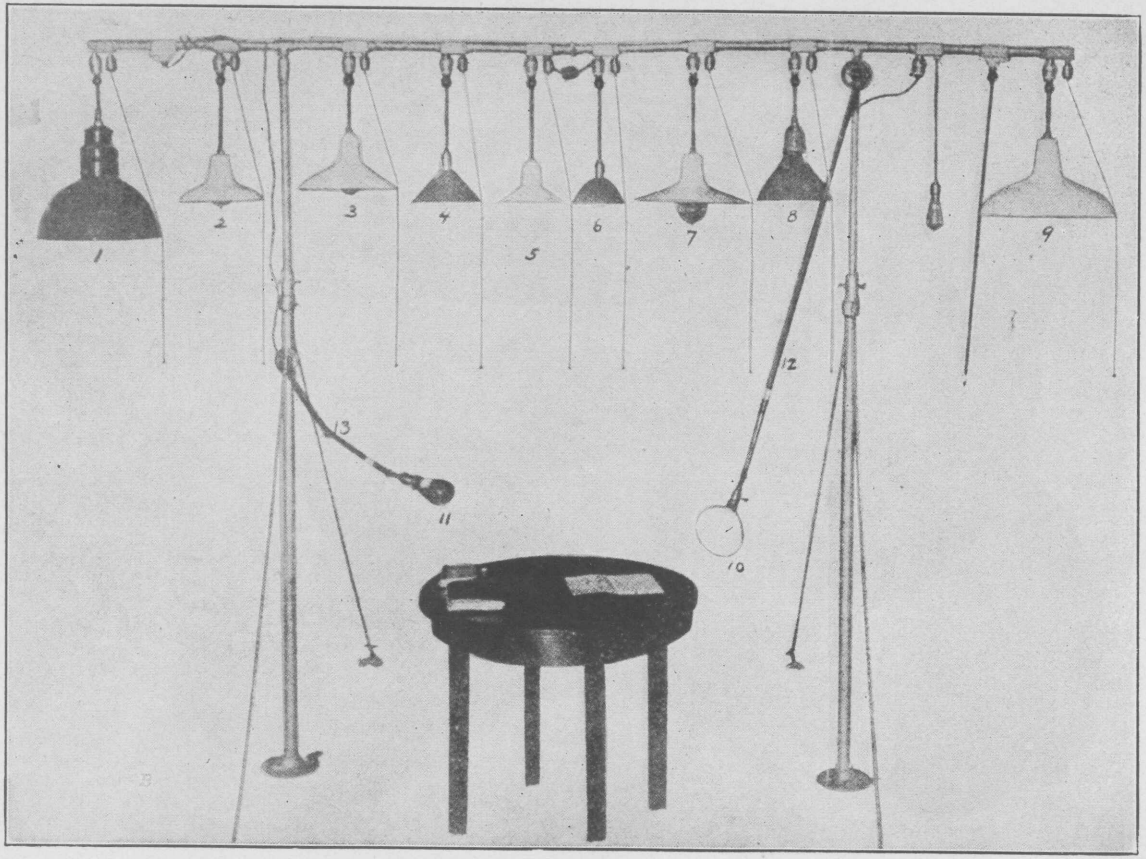
The modern tungsten lamp is a great economizer of current. The old type of carbon-filament lamp consumed 54 watts for 16 candlepower, or about 3½ watts per candlepower. The gas-filled tungsten lamp consumes from seven-tenths to one watt per candlepower. One of the leading shoe factories of Wisconsin recently took out a dray load of the old type of drop cords with carbon lamps and installed tungsten lamps with efficient reflectors. The amount of light was increased 400 per cent and the cost of current was decreased 25 per cent.

The guaranteed life of the tungsten lamp is 1,000 hours. Many plants are getting an average of 1,500 hours of life with the 100-watt units and larger.

Reflectors.—A properly designed reflector will increase the efficiency of a lamp 35 to 50 per cent. Sixty-five per cent of the light from a gas-filled tungsten lamp proceeds horizontally from the filament. Unless this light is redirected by a reflector to the working plane it is wasted on the upper parts of the room.

The deep bowl reflector is recommended for general illumination. It properly concentrates and distributes the light upon the working plane. (See cut, No. 8.) These reflectors should be made of white porcelain-enameled steel. This material is durable, inexpensive, and easily cleaned. When reflectors are kept clean the efficiency is increased 25 per cent.

The lamp should be so attached in the reflector that the center of the filament is located on a plane drawn through the center of the reflecting surface.


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GENERAL ILLUMINATION OF DEPARTMENTS IN WHICH COARSE WORK IS DONE—CEILINGS 12 TO 16 FEET.

Lamp.—One hundred watt gas-filled tungsten.
Reflectors.—Deep bowl, 10 inches in diameter (cut, No. 8).
Height.—Ten feet to bottom of reflector.
Spacing.—Twenty-foot centers. Do not arrange regularly over room, but locate lamps over machines and benches so far as possible. This arrangement will make unnecessary individual lights in departments where there is no close work.
Amount of light.—Not less than one-fourth candlepower for each square foot of floor space. One 100-watt lamp will illuminate 400 square feet of floor space. One-half candlepower for each square foot of floor space is necessary in many departments when the work is at all close to secure efficiency.

WAREHOUSES WITH LOW CEILINGS AND BASEMENTS OF MILLS.

Lamp.—Tungsten, 60-watt.
Reflector.—Shallow bowl, 12 inches in diameter (cut, No. 2).
Height.—As high as possible.
Spacing.—Nineteen-foot centers.
Amount of light.—One-eighth candlepower per square floor foot.

STAIRWAYS.

Lamp.—Tungsten, 40-watt.
Reflector.—Cone shaped (cut, No. 4).
Height.—As high as ceiling will permit.
Location.—At head of stairs.

PLATFORMS.

Lamp.—Tungsten, 60-watt.
Reflector.—(Cut, Nos. 2 and 7.)
Height.—Twelve feet from floor.
Spacing.—Over center if platform is covered. If open, attach to brackets about 4 feet long, extending from side walls.
Amount of light.—One-eighth candlepower per square floor foot.

YARDS.

Lamp.—Tungsten, 300-watt.
Reflector.—(Cut, No. 7.) Diameter, 16 inches.
Height.—Twenty feet.
Spacing.—Two-hundred-foot center.

INDIVIDUAL MACHINES.

Where the work is close and there is danger of eyestrain, individual lights must be provided.

Lamp.—Tungsten, 25-watt.

Reflector.—(Cut, No. 8, with diameter of 7 inches.) (Cut, Nos. 10 and 11.)

Location.—Attached or hung so that the maximum light reaches tool. The most essential thing is that the lamp shall be completely concealed from the eyes of the operator. On many machines it is important to use adjustable fixtures to hold light in position. (Cut, Nos. 12, 13.)

Amount of light.—Sufficient to avoid eyestrain.

BENCHES.

Lamp.—Tungsten, 25-watt.
Reflector.—(Cut, No. 8, with diameter of 7 inches.)
Height.—Eighteen inches above table.
Location.—Eighteen inches from front of table.
Amount of light.—Sufficient to avoid eyestrain.

DRAFTING TABLE.

Lamp.—Tungsten, 40-watt.
Reflector.—(Cut, No. 8, with diameter of 7 inches.)
Height.—Forty-two inches above table.
Location.—Over center of table or over left-hand corner.

COMPARISON OF INDUSTRIAL WITH MILITARY CASUALTIES.

BY I. M. RUBINOW, DIRECTOR, BUREAU OF SOCIAL STATISTICS, NEW YORK CITY.

The entrance of the United States into the bloody conflict has taken place under circumstances very different from those at the beginning of the war three years ago. Instead of the blind cosmic cataclysm altogether unexpected by the great masses, ours is a deliberate action undertaken for many definite reasons and aiming toward certain definite ends. Coupled with the absence of any immediate danger from the outside, this has its many advantages; but it also imposes certain important obligations. The necessary steps may be carefully planned, many errors may be prevented, and perhaps the cost may, at least approximately, be estimated in advance; but side by side with these actuarial or statistical problems the obligation rests upon the Nation to do all that can be done, not only to reduce the material cost, but also to compensate the loss, to relieve the suffering—physical, economic, and spiritual—to the irreducible minimum.

It is unnecessary to argue before a body of specialists such as this, every member of which finds himself in daily dependence upon statistical data, how important at this time are some reliable statistics of military losses. It is easy for the skeptic to question how far the most accurate statistics of military casualties will enable us to reduce the deadly effect of German shrapnel. It may also be difficult to prove that there has been any sensational reduction in the number of industrial accidents within the last five years, through careful accident statistics or in any other way. But some statistical data as to the probable volume of casualties are at least as important as some estimates of the probable cost of ammunition, if the Nation intends to make ready for the relief of suffering and need which must follow in the footsteps of modern warfare.

A few months ago, at the request of Prof. E. T. Devine and on behalf of the Red Cross Institute for Crippled Soldiers and Sailors, I undertook to obtain or prepare a reasonable estimate of the probable number of casualties with which such an institution for the reduction of cripples may be expected to deal. In the month of May it was not at all certain that the American people would be called upon to take an active part in the European conflict nor could anyone hazard the guess as to how far such participation might go. Therefore, I formulated the question in the concrete, though somewhat hypothetical way, as follows:

Assuming that a million American troops were to take active part in the European War during the period of one year, how many cripples might be expected to return to our shores?

The first obvious difficulty arises from the fact that there is no generally accepted definition of the word "cripple." For practical purposes, however, the word may be assumed as equivalent to the term "permanent disability" in the language of workmen's compensation. Loss of member or part of member is evidently not a necessary factor, nor does necessarily every loss of bodily substance result in the making of a cripple. The concept after all is an economic rather than a surgical one. The definition formulated by a committee in the city of Birmingham for census purposes may here be accepted, namely: "A cripple is a person whose movements are so far restricted by accident or disease as to affect his capacity for self-support."

It appears, therefore, that the problem placed before me has been narrowed down considerably. The question of mortality of military forces, whether due to direct military operations or disease—a question of great economic importance, especially in face of the plans advanced for insurance of our Army—was not entered into, because it had no direct bearing upon the functions of the proposed institution. Neither was it considered worth while to estimate the very much larger number of casualties which, in military operations as in industrial operations, would in a reasonable time result in recovery.

Perhaps the most convincing conclusion reached, after a few weeks of inquiry, was the utterly deplorable condition, if not complete absence, of statistics of military casualties. Considering that warfare has been the most characteristic factor of civilized society, one is surprised to find how little casualties of war have been studied. Perhaps the only explanation one can think of is the fact that at least during the last century or so, when statistical study might have been possible, humanity always cherished the thought that the latest war was also the last one.

During the last three years the newspapers have been full of various conflicting statements concerning the number of casualties suffered by various combatants, but no official information is available as yet. This may be due to a definite decision not to announce the losses for the time being; but for the earlier wars no such excuse can be given, and yet little beyond statistics of fatalities is known. It became necessary, therefore, to make use of various published estimates and fragmentary bits of information for the purpose of this inquiry. The result, therefore, must be accepted with a great deal of caution.

Even if careful statistics of earlier wars had been available, any deduction from such statistics would have been very dangerous

indeed, because conditions of modern warfare differ so widely from those of even the recent past. Mortality from sickness, which was the great cause of losses in warfare even as recently as the Spanish-American War, has almost been eliminated by modern methods of sanitation and surgery; but, as against that, there has been a terrible increase in the deadly effect of the modern implements of war. In the Civil War 90 per cent of the battle losses were caused by rifle wounds and less than 10 per cent by artillery. Present losses from artillery fire range from 35 to 40 per cent, and in the case of one French army corps 70 per cent of the wounds were due to shell and shrapnel, 5 per cent to the blowing up of the trenches by mines, 3½ per cent to hand grenades, and only 14 per cent to small arms.

The shell and shrapnel wounds are, of course, much more destructive, and even the triumphs of modern surgery, the improved technic of amputation, etc., may by the reduction of mortality increase the number of cripples. In the Civil War 225,000 men are said to have died by disease, as against 110,000 killed or dying by wounds, while during the present war for the first two years Germany is said to have lost less than 50,000 men from disease, against 735,000 killed or dying of wounds, or only 6 per cent. Of the total number of wounded in the Union forces in the Civil War, 14½ per cent died; of the German forces in the Franco-Prussian war 11 per cent. Of the Japanese forces in 1905, 6.6 per cent, while for the present war Germany has the following record: The proportion of death among wounded in August, 1914, was only 3 per cent, gradually reduced to less than 1 per cent toward the end of 1915.

Each of the combatant countries readily publishes statistics of losses of the other side. In several neutral countries, however, presumably neutral efforts have been made to ascertain the extent of losses on both sides. According to the estimate of a Copenhagen society for studying the losses of war, the fatalities for the first year equaled 4,631,000 and the total number of wounded 11,245,000, making a total loss of 15,876,000. It is well known, however, that the vast majority of the wounded return to the front. Another estimate, most carefully prepared by Col. Harts, of the Army War College, places the number of killed at 4,341,000, number of permanently disabled 2,314,000, making a total loss of 6,655,000. In getting the number of those disabled by wounds, it was estimated that in Germany some 90 per cent of the wounded and in other countries 80 per cent eventually recovered and returned to the front.

These losses of 24 months relate to the estimated forces, which probably averaged some 20,000,000. How far this latter estimate is applicable to the entire course of the war it is very difficult to say, but it is at least probable that the losses of dead, wounded, and

prisoners have been rapidly compensated for in case of most belligerents by the calling out of reserves.

A slight correction must be made in the estimate of losses because all of the belligerent countries did not begin hostilities at the same time, so that all of them were not subject to losses during the 24 months of the first two years. Making the correction for this factor, into the details of which it is unnecessary to enter, I arrive at the general estimate of the number killed per month as 185,000, the total number wounded some 450,000, and the number permanently disabled as about 105,000 per month.

Assuming an American Army of 1,000,000 men in Europe, this will give us per month 9,250 killed and 22,500 wounded, of which 5,250 will be permanently disabled. An estimate for one year should be 111,000 killed and 270,000 wounded, and of this number 63,000 permanently disabled.

Very little reliable statistical information is obtainable at this time as to the nature of these permanent disabilities. Some fragmentary information referring to Canadian forces may justify the following very rough estimate of the probable distribution of the 63,000 invalids of war.

Amputation of leg ---------- about	7,000
Amputation of arm or hand ----------	6,500
Injuries to leg, requiring no amputation ----------	9,500
Injuries to arm, requiring no amputation ----------	9,000
Injuries to hand, requiring partial or no amputation ----------	8,000
Total cripples ----------	40,000
Eyesight cases ----------	7,500
Deafness ----------	4,500
Other injuries and wounds ----------	11,000
Total permanently injured by wounds ----------	63,000
To this must be added about 33,000 permanently injured by disease, namely:	
Diseases of chest, of heart, and rheumatism ----------	23,000
Insanity, epilepsy, and nervous diseases ----------	4,500
Other sickness ----------	5,500
Total for diseases ----------	33,000
Total number of permanently disabled ---------- about	96,000

No one appreciates better than myself the slight statistical foundation upon which these compilations are built, but whether the number be 50,000 or 150,000 it is obvious that a year of military operations with a million men in the field will result in substantial losses of life as well as limb and working ability.

The charge would be unjust that the country and the Government are not sufficiently aware of this certain cost. The recent conferences in Washington concerning the proposals of insurance for army forces

and the bill to be introduced in Congress are splendid demonstrations of foresight, such as perhaps has never been shown in similar conditions before. Incidentally, it may be recorded that these plans represent a very valuable demonstration of the triumph of the social insurance principle in this country, particularly valuable at this time, after six months of vicious opposition to the rising social insurance movement as un-American and undemocratic.

It is scarcely necessary to argue before this gathering that mere money indemnity does not solve all the problems created by 100,000 cripples and invalids. Drawing a parallel from the related field, one by-product of compensation legislation was the important movement for accident prevention. The well-known author of the analytic schedule, Mr. Hansen, created the motto, "Compensation is palliative, accident prevention is prophylactic." Mr. W. Cowles, of the Travelers' Insurance Co., has coined the phrase that is equally well sounding, "An accident compensated is an apology, an accident prevented is a benefaction."

Perhaps the figures above quoted give us no key to the prevention of military casualties, but after all is said for and done in the way of both compensation and prevention, is the problem of industrial accidents altogether solved? Even if the 100,000 cripples and invalids have been amply compensated, a good deal more remains to be accomplished. The European combatants, who must count their losses by millions instead of thousands, very early in the history of the war were forced to undertake the duty of reeducation of permanently injured in order to conserve the labor forces of the country. One may hope that the participation of the United States in the war will never reach the extent that the losses sustained might substantially reduce the available supply of labor forces, but for reasons social and psychologic even more than financial, the question of rebuilding invalids of war through such institutions as the Red Cross Institute for Crippled Soldiers and Sailors is very necessary, indeed. Several Government agencies, as well as private philanthropists, have already become interested in the subject, drawing upon the extensive experience and valuable results obtained in several European countries.

In view of this fact that many specialized institutions for reeducation of cripples are being created, one may naturally raise the question whether the need for those institutions will be gone after the 100,000 cripples have been taken through this educational treatment; and since the hope of an early world peace has not been altogether abandoned by all of us, even the more important question arises: Supposing these 100,000 cripples fail to materialize, will the money and force spent in creating these institutions have been altogether wasted?

Even the superficial examination of the results of compensation experience in this country, brief as it is, give an emphatic negative answer to this question.

The study of the needs of the cripple, especially the adult cripple in this country, is still in its infancy. While a good deal is being done for the crippled child, hardly any substantial institution for helping the adult cripple to economic independence exists as yet. There are no available statistics as to the number of cripples in this country, though suggestions had been made at the last census that questions as to cripples be included in the population schedule.

The English investigation seems to indicate that cripples constitute nearly one-third of 1 per cent of the population. The crippled children constitute 1.4 per thousand and adults 1.9 per thousand. These results find remarkable corroboration in the census of crippled children for the entire German Empire, which found 75,000 of them, or 1.5 per thousand of population. On the basis of either of these two estimates, there must be in this country nearly 350,000 crippled persons. According to the German data, of the 75,000 crippled children, less than 25,000, or one-third, were congenital cases, and 50,000 had become crippled since birth. This proportion must be smaller among adult cripples. Roughly, perhaps less than 75,000 out of 350,000 cripples in this country are congenital cases. In some way or other modern life has created a substantial army of, perhaps, 300,000 persons who are not able to earn their living. As both of these investigations, the English and the German, were made by private sources it is very likely that the figures given are underestimated, and, since accidental injuries constitute the most potent factor in this manufacture of cripples, it is at least permissible to suspect that the number of cripples in this country is even larger.

Not until compensation legislation spread throughout the United States did this problem receive sufficient appreciation in this country. Even now one may question how thoroughly it is understood, when official reports of permanent disabilities made by several industrial boards and commissions include very few, if any, cases of permanent disability outside of actual dismemberment. The vicious dismemberment schedule of our compensation laws, the so-called "New Jersey invention," adopted from the conditions of personal-accident insurance, has focused our attention upon only one-half of the problem. Notwithstanding the numerous efforts of various organizations, such as the National Safety Council, the United States Bureau of Labor Statistics, the Workmen's Compensation Service Bureau, the Casualty, Actuarial, and Statistical Society of America, and even this august body, to create a uniform system of compensation statistics, or perhaps because of these efforts, statistics of industrial accidents in this country are still a mass of incoherent figures.

A careful search was made through the reports of our compensation States to arrive at some dependable totals. Only 16 States were found to have data which could be used for the purpose, New York, California, Massachusetts, and Wisconsin being among the most important of these States. Before this body of Government officials it may, perhaps, be safer not to indulge in criticism of the statistical reports of any one State beyond asking the question why it should happen that the little State of Nevada with its small State insurance fund should be entitled to the credit of having the most accurate industrial statistics available. Taking, however, the 16 States together, with nearly 10,000,000 employees covered by the act, according to the computation made by the United States Bureau of Labor Statistics, I found the number of fatal accidents to equal 7,197, and of nonfatal tabulatable accidents of over one day's duration, 624,000, justifying the estimate for the 26,000,000 employees in the United States of 19,700 fatal and 1,700,000 nonfatal industrial accidents, to which must be added the accidents to United States employees and railroad employees, giving a total of 22,500 fatal and 1,880,000 nonfatal industrial accidents, and a grand total of 1,902,500.

The character of industrial injuries is evidently very different from that of the military ones. Whereas the European war shows about 2½ nonfatal accidents for every fatal one, in industrial life fatalities seem to constitute little more than 1 per cent of the total, thus fairly supporting the standard accident table.

When an effort is made to determine the number of permanent disabilities in the United States, even greater difficulties are met with. Only for 10 States (California, Maryland, Michigan, Massachusetts, Minnesota, Montana, Nevada, New York, Washington, and Wisconsin) were data in regard to the nature of injuries available; but it is significant that out of those 10 States 4 failed to report any permanent injuries except dismemberments, and in 2 the number reported is so small as to be utterly untrustworthy. New York reports 953 dismemberments and only 17 other permanent disabilities, while little Nevada reports 83 dismemberments and 128 other permanent disabilities, thus remarkably substantiating the standard accident table. At this time, therefore, only dismemberment data are at all dependable in American accident statistics. Eliminating cases of loss of only one phalanx, few of which result in any permanent disability, the reports of those 10 States show some 10,000 dismemberments as against 6,745 fatal cases, or about one and a half dismemberments for each fatal case. It is safe to assume that permanent partial disabilities without loss of member or part of member are at least as numerous, so that a conservative estimate will be at least three permanent partial disabilities for each fatal case, as against

four and a half shown in the standard accident table. Assuming even a small conservative estimate of about 65,000 cases of more or less permanent disability resulting from industrial accidents every year, if the standard accident table proportion be accepted, the number rises to some 93,000.

Perhaps an apology is necessary for this structure built of estimates and guesses, and yet a careful and critical scrutiny fails to disclose any essential error in the results. The nature of permanent injuries may not be as gruesome as that of casualties of war. The bare fact, however, remains that in peaceful times industrial life creates as many handicapped persons as would an army of 1,000,000 soldiers fighting on the battle fields of Europe. And yet nothing has been said, because of total lack of information, concerning the effect of nonindustrial accidents, of which there must be a very large number in this country.

It is unnecessary to argue that compensation legislation has been a tremendous step in advance in facing this problem. But has the whole problem been anywhere met as yet? Praiseworthy indeed are the efforts to reduce the number of industrial accidents, but purely Utopian are hopes that we might eliminate them altogether. In many of the States the amount of compensation provided for permanent injuries is such that Mr. Cowles's description of compensation as an apology seems perfectly justified. Time does not permit me to enter into discussion of the whole subject of American compensation scales for permanent disability cases. Moreover, I have already done so on another occasion, and the study is available to anyone interested. This much, however, may be said: The whole theory of specific benefits applicable in most of the States and the tendency to treat permanent disability (not dismemberment) cases in the same way, whether authority for it is found in the language of the law or not, is based upon the theory of rehabilitation, or, one might say, upon the American theory that the permanent disabilities are really not permanent at all except in very rare cases. Undoubtedly, in a good many cases rehabilitation is possible, just possible, but no one can imagine for a moment that it takes place automatically nor unless systematic effort is made to help the injured wage-worker toward this goal.

This seems to be the practical conclusion one may draw from the comparison of industrial and military casualties. The problem of industrial reeducation of crippled sailors and soldiers is a serious problem indeed. Because of the patriotic and sentimental appeal it will scarcely fail to find a satisfactory solution. But at worst it is a temporary problem. The problem of the industrial cripple, almost equally grave, is a permanent feature of our industrial life. The time is ripe for a concerted movement toward making the reedu-

cation of the workman seriously injured at work a definite feature of our compensation legislation.

There are one or two other conclusions that might be made from this broad generalization. To begin with, this necessity of rehabilitation and reconstruction adds an additional argument against any limitation of medical aid. You can not seriously advocate rehabilitation and reeducation and limit medical aid to two weeks. How are you going to provide any form of aid when such limitation is staring you in the face? Perhaps there is just one more conclusion which you might arrive at, and that is that the whole theory of rehabilitation, reeducation, and reconstruction of the man is absolutely opposed to any theory of leaving the wageworkers to private insurance. You can not have private insurance and at the same time have rehabilitation and reeducation, where all pressure is left out of consideration.

FRIDAY, AUGUST 24, 1917—MORNING SESSION.

CHAIRMAN, DUDLEY M. HOLMAN, PRESIDENT, I. A. I. A. B. C.

BUSINESS MEETING.

[It was voted to hold the next convention at Madison, Wis., and the following officers were elected for the ensuing year: President, F. M. Wilcox, Wisconsin Industrial Commission; vice president, George A. Kingston, commissioner, Ontario Workmen's Compensation Board; secretary-treasurer, Royal Meeker, United States Commissioner of Labor Statistics.]

FRIDAY, AUGUST 24, 1917—AFTERNOON SESSION.

CHAIRMAN, GEORGE A. KINGSTON, COMMISSIONER, WORKMEN'S COMPENSATION BOARD OF ONTARIO.

VI. NEEDED CHANGES IN LEGISLATION.

Mr. HOLMAN. The first item on the afternoon program is a paper prepared by Mr. Pillsbury, chairman of the California State Commission. Mr. Pillsbury, as you know, is not here, and I will ask Mr. French, one of the members of the California board, to read Mr. Pillsbury's paper.

Mr. FRENCH. The importance of the paper to be discussed at this time can not be overestimated. As you know, the Supreme Court of the United States by a 5 to 4 decision has decided that the States do not have jurisdiction as regards injured maritime workers or in many cases that come under interstate law. In California we have planned a mutual agreement between employers and employees whereby the industrial accident commission will serve as a board of arbitration in case of dispute, and it is interesting to note that both the employers and employees were particularly anxious to have the compensation system continued despite the fact that many of the attorneys representing the insurance carriers and some employers questioned our jurisdiction up to the time the United States Supreme Court rendered its dictum, but now, rather than face court proceedings, compensation is preferred. Needless to say, the injured man and employees generally also have a preference for workmen's compensation. That is interesting as showing the trend decidedly away from employers' liability even though the opportunity be available for the employer.

CONFLICT BETWEEN FEDERAL AND STATE JURISDICTIONS IN ACCIDENT CASES.

BY A. J. PILLSBURY, CHAIRMAN OF INDUSTRIAL ACCIDENT COMMISSION OF CALIFORNIA.

[Read by Will J. French, of the Industrial Accident Commission of California.]

SYNOPSIS.

1. With a single dissenting vote, this association last year, at Columbus, adopted a resolution favoring the relinquishment by the Federal Government to the States of jurisdiction over injuries sustained in interstate commerce.

2. The work done by the writer, in pursuance of such resolution, convinced him that it would be necessary to wait for the United States Supreme Court to clear the way for action.

3. By decision of the Supreme Court of the United States in the Jensen case, a similar conflict in jurisdictions now extends to injuries happening in commerce by water as well as by railroad, and we are confronted by two problems instead of one.

4. Of the 37 States and Territories now having compensation laws, not all are beneficent or reasonably adequate to afford needful relief to injured workmen.

5. The interest of the Federal Government in and responsibility for employees injured while in the service of commerce are incidental, indirect, and relatively immaterial, whereas that of the States in which they and their families reside are proximate, immediate, and vital to the social welfare of each Commonwealth.

6. Our 48 free and independent State sovereignties differ one from another in spirit, habits, customs, standards of living, and ways of viewing questions of domestic policy, and a compensation law that may fit comfortably in one State might chafe or gall in another. No one law could serve acceptably for all.

7. The Federal Government is huge. Upon the National Capital focus the hundred thousand interests of a hundred million people, and it is impossible that such a Government can legislate to fit the individual needs of the several States.

8. All compensation laws are still in a state of flux and evolution, and needed amendments that, in any State, may be effected at any session of a legislature might conceivably involve 10 years of effort if dependent upon Congress.

9. The crux of the issue has been missed by both sides to the controversy. That crux is that compensation for industrial injuries, however and wherever suffered, has and should have no essential, constitutional connection with commerce, either interstate or intrastate, but is one department of and belongs to a general scheme of local, domestic, social insurance against the hazards of poverty, with which the Federal Government should have only an incidental concern.

10. Therefore, it is neither feasible nor desirable that there be uniformity of compensation legislation throughout the United States in relation to injuries sustained while in the service of transportation by railroad or by water.

11. Federal jurisdiction over injuries sustained in the service of transportation by railroad can, without amendment of the Federal Constitution, and by right ought to be, relinquished to the States, and the same principle holds equally true of service in transportation by water if it can be legally effected.

12. There are no practical difficulties in the way of such relinquishment. The hindrances are all technical, artificial, legalistic, and would not have existed if the fifth man on the bench of the Supreme Court of the United States had held with the dissenting four, who had the weight of argument and reasonableness on their side, but, unfortunately for hundreds of thousands of toilers in hazardous industries, lacked one vote.

13. What, if anything, is this association going to do about these unfortunate conflicts between Federal and State jurisdictions over industrial injuries happening in the transportation service, whether by rail or by water? Several possible courses have been suggested, but this association can not, in view of its limit as to time and crowded program, venture to choose the wisest course and frame the requisite legislation.

14. Therefore, it is respectfully submitted that a standing committee of five earnest and discreet persons, to be selected by the president and secretary-treasurer of this association jointly, be constituted, with full power to act, and that such committee be directed to assemble in Washington, D. C., in October of this year, for the purpose of formulating and promoting such a plan and campaign for eliminating conflicts in jurisdiction between Federal and State jurisdiction in cases involving industrial injuries happening in transportation by railroad and by water, without regard to whether such commerce be interstate or intrastate; and that the good faith and cooperation of this association be pledged to the support of such plan when perfected by such committee.

I had the honor last year at Columbus, Ohio, to address this association in person upon this same subject, and, with a single dissenting vote, the association adopted the resolution following:

Resolved by the International Association of Industrial Accident Boards and Commissions in its third annual meeting, held at Columbus, Ohio, April 25–28, 1916, That Congress be, and it is hereby, memoralized to so amend the employers' liability act of 1908–1910, and any Federal compensation law that may be enacted, as to exempt from the operation of such law or act all States and Territories of the United States having in operation compulsory compensation laws competent to afford adequate protection to employees engaged in transportation by railroad, whether in interstate or intrastate commerce, and to permit railroads and their employees to elect to operate under compensation laws in States in which such laws are elective, thereby divesting injuries sustained in transportation by railroad of their interstate character in all such States, while retaining under Federal jurisdiction all States and Territories which do not enact and enforce laws providing for adequate compensation to injured workmen without regard to negligence.

Equipped with this indorsement I went to New York and Philadelphia and held conferences with the heads of the claims departments of several of the great railroad systems. At Cleveland I was able to meet and present the matter to two or three influential persons connected with the railroad brotherhoods, and at Washington I held several conferences with the Washington representatives of all of the railroad brotherhoods. Making allowances for the urbanity of the gentlemen whom I met, I think that I may say that the idea set forth in the resolution seemed to meet a favorable reception, and in the case of the Pennsylvania Railroad I found in operation, by a sort of gentlemen's agreement between the company and the men, a system whereby it was understood that if injured men would not sue for damages where negligence might be established, they would be paid compensation as if they were under the compensation laws of the State in which each employee resided at the time of sustaining the injury.

When I came to take up the subject with Members of Congress I found, as I had anticipated, that it was then too late in the session to start any new thing, and, what I also foreknew to be true, that it would be necessary to wait until the Supreme Court of the United States had, so to speak, cleared the decks for action. It was at that time generally believed that a decision in the railroad cases from New York and New Jersey would be rendered possibly in May, but almost certainly in June, and I returned home with that expectation in mind. These cases were decided in May, but May, 1917, instead of 1916. Meantime any plans that I may have had for forwarding the movement started at Columbus were effectually stayed by the nonaction of the Supreme Court of the United States. There was nothing to do but to mark time, and I marked it.

A SOURCE OF OPPOSITION.

The most important source of opposition to compensation legislation in any form is that of the railroad employees themselves, voiced by their local organizations at home, and the reason for this opposition was neither difficult to ascertain nor to understand. I have never known a railroad trainman who was injured who did not want compensation for his injury under our compensation law, and I have not conversed with one on the subject who was not favorable to the idea. Wherever railroad claim agents feel that a basis of negligence might be established against them they are quick to settle on a compensation basis if they can, and in our State there have been instances in which the parties stipulated that our commission had jurisdiction when we were pretty sure that we had not, and awards have been made on such stipulations and duly paid. Nevertheless, opposition to a Federal or any kind of a compensation law does exist in the local organizations of railroad men, and that opposition has until now been effective to block all such legislation.

The reason for such opposition is this: All over the country certain young men who have gone into the train service of railroads have been injured. By reason of the severity of their injuries they had to give up railroad work. Some of them studied law, were admitted to the bar, and naturally gravitated into damage-suit litigation, chiefly on behalf of their former fellow employees and against the railroads. They have retained their membership in the local organizations of railroad employees and their influence in them is great. They saw in the enactment of compensation laws a serious impairment, if not destruction, of the law business they had built up and not unnaturally concluded that what was bad for them might also be bad for the railroad trainmen themselves. They were able to persuade the members of the locals to which they belong that in

relinquishing the right to sue for damages where negligence can be established they were giving up a right of citizenship which should be inalienable and at the same time to hold out the gambler's chance for a whopping big verdict when a suit can successfully be maintained under the Federal employers' liability act of 1908–1910.

I would not minimize the importance of this opposition to the plan outlined in the resolution adopted by this association last year, but I do not regard it as insurmountable. It has made the leaders in the brotherhoods of trainmen either timid or discouraged, but the object lessons derived from the operation of beneficent compensation laws in all other branches of industry will, in the course of time, open the eyes and change the views of trainmen in all States having adequate compensation laws.

NOT ALL COMPENSATION LAWS BENEFICENT.

Just here is a vulnerable point in our armor. Of the 37 States having compensation laws, less than half of them confer benefits that are adequate to prevent that poverty arising out of industrial injuries which justifies the existence of such laws. In not a few of the States the entire compensation benefits receivable will not cover the surgical and hospital costs in cases of serious injury. Such compensation laws are false pretenses, and no better service can be rendered to the cause of dissolving the conflict between Federal and State jurisdictions over injuries sustained in transportation by water and railroad than to bring the benefits provided by the compensation laws in illiberal States up to a just standard; and, pari passu, no better service can be rendered to the cause of bringing compensation laws in illiberal States up to a liberal standard than to have the Federal Government fix a just standard in pursuance of the resolution adopted by this association at Columbus last year. Whatever is done for either cause helps both.

TWO FIELDS OF CONFLICT INSTEAD OF ONE.

In a paper presented a year ago upon the subject of conflicts between Federal and State jurisdictions in commerce cases, I confined myself wholly to such conflicts as arose out of transportation by railroad.[1] At that time it seemed to me to be altogether unlikely that the jurisdictions of the several States over injuries happening upon their own navigable waters would be seriously interfered with. The fact that the doctrine that the jurisdiction of a State over its own ships follows them wherever they go on the high seas was also well established, led me to the conclusion that the whole field was

[1] At the meeting of the International Association of Industrial Accident Boards and Commissions, held at Columbus, Ohio, April 25–28, 1916. Paper reprinted in Bulletin 210 of the Bureau of Labor Statistics, pp. 33–55.

fairly covered by State jurisdiction. When, on February 3, 1917, the Supreme Court of California, in a very able opinion, sustained the jurisdiction of our commission in unequivocal terms, I felt that our assumption of jurisdiction was doubly assured.

I had left the Supreme Court of the United States out of my reckoning. Its decision in Southern Pacific Co. *v.* Jensen precipitated chaos where order was evolving. This was an instance where a preponderance of sound argument was on one side and the preponderance of voting power on the other, a situation that occurs not infrequently.

It has been a hobby of mine for many years that where, as in this case, courts of last resort divide nearly equally upon issues involving National or State policy, the decision should not be final, but the issue should automatically and at once be referred to Congress or the legislature in order that the people, by their representatives, may determine which of the two policies shall be the law of the land; but I do not remember ever to have found a judge or justice who agreed with that view.

A fundamental necessity, before any remedial action can be taken, is to ascertain precisely the existing state of the law governing transportation by rail and by water, respectively.

THE LAW REGARDING TRANSPORTATION BY RAILROAD.

The decisions of the Supreme Court of the United States in the two Winfield cases[1] did not materially alter the status relating to transportation by railroad, but only cleared up a few not very doubtful points. The Federal statute is exclusive where, at the instant of the happening of an injury, the employee is engaged in an act of interstate commerce or one so closely connected with it as not to be separable from it. Where negligence can not be imputed no liability exists. The risks of the employment all rest upon the employees. In these cases, as in the Jensen case, the more convincing arguments were made by the dissenting members of the court, but the other side had the votes.

On the other hand, where, at the instant of the happening of the injury, the employee is engaged in an act of intrastate commerce, or an act clearly separable from interstate commerce, the jurisdiction of the States is exclusive and plenary and Federal authority can not take cognizance of such injuries unless the Constitution of the United States is so amended as to permit it, which is so unlikely as to be wellnigh unthinkable, or the United States Supreme Court reverses a

[1] New York Central Railroad Co. *v.* Winfield, and Erie Railroad Co. *v.* Winfield, May, 1917. In these cases the Supreme Court, with two justices dissenting, held that when an employee engaged in interstate commerce was injured his only right to recover arose from the provision of the Federal employers' liability act. The power of the States to supplement such legislation was denied.

long line of its own decisions, which is also extremely unlikely to happen.

Therefore, while, in theory, all conflict between Federal and State jurisdictions is cleared up and a plain line of demarcation established, in practice it is frequently, if not usually, necessary to try each case in order to ascertain whether or not the tribunal undertaking to hear and determine the controversy has jurisdiction over the parties to the proceeding. The situation is absurd. Roughly speaking it may be said, however, that injuries to trainmen and men employed upon maintenance of way will fall under Federal authority, while shopmen and office employees may be under the protection of State laws—with abundant exceptions to all such general rules for predetermining jurisdiction. The railroad employees of the United States are, in this respect, under hard bondage.

THE LAW REGARDING TRANSPORTATION BY WATER.

In only one particular did the Jensen decision[1] make clear and conclusive the exclusive character of Federal jurisdiction, and that is with reference to injuries happening upon the high seas and navigable waters. Even then it concedes that the general body of maritime law may, to some extent, be changed, modified, or affected by State legislation, but does not attempt to tell how far.

Up to the time of the decision of the Jensen case the principle had been regarded as well established in admiralty law that jurisdiction over contracts depended upon the subject matter of the contract, regardless of the locality of the transaction. It had been equally well established that jurisdiction over torts depended wholly upon the locality where the tort was committed, to wit, upon the high seas or navigable waters.

Are proceedings under a workmen's compensation act founded in contract or in tort? If in contract, then, under an elective law, at all events, the employment of a stevedore would, in the language of Mr. Justice McReynolds, be "maritime in its nature," and jurisdiction

[1] Southern Pacific Co. *v.* Jensen, May, 1917, four justices dissenting. The plaintiff in this case was the widow of a stevedore engaged in unloading a steamship in New York Harbor. The vessel was owned by a railroad company, which also operates a steamship line plying between the ports of New York and Galveston. An award in the claimant's favor had been made by the State workmen's compensation commission in October, 1914, and was approved by the various courts of the State. (Jensen *v.* Southern Pacific Co., 215 N. Y. 514, 109 N. E. 600; see Bul. No. 189, U. S. Bureau of Labor Statistics, pp. 221–224.) The New York courts had held that the case was not covered by the Federal statute governing interstate carriers by railroad, and as no statute had been enacted by Congress governing carriers by water, there was no Federal legislation applicable to the case. The decision of the Supreme Court was identical so far as the application of the Federal liability law was concerned, but an objection raised by the company to the decision of the court below that the compensation law was "unconstitutional in that it violates Article III, section 2, of the Constitution, conferring admiralty jurisdiction upon the courts of the United States," was upheld by the Supreme Court as regards the particular portion applying the law to maritime injuries. See Monthly Review of the Bureau of Labor Statistics for July, 1917 (p. 101), for further account of this case.

would vest in admiralty courts whether the injury happened on ship or on dock; but if founded in tort, admiralty jurisdiction would exist only when the injury happened on ship and not on dock. Personally, I am of the opinion that, at least in States where compensation is compulsory, claims therefor arise out of neither contract nor tort, but out of status, out of a condition which the law creates at the behest of the police power of government.

If, as seems possible under this decision, although not finally determined, a sailor or stevedore, injured upon a wharf, can not bring suit in admiralty for tort, because the injury did not happen on navigable waters, and also can not claim compensation because the "work of a stevedore is maritime in its nature," what can the man do? He is in a "no-man's land," with no right of redress in any court or commission.

In the Jensen case the accident happened upon a ship and, therefore, it was not indispensably necessary to a decision of the case at bar that the court indicate what would have been its decision if the accident had happened on the dock, and the point was passed without at all considering that important difference.

It can not have been the intention of the Supreme Court of the United States to create a twilight zone in which no right or remedy exists. Such a condition is as repugnant to law as a vacuum to nature. It would seem, therefore, that, in future decisions, the court must do one of two things:

1. Decide that admiralty jurisdiction does extend to cover all injuries to sailors or stevedores without regard to whether the right be founded in contract, tort, or status, and without regard to whether the injury happens on ship, dock, dry dock, or elsewhere, so that it be while in the performance of a service in transportation by water; or

2. It can define admiralty jurisdiction as extending to injuries happening on shipboard or gangplank, leaving to the compensation or negligence laws of the several States the jurisdiction over all such injuries not so happening.

It is not incumbent upon me at this time to venture any conjecture as to what attitude the Supreme Court will take when the point arises. It is sufficient for the present to point out that a conflict of jurisdiction between Federal and State Governments as certainly exists relative to injuries sustained by employees engaged in transportation by water as by rail and entails great hardship upon labor engaged in this dangerous occupation. The question for us to deal with at this time is: What are we going to do about it?

A STOP-GAP ARRANGEMENT.

In California employers and their employees engaged in transportation by water have tried our compensation law and like it. We

claimed jurisdiction, extraterritorial and all, and until the Jensen case upset us, we had made it stick. Both sides wish to continue under the act. Our commission tendered its good offices to both sides in an effort to bring about an agreement whereby the parties may contract that, in the event of injury, the injured employee will accept, and the employer will pay, compensation in accordance with the terms of our act, just as though they were under it, they also mutually agreeing that, in the event of controversy, the issue shall be put up to the industrial accident commission for determination, as heretofore, and that both sides will abide by the result.

It is not doubted that so far as the men themselves, and their employers are concerned, such a contract can be enforced and that any court of admiralty would recognize it, for there is in admiralty law no prohibition against "contracting out" as there is in the Federal employers' liability act. The only trouble is that the employee can not bar the right, in the event of his death by injury, of a dependent to sue in admiralty. This is not causing employers much uneasiness, inasmuch as, whenever a sailor or stevedore loses his life as a result of injury, the plight of his dependents is generally so serious that compensation in hand is far more attractive to them than an action for damages upon which nothing can be realized for years to come. Our State compensation insurance fund is selling policies to maritime employers just as though the Jensen case had never been decided, and will pay the benefits, and is paying them on policies heretofore sold, without regard to that decision.

I am hopeful that the arrangement here outlined may very generally be effected throughout the State of California, although we are just now in the process of getting together. If it succeeds, other States may profit by our example. However, this device is intended to last only until order shall have been brought out of this chaos, either through Federal legislation or judicial reinterpretation.

WHO IS THE PROXIMATE PARTY IN INTEREST?

The very theory upon which free States federate as a nation is that the Federal authority shall be supreme in all those functions of government which proximately concern the welfare of a nation as a whole, and that all other functions of government are reserved to and reside in the States severally and their subdivisions.

Where, then, vests the proximate, immediate, and vital interests in the welfare of employees engaged in transportation, whether by rail or water? A freight train loaded with oriental commerce pulls out of the Oakland yard bound for markets in the Middle West or East. There is a washout, the locomotive goes into the ditch, and with it the locomotive engineer. Is there any way by which the

Federal Government can be made responsible for or render aid to that engineer if crippled, or to his family if he is killed? Who must see to the education of his children and, if poverty plunges them first into delinquency and afterward into criminality, is it the State or the Nation that proximately suffers?

A ship steams out through the Golden Gate bound for the Alaska fisheries. A steam pipe bursts and a marine engineer is scalded. Is his dependent family within the keeping of the Nation or the State? Who pays the wife her widow's pension that she may keep her family together? Who supports the orphanages that care for her children if she can not?

The questions all answer themselves and, Mr. Justice McReynolds to the contrary notwithstanding, the interest of the Federal Government in the welfare of those engaged in transportation, whether by rail or ship, is but incidental and remote in comparison with the interest of the State and its subdivisions, which is immediate and proximate and vital. Is there need for argument to sustain the contention that where the immediate, vital interest is, there the jurisdiction should vest? The fundamental principle underlying Federal Government affirms the validity of this contention. If it be unsound, then federation itself is unsound.

UNIFORMITY NOT DESIRABLE.

Upon reflection, I have concluded that uniformity in compensation legislation throughout the United States touching transportation either by rail or water is neither necessary nor desirable. The Federal Government is huge. The concerns of a hundred million people with a million conflicting interests focus upon Washington. Federal legislation is difficult and costly. Compensation laws are in a state of evolution. No adequate law could be enacted at this time, even if Congress were minded to take the issue in hand. Courts, in striving to make all new measures fit into old molds, make holes in our acts which need to be plugged. We, in California, have had the major portion of our compensation law revised and reenacted, partly because of what the courts had done to it, and partly because of what we were afraid they might do. This revision comprised the plugging of 11 holes which judicial interpretation had punched and the patching of 35 flaws discovered by experience in the administration of the law, and also the taking of 23 forward steps in State policy regarding compensation. Such a revision of a Federal act might easily involve 10 years of agitation and continuous effort. We accomplished it in three months.

The 48 States of the Union constitute 48 differing civilizations, animated by different spirits, habits, customs, standards of living, wages, and ways of looking at things. A compensation law that fits com-

fortably and works well in one State might not fit as comfortably or work as well in any other. Uniformity in laws relating to marriage, divorce, insurance, taxation, education, and compensation, would be at the cost of freedom of action on the part of the independent sovereignties that make up the Union and might chafe and gall and make against national solidarity. For once I favor State rights.

For three and a half years I have helped to administer a compensation law that assumed jurisdiction over maritime injuries and, until the Jensen case introduced conflict into that jurisdiction, all went well. If it was a California ship, our jurisdiction over it followed it wherever it went. If it was not a California ship and was not manned in our ports and any other State claimed jurisdiction, we did not. By the application of similar simple rules all conflict between the 48 sister States may easily be avoided. It is only the assertion of Federal jurisdiction over industrial injuries that produces perplexity, contentiousness, and wrong.

THE WRONG FOOT FIRST.

The truth is that the cause of compensation for industrial injuries started off the wrong foot first. There is nothing strange about this, inasmuch as human progress is always directed toward, and seldom starts from, correct principles. "Compensation" is insurance, and compensation insurance is one factor of a scheme of social insurance that will one day protect each toiler from cradle to grave. There is no other safeguard against the menace of an all-pervasive poverty, and an all-pervasive poverty spells anarchy.

Of every 100 persons who die in the United States 65 die penniless, 25 others leave estates of an average value of $1,300 or less; fewer than 9 leave estates of the value of $5,000 or over; and fewer than 2 can be classed as having been well to do. Is this because the workers have not practiced thrift?

As I pointed out last year, between two-thirds and three-fourths of the adult male workers in the United States, and nineteen-twentieths of the adult females earn less than $600 a year. Less than one-tenth of them earn $800 or more, and yet the annual cost of maintaining a family of five persons upon what we like to think of as an American standard of living requires $900 to $1,000 outgo.

How, then, is widespread poverty to be stripped of its menacing attitude, except through insurance against the poverty-making dangers of sickness, unemployment, industrial injury, premature death, old age, maternity benefits for working women, and burial benefits when the end comes? No country that looked well to the welfare of its working population ever suffered revolution. No country that allowed poverty to become widely pervasive long escaped it. The people of Germany refuse to inaugurate a revolu-

tion because, domestically, they have been well cared for by their Government. Russia has resolved itself into social chaos because the people have not been cared for at all. We in America have gone ahead on the principle of "Everybody for himself, devil take the hindermost," with the result that the devil has pretty generally gotten him. It is not inconceivable that we may have to choose between social insurance, socialism, and social anarchy.

Compensation for industrial injuries is but one factor in a scheme of social insurance, and social insurance is a State problem rather than a Federal, although Federal authority might conceivably foster and encourage it among the States. Of every 100 persons who attain the age of 65 years, 97 live, at least in greater part, upon public or private charity. The question is not whether or not the aged shall be pensioned; they are pensioners already, and the only issue is as to how those pensions shall be paid and where shall rest the burden of paying them. Social insurance bears only an incidental and unimportant relation to commerce, either by rail or by water, interstate or intrastate, and its relation to master and servant is almost equally incidental. The obligation of the employer runs to the State to carry this insurance, not merely for the benefit of the employee, but primarily for the protection of the State against the menace of poverty.

FEDERAL JURISDICTION SHOULD BE RELINQUISHED.

Federal jurisdiction over industrial injuries out of the way, our problem becomes easy of solution and the burden light. The States will take care of it in due season. There are backward States in this Union. There are States in which labor has few rights and ambulance-chasing attorneys thrive. Shall all of the States be held back from doing justice and showing mercy because of these?

The way is now clear whereby Congress may, at least, exempt injury sustained in interstate commerce by railroad from its interstate character when it happens in any State desiring to enjoy such exemption for the benefit of its citizens. The Webb-Kenyon Act, to which I called the attention of this association last year, and which divests liquors of their interstate character as commerce when they reach the boundaries of a prohibition State, has since had its constitutionality affirmed by the Supreme Court of the United States. If it be so with liquors, why not with industrial injuries? The power of Congress so to do is, it seems to me, no longer questionable.

WHAT ARE WE GOING TO DO ABOUT IT?

The existing chaotic condition in relation to conflicts between State and Federal jurisdiction over injuries sustained in transportation whether by water or by rail is intolerable. What is the remedy?

An article in the July Monthly Review of the United States Bureau of Labor Statistics suggests the following possible solutions of the problem:

1. An amendment to the Constitution of the United States giving Congress jurisdiction over intrastate as well as interstate commerce, preparatory, it may be inferred, to enacting a comprehensive Federal compensation law covering all railroad employees.

2. The repeal of the employers' liability law of 1908–1910, relegating the problem, so far as the railroads are concerned, to the States.

3. The enactment of a Federal compensation law to be effective only in States not having such a law of standard type.

The first remedy suggested might require a generation for its accomplishment; the second would leave the railroad men in the backward States in worse plight than they are at present; the third has more to recommend it, but, for reasons already explained, Congress has not been minded to pass any compensation law at all in relation to interstate commerce.

Mr. Justice Brandeis, in his dissenting opinion in one of the Winfield cases, suggested that "It would obviously have been possible for Congress to provide in terms that wherever such injuries or death result from the railroad's negligence the remedy should be sought by action for damages; and whenever injury or death results from causes other than the railroad's negligence, compensation may be sought under the workmen's compensation laws of the States."

While this solution would doubtless be acceptable to the railroad employees, the railroad companies would oppose such a measure, notwithstanding the fact that in Great Britain every injured workman may take his compensation or sue for damages as he may elect, and notwithstanding the further fact that whichever remedy the injured employee elects, he almost uniformly secures about what the compensation statute would have given him. Juries, knowing no other scale by which to measure damages, choose the one furnished by the compensation law with which they are familiar.

Another method has been suggested to me: Let Congress, if it will, enact a compensation law covering interstate injuries and then confer upon industrial accident boards and commissions of the several States the administration of the act. If this can not be done directly, the United States District Courts could be authorized to refer all such cases to such boards or commissions for determination of the facts, unless a jury were demanded, as such courts now refer such issues to special commissions or referees. Then, when a case comes before such commission, if the facts prove the injury to have been suffered in interstate commerce apply the Federal law, if in intrastate, then apply the State compensation law. The suggestion is not without persuasive force.

WHAT ABOUT THE CONFLICT IN ADMIRALTY JURISDICTION?

The remedy that does not resolve this conflict upon water as well as upon railroad will prove but half a remedy. What about that?

The writer in the Monthly Review, above referred to, affirms that, "Only Congress can legislate as to injuries on high seas and navigable waters of the country." It has been as stoutly affirmed that Congress itself can neither add to nor take away from the jurisdiction of the United States District Courts over admiralty cases. If both of these propositions be true, and it is also true that admiralty jurisdiction does not extend to injuries happening upon the docks, then the conflict of jurisdiction between State and Federal authority over injuries happening in commerce is even more hopeless of remedy when such commerce is by water than when by railroad, for no Webb-Kenyon statute has been enacted and judicially upheld which can divest a maritime injury of its admiralty jurisdiction, even when it happens in a State having an adequate compensation law.

There are two kinds of maritime law—the statutes of Congress and the general, judge-made, law maritime. Congress has enacted no employers' liability law covering injuries suffered in the business of transportation by water, and the general law maritime, although far more liberal toward injured men than the old common-law liability doctrine, allows indemnity for injuries only where negligence can be established and none at all in cases where the injuries result in death. Congress can enact a compensation law covering all maritime injuries, and the courts may hold that dock and dry-dock injuries are maritime, but if such a law were administered by the United States District Courts the cost of it would consume the benefits and hoped-for relief would not result.

Suppose that one of the five justices who voted for the Jensen decision had voted the other way, what would have been the status of those engaged in commerce by water?

That decision committed the court to two doctrines:

1. That the procedure followed by the Industrial Commission of New York did not constitute a common-law remedy within the meaning of section 9 of the act of 1789; and

2. That the compensation law of New York is, in substance, in contravention of the general body of admiralty law.

If one other justice had voted with the dissenting four, the procedures of industrial accident boards and commissions would have constituted common-law remedies and, in pursuance of the act of 1789, would have been "saved to suitors," and it would also have been held that such compensation laws were not in contravention of the general maritime law, which itself would have been made subordinate to the common-law remedy.

Under such a decision the shipping interests would speedily place themselves under the protection of the compensation laws of the States having such laws, and all would soon be well with the larger share of men who toil in commerce by water. When we reflect upon the fact that the interests of hundreds of thousands, it may be millions, of toilers were so unfavorably affected by the fifth man on that bench, one can not resist the feeling that that fifth man can not fully have realized the consequences certain to flow from his act. I should like to see the issue go back to the court on the dock side of it, and shall do my best to see that such a case gets there. Our commission proposes to assume jurisdiction over accidents happening on the docks.

A PRACTICAL SOLUTION SOUGHT.

A Federal compensation law governing transportation by railroad is not, in my opinion, practicable, because inelastic, not readily susceptible to amendment, would cover interstate injuries only, would attempt to deal with what is essentially a State problem, and, anyhow, could not be enacted without great difficulty.

Concerted pressure should, in my judgment, be brought upon Congress by all compensation States, to relinquish the whole subject of injuries sustained in interstate commerce by railroad in States having adequate compensation laws and fixing a standard of adequacy therefor, retaining the employers' liability law in full force and effect in States falling below such a standard or having none at all. Such a measure could probably be put through Congress at this time.

With reference to commerce by water it may be found advisable not to attempt Federal legislation at this time, but instead to bring new and more fully argued cases before the Supreme Court of the United States. Meantime, push along the California idea of getting seafaring employers and their employees to accept the compensation acts of the several maritime States, supplementing the acceptance with a waiver of the right to sue in admiralty where a basis of negligence might be laid. There is no statute prohibiting contracting out from under admiralty jurisdiction, and there is every reason in the world why men who toil in shipping should wish to contract out from a law that does not afford them protection and under a law that does. Such a contract would bind all except the dependents of deceased employees, and they would have nothing to sue for anyway except in States that have given a right of action in death cases. The general maritime law gives no such right, nor does any Federal statute.

A TENTATIVE STANDARD.

I have spoken of a standard of adequacy to be imposed by the Federal Government as a condition precedent to relinquishing its

authority over injuries happening in interstate commerce in States having compensation laws conferring equalized benefits approximating to the standard imposed.

At a venture I took the statute affording "Compensation for injuries to civil employees of the United States," approved September 7, 1916, and find that it affords the highest benefits of any compensation statute in the United States. If this were taken as the standard, the law of no State would be adequate. The compensation laws of New York and Ohio would fall about 10 per cent lower. The compensation laws of California, West Virginia, and Wisconsin would fall about 20 per cent lower; Illinois would be 30 per cent lower, and Maryland, Nebraska, and Oklahoma from 30 to 40 per cent lower. The compensation afforded by the laws of Connecticut, Indiana, Iowa, Louisiana, Michigan, Minnesota, Montana, New Jersey, and Rhode Island would be between 40 and 50 per cent lower, and those of Vermont and Colorado would be more than 50 per cent lower. I did not continue the investigation further.

In my judgment those States affording compensation more than 30 per cent lower than the Federal compensation act above designated could reasonably be held to fall below the standard of adequacy.

These figures were all computed according to the differentials employed by insurance actuaries in determining the relative benefits conferred by the several States as compared with the Massachusetts act of 1911. The rule is applied by all of the insurance carriers of the United States in determining rates in the several States, and I think is accurate.

APPOINT A COMMITTEE.

These issues are too important to be disposed of in a summary fashion at a session of an association such as this, with a crowded program, time being needed to master that problem in principle and detail. Something should and, I believe, can be done to relieve the situation of its embarrassments and the hardships inflicted upon several millions of toilers in hazardous industries.

I would, therefore, urge that a standing committee of five earnest and discreet persons be appointed, to be selected by the president and secretary-treasurer jointly, with power to act; that such committee be instructed to meet in Washington early in October, to sit for one week or two weeks, as the case may be, for the purpose of formulating and inaugurating such a plan and campaign for resolving and eliminating all conflicts in jurisdiction between Federal and State Governments in cases of industrial injuries happening in commerce, whether by railroad or by water, as may be deemed advisable; and that the good faith of this association be considered as pledged to the support of such plan as may be perfected by said committee.

DISCUSSION.

Mr. FRENCH. I would like to state that we have had prepared a number of copies of a synopsis of this article that I think will be found interesting and I shall be glad to hand them around. If you want more than one, we have lots of them.

Mr. SMITH. It seems to me that this paper of Mr. Pillsbury's, from a legal point of view, is a masterpiece. While not possibly agreeing with every word in it, I certainly do agree with the legal argument and with the facts stated, that in every State workmen's compensation boards are "up against it" on account of the Jensen and Walker and the two Winfield decisions. We have had it in Michigan, and I don't mind saying that in four cases which we had pending when the Jensen, Walker, and two Winfield cases came down, we promptly decided contrary to the decision of the United States Supreme Court. We made up our minds that if that was the law, our State supreme court would have to say so first before the industrial accident board did and then the United States Supreme Court say so afterwards. I might say that the New York law is, of course, entirely compulsory and the New Jersey law semicompulsory and semielective; the Michigan law is entirely elective, which would make quite a difference and our decisions might be different. It seems to me that this is the biggest question that has come before this association and I understand that the New York State Industrial Commission through its chairman, Mr. Mitchell, has submitted a resolution on the subject of the maritime commerce division of this question to the committee on resolutions. It seems to me that this association should appoint a committee such as suggested in the paper of Mr. Pillsbury, read by Mr. French, and also take some action along the lines suggested in the resolution which has been submitted to the committee on resolutions by Mr. Mitchell, and I move that the entire question be submitted now, or be referred to the committee on resolutions with instructions to report at our next meeting a suitable resolution on this proposition.

The CHAIRMAN. Before putting the motion by Mr. Smith, I may say that the program has down for discussing this subject Mr. Archer, of New York. Mr. Archer was unable to come, but we are very glad to have with us the chairman of the New York board, Mr. Mitchell, and I will be glad if he will now discuss the subject and say what is in his mind regarding the resolution Mr. Smith speaks of.

Mr. JOHN MITCHELL, chairman, New York State Industrial Commission. I have been prompted to come here to-day because of the situation created in the State of New York through the decision of the United States Supreme Court in the Jensen and Walker cases. As you know, it was from that State these people went. It was from the State of New York the Winfield case went to the United States Supreme Court and while I am not going to take your time in discussing the Winfield case, I will take time to say that the old New York Compensation Commission, which was the predecessor of the present State Industrial Commission, decided that a railroad employee injured through no fault of the railroad company should be entitled to compensation under the New York act. We felt that the Federal employers' liability act as affecting interstate commerce applied only to those cases in which the injured man or the dependents of the workman killed had real remedy under the Federal act; that where the Federal Government had made no provision at all for the man injured through no fault of the railroad company, that such man came under the provision of the State acts, and we awarded accordingly. Our decision was upheld by unanimous vote of the New York courts, and I think that everyone will agree that the New York Court of Appeals, the highest court in New York State, is a very conservative court and that its decisions are followed by the higher courts of other States and rarely reversed by the Supreme Court of the United States. Therefore, when that great court decided that the New York workmen's compensation act, applied to railroad employees who were injured through no fault of the company and therefore had no real remedy under the Federal act, we had reason to hope that the United States Supreme Court might affirm that decision. However, that great body has seen fit to reverse that decision by a vote, not of five to four, but, I believe, of seven to two, and while we regret that decision, we hope that the time is not far distant when Congress will enact a Federal compensation act applying to the employees of interstate railways.

Personally, I disagree with Mr. Pillsbury's suggestion that the employees of interstate railroads should be brought under State acts. I believe in the case of railway employees it would be much better if the Federal Government were to act and to act so as to cover practically all, if not all, of the employees of interstate railroads, and as you know, there has been pending in the Senate of the United States a bill introduced by Senator Sutherland providing compensation for railway employees. The bill as originally drafted providing the rates of compensation was so wholly inadequate as not to commend itself to the judgment of anyone who was interested in the welfare of employees. The bill was amended and revised and

finally put in such shape as to be much better than originally introduced but at no time did the bill commend itself to at least two of the great railroad brotherhoods. The brotherhoods were divided, two of them standing for the bill and two opposed. Until the railroad brotherhoods can be persuaded that compensation is better than the suits for damages with all their uncertainties, there isn't much chance of the bill being enacted into law. Recently I wrote Mr. Gompers, asking him if he would not call a conference of the heads of those unions employed in railroad service for the purpose of considering again conscientious Federal legislation concerning railroad employees.

Now, the subject to-day relates only to those engaged in the loading and unloading of ships. Of course if the Federal Congress were to act for both the maritime workers and railway employees, it would have to be in separate bills because one bill could not cover both kinds of employees. Therefore, this resolution, which will probably be referred to the committee on resolutions, relates only to men engaged in loading and unloading vessels. The decision of the United States Supreme Court was handed down in two cases, in both of which the boats on which these accidents occurred were foreign vessels; that is to say, they were not vessels of the State of New York. One was owned by the Southern Pacific Railroad Co. and the other by the Clyde Steamship Co. Therefore the United States Supreme Court did not have the opportunity of deciding in that case whether boats owned in the State where the accident occurred were excluded from the provisions of the workmen's compensation act, although I imagine from the general lines of the decision it was intended to exclude boats whether they be owned in the State where the accident occurred or engaged in foreign and interstate commerce and owned in other States or other countries. The Supreme Court has not decided definitely that longshoremen injured on the dock are excluded from the benefits of the workmen's compensation act, although it seems the consensus of opinion among admiralty lawyers of the State of New York that the decision does exclude men injured on the dock. Now, personally, much as I should like to have that decision defined so as to leave to the State as many of the workingmen as possible, I believe it would lead to endless confusion. The longshoreman moves perhaps a hundred times each day from the dock to the boat and back again, and therefore we would have the difficulty of determining and trying to adjudicate cases of men who are one minute on the boat and the next minute on the dock and part of the time on the gangplank between the dock and the boat. I can not see where there would be any successful administration of the law under those circumstances.

Therefore it seems to me and to my associates in the New York commission and to other men interested in social legislation with whom I have conferred, that Congress should be appealed to now to withdraw its jurisdiction—withdraw Federal jurisdiction—over the men employed on boats—employed in loading and unloading boats. Legislation of that kind would be extremely simple if Congress were disposed to act. It requires no elaborate machinery; all that would be necessary to do would be to pass in a few lines an act withdrawing jurisdiction of the Federal Government from cases such as were determined by the United States Supreme Court in the Jensen and Walker cases. It would be much more easy to secure legislation of that sort, I think, than to have the Federal Government create a compensation act applying to men loading and unloading vessels or men employed on boats on navigable waters.

Now, I have indicated that I favor State legislation for the men on docks, longshoremen, and stevedores, and Federal legislation for men employed on railroads.

The situation created is so lamentable; to see the great numbers of widows and children of the men killed, there are simply hundreds of them; I say it is deplorable. The New York Industrial Commission has made awards and those awards have been accepted by the insurance companies, or, where an employer was not insured, the steamship company has paid the awards without protest. Appeals have not been taken; they have consented to the awards, and these women have been drawing their money every two weeks, and that has been going on for three years. In some States statutes of limitation have run against them, and now the insurance companies refuse to pay. The employers refuse to carry out the awards, and this great army of women and children are left helpless and don't know what to do. Now, the insurance companies are not coming to the commission and asking them to set the awards aside; they are simply refusing to pay, and these women—a very large number of them do not speak our language—feel that a great injustice has been done them and feel that the industrial commission has power to remedy that injustice. Now, what is to be done I don't know. Of course the New York commission, unless it is advised by a higher authority than itself, will not revoke the awards it has made in any of these cases. We will attempt to compel the insurance companies to pay the awards which were made and from which no appeal was taken. If in that way the matter gets back to the United States Supreme Court, well and good. Ordinarily, I am not disposed to criticise higher courts; I can understand that they have their great problems too, but I wish it had been possible for the members of the United States Supreme Court to have sat in the court over which I preside and been called upon to reverse the awards made to these women

and injured men. It would have been a little more difficult for them to have reached their conclusions if they could have seen the great army of widows and orphan children whose compensation was being taken from them, than it was to sit in Washington, where, perhaps, they never had the opportunity of seeing a working man or woman.

I know the committee on resolutions will make arrangements with regard to the matters presented to them and I trust they will advise prompt action. I regard this as the most propitious time in the history of the United States to secure immediate legislation from the Federal Congress. A great war is on, and practically every measure that has been presented to Congress for the furtherance of that war has very properly received their reasonably prompt and considerate attention, and it seems to me that when so large a number of our citizens are employed day after day loading ships with munitions, employed every day doing something that is going to further or retard the progress of the successful prosecution of the war, that citizens who are alive to the needs of the situation may effectively appeal to Congress to pass as an emergency measure a law that will in part at least correct the hardships caused by the decision rendered recently in the Jensen case by the United States Supreme Court.

Capt. WHITE. What do you do in New York in a case where members of the crew are injured on ship? Do they come under the New York law?

Mr. MITCHELL. We have been making awards to them in New York.

Capt. WHITE. As long as they are within police jurisdiction of New York State you consider them as coming under your act?

Mr. MITCHELL. If a foreign vessel, we do not. In case of foreign vessels we do not assume jurisdiction, but we have always held that a vessel registered in the State of New York, though owned in the State of Kentucky, as was the case in the Southern Pacific Railroad Co.—we held that a boat registered in the port of New York was a New York vessel, and I understand that has been determined in admiralty; so we made awards in those cases, but not where a vessel was owned by some other nation.

Capt. WHITE. Then the proposed change in the law is simply applicable to men working temporarily in connection with that work?

Mr. MITCHELL. Well, wherever they may be on a New York vessel. It is the theory of the law that the State follows the vessel; for instance, if a New York vessel were in Liverpool, it would still be in the State of New York because the vessel is part of the State of New York and that is the fact all over the country; for instance, in British Columbia and on the Continent.

Capt. WHITE. I am speaking particularly of the steamship dock; whether on the ship or on the dock, simply because they were citizens of the State of New York or residents of the State of New York, they would properly come under the law of New York in occupation.

The CHAIRMAN. Do you consider, Mr. Mitchell, that an act of Congress divesting itself of jurisdiction would by that very act automatically, so to speak, give the State jurisdiction without positive enactment from some quarter?

Mr. MITCHELL. I think there is no doubt about that. I think if the Federal Government withdrew its jurisdiction, it would then come under the State. Of course our Government is founded on the principle that the State reserves to itself all rights not delegated to the Federal Government. I don't think they would necessarily go to Congress to have jurisdiction, but if they did it could very easily be done. Might very well withdraw admiralty jurisdiction in States where they had compensation act, but not otherwise. The law applies to the members of the crew of a vessel coming under the jurisdiction of the State of New York.

Capt. WHITE. Should not the Federal law follow a vessel? The employees are those men who are engaged on the vessel. The Federal law would properly follow them, and the jurisdiction of the State of New York simply follow its residents who are temporarily employed as stevedores on the vessel.

Mr. MITCHELL. Of course that would not take care of the crews.

Capt. WHITE. The Federal law would take care of the crews wherever it might be owned in the United States.

Mr. MITCHELL. Of course the Federal law does not take care of them.

Capt. WHITE. You mean if we had a Federal compensation act to follow the crews of vessels wherever they go?

Mr. MITCHELL. That might be one way of correcting the decision, although I can not see any reason why the acts of the State should not follow the vessel, because as a matter of fact it is the citizens of the State who are injured on these vessels and killed, and the State must provide for their dependents. The burden falls on the State; it does not fall on the Federal Government. In other words, the Federal Government does nothing to provide for the vicissitudes of the citizens stricken; the State itself must provide for all vicissitudes of its citizens.

Capt. WHITE. Then a resident of the State of Maine employed on a ship in New York would have to seek compensation under the laws of Maine?

Mr. MITCHELL. Yes.

Capt. WHITE. If he were on a New York vessel?

Mr. MITCHELL. Because that would be the home port of the vessel.

Capt. WHITE. From what I judge, the employee would have to go back to his own residence to get compensation for any accident that might happen on a vessel wherever he was employed.

Mr. MITCHELL. That is just the operation now. In the case of a mechanic employed in the State of New York by a New York employer to do work in Maine we would pay.

The CHAIRMAN. We had a very able paper on that subject presented by the late Mr. Yaple at the Seattle conference two years ago—on this question of concurrent jurisdiction between States. Practically the same point arises with relation to the border waters between Ontario and the States. We occasionally have the point up where a seaman on an American vessel in one of our ports becomes injured while, possibly, on the wharf or the gangplank, but at all events within our territorial jurisdiction for the moment. The question might properly arise, Has Ontario jurisdiction to deal with such an accident? We have rather taken the view where it has arisen that we wish to divest ourselves of that jurisdiction, although it may be admitted that we have it. I think the best opinion, and this was concurred in by Mr. Yaple, of Ohio, is that both have jurisdiction but that jurisdiction should be exercised only by the home State, so to speak; that is to say, Ontario would say to such a man, "If Ohio, or Michigan, or Wisconsin, your home State, as the case may be, will give you compensation, or will deal with your case, we will have nothing to say about it"; just so we would assume jurisdiction if an Ontario man were injured on an Ontario vessel which happened to be at the moment in a New York State port. That point of jurisdiction between States, however, is quite a different problem from the one presented by Mr. Pillsbury.

Capt. WHITE. The difficulty seems to lie in providing for the compensation. Where do the States get funds to provide this compensation, or what insurance companies or what carriers pay the award?

Mr. FRENCH. The insurance carrier representing the employer. There are thousands of insured employers.

The CHAIRMAN. You instanced a case of a man from Maine being employed in New York. I would say residence does not make any difference; he may be a resident of Ontario or any other foreign jurisdiction. If a man goes to New York from Maine for employment, as far as the law governing his compensation is concerned he places himself under the jurisdiction of New York State, is subject to its laws and at the same time is entitled to the protection of its laws.

Mr. SMITH. I might suggest that this question of Mr. White's is absolutely foreign to our present question.

Mr. HOLMAN. You have handed a resolution to the committee on resolutions and there is no action, I suppose, to take at the moment with reference to it.

Mr. SMITH. I placed a motion that the paper of Mr. Pillsbury and his recommendation, together with that of Mr. Mitchell, be submitted to the committee on resolutions.

The CHAIRMAN. Mr. Wilcox is down to discuss the question but as he has gone home we will go to the next item, a paper by Mr. Little, chairman of the United States Employees' Compensation Commission, on the subject, "Compensation for occupational diseases."

COMPENSATION FOR OCCUPATIONAL DISEASES.

BY RILEY M. LITTLE, CHAIRMAN, UNITED STATES EMPLOYEES' COMPENSATION COMMISSION.

The underlying principle of compensation laws is that the hazards of industry should be borne by society as a whole, and not by individual workingmen alone. The principle rests upon man's social nature. We are members of one body, and if one member suffers all members suffer with him. The injury of one is the injury of all; the welfare of one is the welfare of all. A fraction of the people may be injured and suffer, and all of society not be conscious of the suffering because of the health and vitality of the whole, just as one's body may have a diseased member, but because of one's general health and strength, he may not think much about the decayed tooth, the defective eyesight, or the weak heart.

But an injured body is not a perfectly sound body, and the healthy members of the body must make up for the weakened members by carrying an increased burden. A man becomes a stronger and more effective man when every organ of his body is sound and well and performing its proper function.

A strong virile State may continue to grow, and develop a fine civilization while some of its citizens are handicapped and are unequally bearing the burdens of life, but it will be a stronger State and have a finer civilization if all of its citizens are living normal, happy, useful lives. This truism is receiving tremendous emphasis by the present world struggle for democracy.

I am merely reciting the A, B, C of what we all know, in order that we may bear in mind the fundamental consideration—why occupational diseases should be compensated. They exert a direct and blighting influence upon the State, as well as upon the afflicted workingman. They affect his health, working power, and economic and social status. They also affect industry as to output, loss of time, and efficiency. They affect society and the world which industry serves. There is a loss all along the line through occupational diseases, as well as on account of industrial accidents.

It is all but universally conceded that compensation should be granted to those who are injured by accidents while in the course of their employment or in the performance of their duties. Accidents are caused by forces which operate from the outside. They are considered untoward events which suddenly and unexpectedly occur.

They emanate from a workingman's environment. They are caused by tangible instruments or conditions. They are easily susceptible of proof, and can be tabulated or analyzed, and the responsibility for them can be fixed and the costs assessed.

Most people believe what they can see, and are slow to believe what they can not see. Because accidents are external—within the light of common day—and because they occur while men are at work, the awakening social conscience has made provision as to them in 37 States and in the Federal Government; but we are slow to make similar provision against the hazards of industry on account of occupational diseases.

Every compensation law recognizes individual responsibility by denying a workman compensation for an injury which he sustains through his own willful misconduct or intoxication; also when he is doing something on his own account, or in that period of the day which belongs to himself alone. But when a man is engaged in an industry doing something useful for his employer and for society, his employer and society are his partners, and with him jointly responsible for the personal injuries which he may receive. Compensation laws do not absolve men from their personal responsibility, nor should they; but they do define the interrelations of life more closely than heretofore, and they do attempt—justly—to distribute the responsibility and hazard of the working and producing world among all those who receive benefits from the working and producing world.

Already, the experience gained from compensation laws on account of accidents shows that they are sound and just, and for the welfare of society. The sufferings of thousands of workingmen have been mitigated by the benefits; families have been kept intact; the sense of injustice has been appeased. Those who do the hard work of the world amidst its dangers are coming to recognize that society, as a whole, cares for their welfare. Prevention has been stimulated; conditions of toil are being made safer; accident frequency has been reduced, and lost time greatly shortened; industry is becoming more efficient; and life is sweeter and means more to a multitude of toilers.

Our compensation laws embody the conviction that we really believe that a man is of more value than a sheep. We are discovering that sound, healthy workingmen are more valuable than maimed and mangled employees, and even the dividends are more reliable.

This happy experience is bringing us to an attitude of mind that recognizes the justice in providing compensation for occupational diseases. They as distinctly arise out of the nature of employment and belong to the hazards of industry as do accidents. If the one should be compensated, so should the other. If society should share with the workingman the loss he experiences because of an accident,

why should not society likewise share with him in the loss and suffering which he experiences on account of a disease which he contracts because of his employment? For the reason previously stated, it was quite natural that compensation laws should first take cognizance of accidents, but it is apparently difficult for many minds to broaden sufficiently in their thinking to include occupational diseases. However, the logic of the underlying principle and the practical experience of the industrial world must carry us forward to include the latter in our schemes of compensation.

Think of the injustice of discriminating against occupational diseases. A workingman left his position with a railroad to accept one at a tannery at an increase of $2 per week in his wages. Within a few weeks he contracted anthrax, and after a short illness he died. The diagnosis was clear and conclusive that he contracted the disease while working with hides. He left a wife and two children, and an unborn child—foreigners in a strange city—with $100 in money, $78 of which was used to pay funeral expenses. In course of time, the case came before the compensation board of Pennsylvania, which disallowed the claim. The widow and children in their helplessness were cared for by the charity society of the city. It was necessary to move the family twice within three months. The widow made a brave, energetic struggle against her adverse circumstances, but her health failed. When the charity society asked the employer to make a reasonable contribution to a pension fund for the family, the president offered to contribute "$10 once in a while," whereas the needs of the family were $400 a year to eke out a meager existence. If the man had been injured by an external force and died therefrom, his family would have secured more than $2,500.

A strong, able-bodied, productive workingman of 37 years of age was placed in a position where he was subject to a virulent infection which destroyed his life within a few weeks, which left his widow and little children helpless—the objects of charity and the benevolent spirit of the community. Justice was what they were entitled to, not charity, but the law or its interpretation denied them justice.

In contrast to the attitude of this Pennsylvania company was that of an Illinois manufacturing establishment, where 20 employees died on account of diphtheria and typhoid fever. They contracted the disease by drinking polluted water furnished by the company. There was a voluntary settlement of the claims without contest. Unfortunately, employers can not all be depended upon to deal justly with their employees without the compulsion of law.

The basic difficulty, of course, is in the wording of the laws. Most compensation laws are intended, primarily, to assure compensation for industrial accidents, and, naturally, compensation boards and the courts must follow the laws. However, ten States do not employ

the term "accident" in describing compensable injuries, but they use the terms "injuries" or "personal injuries." These States are California, Connecticut, Iowa, Massachusetts, Michigan, New Hampshire, Ohio, Texas, West Virginia, and Wyoming. The meaning of the term "injuries" or "personal injuries" as interpreted by the commissions and courts in these States is confusing and conflicting. Apparently it was the intent of the legislatures in some of the States to include occupational diseases when the word "injury" was substituted for the British term "injury by accident," but with the single exception of Massachusetts, the courts, where cases have come before them, have ruled against the inclusion of such diseases. In Iowa and Wyoming, occupational diseases have been specifically excluded by the laws, although they do not use the term "accident." There is an express provision in those States against occupational diseases being compensable. In Connecticut, Michigan, Ohio, and Texas, occupational diseases have been excluded by the courts. In Connecticut, Michigan, and Texas, the courts have overruled the administrative commissions which had allowed compensation for occupational diseases. In excluding such diseases in Michigan, the court relied upon the use of the word "accident" found in the title, but not in the body of the act. In New Hampshire, the law declares the employer liable "for any injury arising out of and in the course of employment"; but as the law announces its purpose to be "to establish a new system of compensation for accidents to workmen," and repeatedly uses the term "accident" in prescribing the methods of administration, it is probable that occupational diseases are excluded in New Hampshire. In California and West Virginia, the phraseology of the law favors more strongly the inclusion of occupational diseases. The original West Virginia law included two references to accidents, but the most significant of these was changed in 1915 from "accident" to "injury." In California the law was amended in 1915, substituting the word "injury" for "accident," wherever the latter word appeared, with the apparent intention of including occupational diseases. Such diseases are now being compensated in California. Massachusetts and California, however, are the only States in which both the compensation board and the courts have ruled that occupational diseases are included within the scope of the act. The United States Employees' Compensation Commission has held that the Federal act covers occupational diseases. The language of the act is as follows:

> That the United States shall pay compensation as hereinafter specified for the disability or death of an employee resulting from a personal injury sustained while in the performance of his duty.

The word "accident" is not used in the Federal act, but the broader term "personal injury" is employed. What is a personal

injury? The primary idea of "injury" is something not right, or unjust. The secondary meaning is a wrong or damage done to another in his person, rights, property, or reputation; the unlawful infringement or privation of rights. The term "personal injury" in law means injury to one's body.

The Supreme Judicial Court of Massachusetts, in considering a compensation case for occupational diseases, has declared that "Under the act 'personal injury' is not limited to injuries caused by external violence, physical force, or as the result of 'accident' in the sense in which that word is commonly used and understood, but under the statute is to be given a much broader and more liberal meaning, and includes any bodily injury." The pending War Risk Insurance bill in Congress declares that "The term 'injury' includes disease."

The United States Employees' Compensation Commission, in interpreting the words "personal injury," has taken them in their comprehensive meaning as given in the dictionaries and by the Supreme Court of Massachusetts. We are unable to distinguish between "personal injuries" which civil employees may receive while in the performance of their duty, by infection, or virulent poison, and those which are caused by a sudden external physical force.

Four decisions of the commission may serve to illustrate its attitude toward occupational diseases:

(1) A case of lead poisoning. A painter in one of the Government establishments experienced some symptoms of lead poisoning for several weeks, but, being a strong, robust man, did not pay much attention to the illness. Suddenly, one afternoon he fell over unconscious, and was quickly taken to the dispensary, where the attending physician pronounced it a case of epilepsy, and at once the patient was sent to an emergency hospital. In addition to the physicians of the hospital, the family physician was present, but within a short time the patient died. The superintendent of the hospital and the family physician were inclined to believe that it was a case of lead poisoning.

When the claim for compensation came before the commission, there was the conflict of opinion between the medical officer of the Government establishment and the physicians who last attended the deceased. Every particle of evidence bearing upon the case was carefully sifted, and the judgment of a number of impartial physicians secured. In their opinion, the preponderance of evidence indicated lead poisoning. The complete record was placed before the Surgeon General of the department, whose opinion coincided with that of the other physicians and against the hasty diagnosis of his subordinate officer. With all these facts before the commission,

they decided that the man died from a personal injury sustained while in the performance of his duties. The claim was allowed.

(2) A claim on account of disability caused by inflammatory rheumatism has been allowed by the commission. The circumstances were as follows: A young man was employed as a stock clerk in a room which had a dirt floor, and in order to keep the floor in good condition it was necessary to sprinkle it with oil and then with water. The oil prevented the water from being absorbed and caused it to form puddles on the floor. All the employees in the stock room suffered from the extreme moisture and cold. The claimant suffered severely with la grippe and then with a serious illness which the attending physician diagnosed as rheumatism, articular, acute, in both ankles, hips, and knees, and left elbow, and in his opinion the disease was incurred while in the performance of duty. Three physicians agreed that most likely the claimant was afflicted with rheumatism because of the unhygienic conditions under which he was employed. The claim, therefore, was allowed.

(3) A riveter in one of the navy yards, while riveting the boiler beds on a vessel, was compelled to lie on the tank tops, using a compressed air machine. Continuous working in that difficult position, and the constant jarring of the machine and rubbing the cold iron, caused water on his elbow. His claim for compensation was allowed.

(4) A mining engineer, who attempted to do rescue work after an explosion, entered a mine with protective apparatus, but inhaled the gases. He was carried unconscious into the fresh air, but all efforts to revive him failed, and he died. The claim was allowed on the ground that the injury was received while in the performance of his duties.

These cases illustrate not only the attitude of the commission toward occupational diseases, but also its procedure in considering border-line cases.

Ruling that occupational diseases are compensable brings us into the midst of a multitude of difficulties, because the knowledge of such diseases is not complete or always clear and definite in particular cases. However, they do exist, and they cause personal injuries resulting in disability and death. They occur in the course of employment, and arise out of employment, while employees are performing their duties for the Government. The fact that allowing claims for occupational diseases leads us into a disputed field is not sufficient reason to disallow them. There is a twilight zone surrounding accidents; there is a larger twilight zone, perhaps, surrounding occupational diseases; there is also a twilight zone lying between accidents and occupational diseases. By including occupational diseases as compensable, the Federal commission is not con-

fronted by any more twilight zones than are those who administer the laws which grant compensation only because of accidents, for by granting compensation for occupational diseases we have eliminated the twilight zone between accidents and occupational diseases. Even if our knowledge of occupational diseases is incomplete and at times vague, we do have certain definite knowledge about a number of diseases, and with further investigations we shall have more definite and dependable knowledge, but in the meantime we are acting upon the knowledge which we already have. Compensation commissions and courts, when the law permits, should follow medical science and award compensation only for those cases which competent medical authority believes are due to conditions of employment.

The principal contention of this paper is that the hazards of industry ought to be borne by society as a whole and not by individual workingmen. It is perfectly obvious that many working people suffer because of harmful conditions of physical environment, injuries to nerves, muscles and bones, injuries to special organs of the body as the skin, eyes, ears, nose, and throat; injuries to the blood, circulatory system, respiratory system, nervous system, digestive system, muscular system, cutaneous system, urinary system, and special sense organs. There is a large field of occupational diseases clearly charted and defined. As the safety movement is the corollary of the employers' liability laws and compensation acts, so sanitary and health measures will become the corollaries of compensation on account of occupational diseases. It is highly desirable, therefore, that compensation laws in the various States should be amended when necessary so as to include occupational diseases. Their inclusion will not impose an appreciable burden upon society, but will lift an unjust burden from a considerable number of wage earners, and will help to fill out the meaning and just scope of our compensation laws.

DISCUSSION.

Mr. JOHN B. ANDREWS, secretary, American Association for Labor Legislation. May I ask, Mr. Little, what is your procedure?

Mr. R. M. LITTLE, chairman, United States Employees' Compensation Commission. Well, I presume that the procedure of the Federal Compensation Board by force of circumstances is a good deal different from a good many compensation boards. The law directs that a record of the injury must be made out and signed by the immediate superior officer of the employee, then signed by the medical officer of the navy yard or arsenal; the claim for compensation must be signed by the same two officers of the staff and any witnesses who were present. Now, we do not hold hearings all over the country; it would be impossible to go all over the United States because of the scattered nature of the work, and therefore we simply take the judgment of the officers that were there, very largely, and now when it comes to a case where there is a dispute, like this lead-poisoning case, in Washington, we got the judgment of the attending physician, which was epilepsy, but there were certain circumstances round about it which indicated to us that the diagnosis was not satisfactory; he made it in fifteen minutes—and so we gathered all the circumstances surrounding it we could and then took the testimony of the superintendent of the hospital where he died and the testimony of the family physician. Now, there was not a full and complete analysis of that case that demonstrated to the last word that it was lead poisoning, but the whole preponderance of evidence was in favor of lead poisoning and as we are not pitting the advantages of the Government against the employee, we resolved in his favor whatever shadow of doubt there might have been in our minds—there wasn't any shadow of doubt, really. That may not have answered your question. I am going back on my own tracks.

Mr. ANDREWS. Did these doctors come before you and testify?

Mr. LITTLE. Our health doctor happened to know personally the physician of the yard who made the first statement; he esteemed him a very high-grade man. He took four or five physicians from the Public Health Service, then when we got all the circumstances and the judgment of the medical men, we placed it before the Surgeon General of the Department and he looked it all over and said there was no question in his mind but what the man died of lead poisoning. That was the proceeding in that particular case.

Mr. ANDREWS. Suppose the case had arisen a long way from Washington; would you instruct one of your officers there to make some investigation?

Mr. LITTLE. Of course we are using—the law prescribes that we must use the health service the Government already has in the Navy—the naval officers, medical officers in the dispensaries and hospitals; the same in the Army; and then in addition to that, the widespread Public Health Service. In all the large populous centers of the country there are designated hospitals, if there are none under the control of the Public Health Service. We would refer such a case, if in a city and anywhere near a public health officer of the Government, to him and he would go and make further investigation; that would be our proceeding. If he was not available and there was no Government doctor or surgeon near by, we would try to select by correspondence or knowledge of the best grade medical men, experts in the particular line. We get impartial men of the highest possible standing to do it for us. It is the only way we could do it.

Mr. ANDREWS. Does this act apply to men in the Army?

Mr. LITTLE. It does not cover enlisted men; only civil employees of the Government.

Mr. SMITH. May I ask whether you take that as testimony or simply send out an investigator and take his report?

Mr. LITTLE. Not sworn testimony, for the reason that every officer in the United States Government is under oath. We sometimes would if it were in the case of an employee, but the certification of an officer of the Government is under oath anyway.

Mr. SMITH. Then ordinarily you have very little testimony taken.

Mr. LITTLE. Not very much. We are not holding hearings, just a few occasionally in Washington. We have a few field men who go out and investigate complicated claims, but as we are getting more and more in touch with the Government's machinery and the officers in those places understand the working of the law, why we feel it is to that extent working well and believe it will work out quite satisfactorily.

Mr. ARMSTRONG. Does the workman himself make any statement of his injuries?

Mr. LITTLE. Oh yes, he signs it; it is the same form.

Mr. WRIGHT. In that case of lead poisoning I didn't get what the evidence was. We in Ontario would compensate a case of lead poisoning but we must have satisfactory evidence that it did arise out of employment. One case I have in mind now; Mr. Kingston investigated it; the doctor had no doubt in his report that it was lead poisoning, but assumed that it was lead poisoning because the man was a painter. Mr. Kingston's investigation showed that while the

man was engaged in such occupation he was not using lead paints at all, and the evidence seemed to show it was not a case of lead poisoning arising from occupation. Under our act these cases would be compensated, but we must have evidence that they arose out of employment and happened in the course of it.

Mr. LITTLE. I did not try to give the evidence in this particular case of lead poisoning further than these general facts; he was a man of splendid reputation, a workman in the navy yard for 5 years—most of the time inside—using gloves but not always. His fingers and under the nails showed lead. He was willing to do work in difficult positions. He was a strong robust man; had a nice family. He did not complain particularly to his wife about being ill; she did not know of his illness at all. He said something about it to his fellow workmen from time to time. His wrist dropped a few times; those were common occurrences about it. There had never been any epilepsy in the family and he never had any epilepsy and when he fell over unconscious that day, there was more or less confusion. He was taken to the dispensary and the head physician who was very busy looked at him just a few minutes and in 15 minutes sent him to the emergency hospital. Over at the emergency hospital they did not make a thorough diagnosis of the urine for lead—it would show up in that—but the superintendent of the hospital said "Why, that must be a case of lead," and so he called the family physician. He thought perhaps he would know the whole history of the case. Then it got out among the workmen that it was a case of injustice; the man's family was going to be denied compensation because it had been reported that the man died of epilepsy. We sent out an investigator and that did not seem to be quite conclusive. We put in a great deal of time. We did not have the chemical analysis and dropped the case for that reason, but we had the judgment of the two physicians who were with him when he died. We had the judgment of three other impartial physicians in the Public Health Service besides the health officer of the commission and at last, with the accumulative evidence, we had the judgment of the Surgeon General of the Navy. He died of lead poisoning in his judgment.

I give it to you as an illustration that even when the commission does not have a chemical analysis that would demonstrate finally, when the preponderance of available evidence shows that a man died of a disease contracted in the course of employment or while in the performance of his duties, we compensate his family for his death.

Mr. WRIGHT. I can see that with such evidence as you have in that case we would most certainly consider it a case of lead poisoning and compensate, but in a case where a man is ill with lead poisoning and dies of lead poisoning and there is absolutely no evidence that he

could have contracted it while in the course of occupation—in that case we would not compensate; but with reference to the whole question of occupational disease, while we have a few diseases specified, we also feel that is a source of difficulty to our board. We felt that because of the number of diseases specified—occupational diseases—that we were debarred, unless an "accident" could be shown, from compensating another case that did not come under this list, and our board has decided that, while we would not like exactly to take the Massachusetts plan and say "all persons injured"—we did contemplate suggesting an amendment like that at one time—we have made up our minds now when a case comes up, if we are satisfied that that illness or death arose actually out of employment and was caused by it, even though accident is not definitely proven, we are going to treat it is an accident and compensate accordingly.

Mr. LITTLE. Of course the point of view of my paper is getting rid of the word "accident" and calling it "personal injury," and if personal injury occurs in the performance of duty or arises out of employment, why it is due to employment, and those injuries a man receives are just as compensable as if he had been hit with a hammer.

Mr. ARMSTRONG. May I ask another question? Are your decisions final?

Mr. LITTLE. Yes, sir.

Mr. ARMSTRONG. I am glad they are.

The CHAIRMAN. I want to congratulate Mr. Little on being the chairman of the board that is administering a law on a basis so similar to the law in Ontario. It almost seemed as if he were reading a paper having the Ontario experience in his mind except for the point of difference Mr. Wright refers to. Those of you who are on administering boards in jurisdictions where there is the right of appeal to a higher court will appreciate the position occupied by Mr. Little and the board in Washington as well as the board in Ontario who are a court of last resort unto themselves.

Capt. WHITE. Mr. Chairman, may I say one thing about Mr. Little's paper? I notice he said that the accident should be borne by society as a whole. We believe—the manufacturers believe—that the industry should bear the burden of the cost of accidents. Now, in the question of workmen's compensation, the law of workmen's compensation simply took the place of an antecedent condition where the workman was empowered by law, if he received an injury, to take his case into court and get compensation through the forms of law. The workmen's compensation act was passed so as to make it easier for the accident to be compensable; that the workman might not have to take his case into court, and, I think, it is very generally accepted by the manufacturers that the manufacturers at large have gained by

that method; that we are benefited by having a method that will enable the funds which otherwise might be used in fighting a case in court properly given to the man who was injured.

Now, in case of disease it has not always been so sure or certain. It is only in modern times that modern methods of investigation prove that disease may grow out of occupation and that injury resulting from disease gained in occupation might be properly charged to industry. Occupational disease in itself is very difficult of determination. The very question of lead poisoning brought up in this case shows, we might say, that it is not necessarily an occupational disease. The man who is a painter does not necessarily get lead poisoning. Because he happens to be a painter and gets lead poisoning it does not necessarily follow that his lead poisoning is due to the fact that he is using paint, but it may be that he is careless in his habits, in not cleaning himself before he takes his meals, or he may be using tobacco and get the lead into his system through his mouth through carelessness. So that lead poisoning in particular, I feel, is not properly an occupational disease, although the law does say it is and may properly be charged to the industry.

Mr. WRIGHT. With reference to one thing the gentleman just said, that the cost of compensation should be borne by the industry, I think there is a threefold burden; the employee bears his share, the employer should bear his, but society at large also has a share. It is to the interest of everyone that industry should be carried on. A man may be injured in a factory or workshop through no fault of his own, through no fault of his employer, but by an accident that simply could not be avoided and not an accident of employment at all. While I would not urge that the law should be amended in any way I would like the public conscience always to be awake to the fact that every workman who meets with an injury should be considered by society at large as one in whose compensation they should bear a share. Now, you are going to do some compensating here in the United States as we are doing in Canada for the war. I hope your share will not be as large a portion as ours, but you will have to bear your burden. It is going to be borne by the whole people, and I trust the whole people while bearing that share will not forget that the soldiers are entitled to the very best that can be given. We are not quite doing that in Canada but we are coming pretty near it.

The CHAIRMAN. In that connection may I quote an expression by one of our most eminent jurists in Ontario, to whom, on the original investigation leading up to the passage of our act, it was urged that the employee should be made to bear the burden or a portion of the burden of compensation instead of, as suggested, putting all on the

employer. He retorted with this answer: "Do you mean to tell me that the employee is not bearing a portion of the burden of compensation?" We are paying 55 per cent in Ontario; "doesn't the employee bear the other 45 per cent? Doesn't the employee bear all the suffering consequent upon the accident? If there is a deformity doesn't he carry that through life?" Who, let me ask you, is bearing the biggest share of the burden, even as it stands to-day in our law and in every one of your laws? It can not be said of any State in the Union or any Province of Canada that the employee is not bearing a very, very substantial share of the burden or loss, whichever you may call it, resulting from an industrial accident.

We have Mr. Lissner, of California, down to discuss this question, but as he is not here, I am going to ask Mr. French to say what is in his mind; he may have some notes from Mr. Lissner with reference to it.

MR. FRENCH. I haven't anything from Mr. Lissner in this connection. I do want to digress just for a moment to add to the reasons you gave why the employee bears his percentage of the burden also, that in the final analysis the working man and woman of any State or country are the largest factor in the purchasing power, and every employer who possibly can adds to the cost of production the cost of his compensation insurance, and so if we had some German professors here they would be able to tell us exactly how through the different processes the employee pays it all or very nearly all.

The problem of occupational diseases has been so well presented by Mr. Little that I feel I have hardly anything to add, excepting to say that his two main contentions are, I think, absolutely sound: first, that the occupation or the industry should pay for the loss sustained by occupational disease just as it does for injury; and second, that because of charging industry as it should be charged for occupational disease, there will be taken that care to surround the workers with healthful conditions that now gives vitality to "safety first" under our workmen's compensation laws.

The decisions quoted by Mr. Little were interesting. There is one from Wisconsin that he did not refer to, the case of Vennen *v.* New Dells Lumber Co. When Wisconsin first had the word "accident," the commission of that State ordered compensation to a widow who lost her husband through typhoid fever and the source of contamination was found related so directly to industry that the award was forthcoming. Now, to the surprise of those of us that follow this kind of legislation the higher courts in Wisconsin upheld the Wisconsin Industrial Commission's decisions, and in Massachusetts we have had a similar decision, as alluded to.

I copied briefly the words used in the laws on this subject. I shall just summarize them. I copied them from the Workmen's Com-

pensation Publicity Bureau Digest, issued in December, 1915. There may have since been some changes.

In Alaska the law calls for "personal injuries by accident."

In Arizona, the same.

In California, "all personal injuries proximately arising out of and in the course of the employment." There is rather interesting history in that connection. Our act first stated that compensation should be paid for industrial accidents. We had a case of a man working with wood alcohol and all of a sudden he became totally blind. The doctors informed us that the wood alcohol was a dangerous and treacherous liquid with which to work, and that it was responsible for the man's incapacity. We awarded him compensation, but our supreme court determined that we did not have that right because of the word "accident." Therefore, we promptly changed it the next time the legislature met and made the word "injury," and we believe that the supreme court will undoubtedly uphold our decisions, awarding compensation for occupational diseases. We were asked by the employers to name a certain number of special diseases. In England and Great Britain they have about 24. Now, we did not do that and thought it best not to for this reason: That all the time there are changes in industry, new occupations coming along, and it might be that a man would be as much entitled to compensation for an occupational disease outside of those specified. So we preferred, and the plan is working well so far, to simply make the generalization of "personal injury" and thereby include occupational diseases.

In Colorado I find that all personal injuries accidentally sustained are covered.

In Connecticut, "personal injuries arising out of and in the course of employment."

Hawaii—"Personal injuries by accident, not to include diseases except if they result from injury," which, of course, excludes what might be termed the pure occupational diseases, if there be such a thing.

Illinois—"All accidental injuries." There may have been changes; I'm not sure about that, Mr. Andrus.

Indiana—"Personal injuries by accident, not to include disease except as it results from injury."

Iowa—"All personal injuries, not to include disease except as it results from injury."

Kansas—"Personal injuries by accident."

Maine—"Personal injuries by accident."

Michigan—"Personal injuries arising out of and in the course of employment." Is that right, Mr. Smith?

Mr. SMITH. Yes, except that the word "accident" is in the title.

Mr. FRENCH. You ought to have it changed to "injury."

Minnesota—"Personal injuries by accident."

Montana—"Injuries arising out of and in the course of employment, but not disease—special restrictions applicable in case of hernia."

Nebraska—"Personal injuries by accident; occupational diseases not included."

Nevada—"Personal injuries by accident."

New Hampshire—"Any injury arising out of and in course of employment."

New Jersey—"Personal injuries by accident."

Ohio—"Personal injuries in the course of employment."

Oklahoma—"Accidental personal injuries and such disease or infection as may result therefrom."

Oregon—"Personal injuries by accident."

Pennsylvania—"Injuries sustained by accident and such disease or infection as naturally results therefrom."

Rhode Island—"Personal injuries by accident."

Texas—"Personal injuries sustained in the course of employment."

Vermont—"Personal injuries by accident not to include disease except as it results from injury." Is that correct, Mr. Simonds? That has been changed, has it? I am reading the summary given by the Workmen's Compensation Publicity Bureau Digest.

Washington—"Personal injuries; contraction of disease not deemed an injury." Is that correct, Mr. Wilson?

West Virginia—"Personal injuries with special restrictions as to hernia."

Wisconsin—"Personal injuries sustained in performing service." The law has been changed in Wisconsin from "accident" to "injury."

Wyoming—"Injuries sustained in course of employment not to include disease unless it results directly from injury." Is that right, Miss Anderson?

I find in the last Digest which was dated November 1, 1916, that in Kentucky—"Personal injuries by accident not to include disease except where it is the natural and direct result of a traumatic injury by accident, not the result of a preexisting disease."

Louisiana—"Personal injuries by accident."

Maryland—"Accidental personal injuries and disease of infection naturally arising out of the employment." They inserted the word "naturally" in Maryland to make it a little different.

New York—"Personal injuries by accident and disease or infection arising out of the employment." Is that correct, Mr. Mitchell?

Mr. MITCHELL. That is substantially correct—"such disease and infection as."

Mr. FRENCH. New Jersey—"Personal injuries by accident," and then in Massachusetts we have "personal injuries."

Porto Rico—"Personal injuries by accident" and then in the United States, as described, "personal injuries."

Now, Mr. Kingston, this digest does not cover the Canadian Provinces, and it might be well just to have the gentlemen interested add a few words to have the record complete.

Ontario—"Personal injury by accident arising out of and in course of employment," with a supplementary Schedule 3 naming seven specific diseases providing they are due to the nature of any employment in which the workman was engaged at any time within 12 months previous to the date of his disablement.

To Pennsylvania should be added "injuries arising from violence to the physical structure of the body."

Mr. ARMSTRONG. Nova Scotia has practically the same as the Ontario section, but the commission has power to add additional industrial diseases by regulation.

Mr. FRENCH. The only suggestion I have to make from the six years' experience I have had on the California commission is that these States that have any qualifying term not as clear as it should be would do well to adopt amendments to cover occupational diseases, and, I trust, not to specify the diseases, but to include all that rightly belong to the industry. For instance, in California there are efforts being made to discover means of procuring potash. We have lately had manufactories for the purpose of getting potash from kelp which is found on the seashore there, and we find in those factories that there is coming, and we see it in the distance, as it were, an occupational disease, because of the effect on the workmen. Now, if that were not specified in our act we, of course, would be unable to include it should the occasion arise, and therefore by making the act elastic and having the word "injury" you cover all that is to be desired.

Capt. WHITE. What is the trouble that comes from the handling of kelp?

Mr. FRENCH. I could not say as to that; I am not familiar with the details. It is a new industry there.

Here we have British Columbia: "Personal injury by accident arising out of and in the course of employment, together with such industrial diseases as may be added by the regulation of the workmen's compensation board." That is good.

Mr. WILLIAM NEILL, assistant commissioner, Workmen's Compensation Board of Manitoba. Regarding Manitoba, the law in this respect is practically the same as that in Ontario.

The CHAIRMAN. That concludes the special program for the afternoon.

Mr. HOLMAN. To-morrow morning a steamer will leave Eastern Avenue Pier at 9.30 to give the delegates a view of Boston Harbor, the navy yard, and the entire waterfront of the city of Boston. This steamer is furnished by his honor, the Mayor, who will accompany the delegates on the trip down the harbor. Nine thirty o'clock, Eastern Avenue Pier, which is at the foot of Fleet Street.

The CHAIRMAN. The only fault I find with this convention is that we are tied up here so much that we have not had an opportunity of seeing as much of this beautiful city as we would all like to.

Now about the session to-night. Another fault I find with this convention is that they have left to the last night of the last day, not the paper that I have to read, but the question of administrative problems. My idea is that what we are mostly here for is to discuss administrative problems. We have not had administrative problems dealt with very much so far and I don't believe we are going to get anywhere near over the ground that we would like to get over in the two hours and a half that we may have at our disposal to-night. However, I promise you I will not take very long on the subject that has been assigned to me, and I did rather hope that there would be a very full meeting to-night and we would leave the meeting open to discuss the problems that are lying next to the minds and hearts of all of us in the difficulties we meet with every day at home. Have you anything to suggest, Dr. Meeker?

Dr. MEEKER. I suppose I am responsible more than anybody else for the overspeeding and suffering from fatigue that has marked this conference. I will promise that if ever I have anything to do with making another program, I am going to follow out resolutely the plan that I have always started out to try to follow and then always got "cold feet" and did not follow it. I am going to make a programless program; I think it would work well.

As to administrative problems, it was our intention to, and we had thought we had, spread them all over the program, beginning with the first real session, "Accident prevention"—that certainly is an administrative problem. The next session in the evening, "How claims are handled with special reference to lump-sum settlements"—to be sure, I did not get what I was "fishing for," but it was intended that the administrative difficulties that confront the commissions would there be dealt with frankly. "How do you handle your claims?"—if that is not an administrative problem, I can not state

it any more clearly. And so with our medical sessions; it was intended that the administrative problems having to do with the administration of medicine should be brought out, and so on. I don't want to take up any more time with that, but it was our plan and hope that more would stay over and go on the trip and there we would have a more thorough discussion, a more heart-to-heart talk—"How do you do this?" "We do it this way; now how do you fellows do it, anyway?" That was just the idea of putting the trip at the last instead of "busting" the week wide open with a trip, after which three-thirds of the conference would disappear.

Now, I want to urge that this evening everyone here attend, every commissioner at least attend, and if it is possible to find any of the lost commissioners to bring them also, for we are going to consider some very important resolutions. The committee on resolutions—unfortunately, I was made chairman of that committee unbeknown to me, and it has been very difficult for me to do anything because of the many other things devolving upon me, but we have under consideration even more important resolutions than we have thus far formulated, and by all means let us get as large a representative gathering together as nearly as possible at the hour set, so that we can transact this important business and still attend to the regularly stated program.

FRIDAY, AUGUST 24—EVENING SESSION.

CHAIRMAN, DUDLEY M. HOLMAN, PRESIDENT, I. A. I. A. B. C.

VII. ADMINISTRATIVE PROBLEMS.

The CHAIRMAN. Owing to the fact that the first speaker of the evening has not as yet arrived, Mr. Kingston has consented to go ahead with his paper.

EYE INJURIES.

BY GEORGE A. KINGSTON, COMMISSIONER, WORKMEN'S COMPENSATION BOARD OF ONTARIO.

The subject matter that I am to speak about, as noted in the program, is "Eye injuries" or rather "Compensation for injuries to the eye." Perhaps the question of injuries to the eye is one of the most difficult problems with which those of us who are administering compensation laws have to deal. I am not now referring in that expression of difficulty to the case of a man who has lost the sight of the eye entirely—that is, complete blindness in the eye or enucleation of the eye; that is a simple proposition for us all. Many of the States, as you know, have specified amounts, usually expressed in terms of so many weeks' compensation, for the loss of an eye. With us in Ontario we have no express provision or limitation in the statute to cover compensation for injuries to the eye any more than any other case, but very shortly after we started the administration of our law we determined on a basis for this type of injury and we now express it in terms of percentage—16 per cent for the loss of sight of an eye: that is, 16 per cent total disability, and in the event of enucleation it is a little higher—18 per cent. Some of you who were at the Columbus convention may remember a paper I read there, which gave a comparison of compensation allowance for various injuries, including, amongst others, the loss of an eye; that gave the result in real money that would be allowed for the loss of an eye in some 35 different jurisdictions in the United States and Canada. That paper can be found in Bulletin No. 210 of the United States Bureau of Labor Statistics.

There are a number of controlling features in the different jurisdictions which enter into that comparison. Average earnings are adopted practically everywhere as the controlling basis. It may be

50 per cent of the wages in one State, 55 per cent in another, 60 per cent in another, 65 per cent in another, and 66⅔ per cent in another. But there are several other considerations and they vary as often as there are different jurisdictions. There are varying maximum and minimum limits, varying compensation within those limits, varying periods during which compensation is payable, expressed as I said a moment ago in terms of so many weeks. Then the age of the injured man has to do with the question of compensation in a few of the States. There are varying periods of medical attendance, varying waiting periods and varying methods of compensation during the healing period. It is surprising what lack of uniformity there is in the various jurisdictions in the United States and Canada on these several points I have noted. I don't propose to go into these at length, but I desire to mention two of the items for a moment: viz, medical aid and compensation during the healing period.

Some States appear to give similar compensation for injuries to the eye, but let us not deceive ourselves but look at the question of medical aid. Two States may give 100 or 150 or 125 weeks' compensation for the loss of an eye, but if they do not both give medical aid in addition, they are far from giving equal compensation.

Then on the question of the healing period, it is unfortunate that there is not unanimity or uniformity in this respect. I was amazed when I prepared that paper for Columbus to find that in some States where this specific number of weeks is mentioned the "weeks" will start from the date of the accident, whereas in others the "weeks" will start from the termination of the healing period; in other words, when the man is able to go back to work he will have so many weeks. The result is, as you will see, that in the jurisdictions which start the time running from the date of the accident it gives the man very little compensation for the loss of the eye because in some cases—not many, but in some cases—the man is totally disabled probably for a great portion of the number of weeks specified. My idea is, and I think it meets with the approval of a great many to whom I have spoken on the subject, that these periods should run consecutively not concurrently; that is to say, the time should begin at the end of the healing period. The disability during the healing period is not for the loss of the eye: it is for the shock to the man; he does not miss the eye, or in other words the mere loss of the eye causes no disability or special wage loss during the healing period because he is not able to go to work for other reasons. The loss of the eye becomes a real loss to him only when he has recovered from the shock of the accident and is able to return to his duties again.

The point I have just mentioned applies not only to the loss of the eye but applies to every type of permanent partial disability that you can suggest involving loss of a limb or member.

To come back, however, to our subject, I want first to mention the agencies which cause traumatic action on the eye. They may be divided into three: First—objects which cut, strike, or prick, the result of which is so much the more considerable according as the force of the projection is increased; second—foreign bodies, which are more irritating by the continuance of their presence rather than by the violence of the blow; third—thermic agencies, resulting either in physical, chemical, or electrical burns. As a usual thing eye injuries involving less than complete loss of vision are the result of slight wounds of the first class; that is, wounds that do not penetrate very deeply into the inner structure of the eye. Wounds caused by severe burns or heavy blows or deeply penetrating wounds usually bring about much more serious results. I do not propose to deal with these injuries to the deeper structures of the eye involving complete loss of sight but rather with a few cases which involve merely partial loss of vision, such as injuries to the cornea or the lens.

I fancy Dr. Donoghue will agree with me when I quote statistics which suggest that about 75 per cent of the cases of less than permanent loss of sight have reference only to corneal injuries resulting in corneal astigmatism. In these slight injuries, what has happened is simply this: No sooner is the wound in the cornea made than nature proceeds to heal it. If there has been no infection, it is a comparatively simple matter: the wound will probably not be serious. If the injury is only to the outer surface of the eye—I venture to use a technical word, the "epithelium"—it will almost always clear up readily and will leave practically no disabling result. The cornea, which is this window so to speak in front of the eye, covering both the iris and pupil, has five very fine layers; the first layer as stated above is the epithelium, the second layer is known as Bowman's membrane, and the third is called "the real substance of the cornea." If a penetrating wound reaches this far we are almost sure to have a corneal astigmatism. I don't know that I need attempt to explain at any length what a corneal astigmatism is. It simply amounts to this: when a wound is made, particularly if there is infection, there is left a scar, just the same as would be the case on your hand or arm or any other part of the body. You know the effect when a scar is thus formed—fibrous tissue is created and the finer particles of tissue adjoining this scar are drawn together in very fine little irregular ripples. When that happens in the eye, the rippling draws the surrounding tissue of the cornea together and it produces an effect somewhat like prismatic glass. The fibrous tissue that is created right where the scar is becomes translucent instead of transparent, and the result is there is no sight—or rather, no clear sight—immediately over where that scar has formed. Surrounding the fibrous tissue caused by the scar, this rippling takes place and in-

stead of letting the light through the cornea in a clear definite way, it deflects the light through the lens in different directions, confusing the sight, depriving the lens of its ability to focus the rays of light on the retina, and the result is an astigmatism, which deprives the man of the ability to see with that clearness which a man with a good eye ought to see.

Just a reference now for a moment to an injury involving the lens. The lens, as I said a moment ago, is that portion of the structure of the eye which focuses the rays of light coming into the eye on the retina, which is at the back part of the eyeball. If that lens is punctured or suffers a blow, it results usually in what is commonly known as cataract. Some doctors advise an operation to remove the lens under such circumstances, but the weight of medical opinion seems to favor no such operation if the eye is quiet, unless the other eye should be destroyed. With loss of lens the man's vision in that eye is practically gone. Fairly good vision can, however, sometimes be restored after a successful operation by the use of a glass lens which the eye specialist will prescribe, but there will always be the lack of accommodation. A man can see with an artificial lens say at this distance (indicating about 15 inches), but if you ask him to see definitely a few feet farther away or bring the object up closer he cannot see clearly at all. An eye with such a lens in front of it will not mate up with the other eye, so the only good to the injured man, you might say, of an eye which has lost the lens and has been provided with an artificial lens is as a reserve eye. In the event that the other should be destroyed he is not hopelessly blind by any means; he can see to get about and to do rough work, but to do fine work with such an eye is out of the question.

I have brought with me to-night, in order to demonstrate some of the points I have just mentioned, a number of references to cases which we have decided in Ontario. I don't know whether we give too much or too little compensation in these cases, but I think it will help to illustrate what we are doing if I refer shortly to a few of them, and I will be glad if it elicits a response from you gentlemen here who are meeting the same problems, in the way of suggestions as to what you would do under somewhat similar conditions.

The first case on my list is No. 03684. In this case the workman was employed by a large implement manufacturer and while grinding castings he got a piece of emery in his eye. The report which comes to us from the eye specialist describes the two eyes thus—O.D. $\frac{6}{36}$, O.S. $\frac{6}{6}$. Those of you meeting this sort of problem every day will recognize at once that the eye specialist means the right eye reads $\frac{6}{36}$ and the left eye $\frac{6}{6}$, the latter being practically perfect. This reading of the eyes is by Snellen's Test Card—that card you see in nearly every doctor's office with the big letter "E" on top and

eight or nine rows of letters below, each row containing letters a certain degree smaller than the row above. The fractional expression simply means that this man can see with the right eye at only 6 meters what he should be able to see at 36 meters; that is to say, he can see clearly only about as far as from where I am standing to that first chair (indicating about 20 feet) whereas with a good eye he ought to see clearly down to the front of the building. These figures are an indication too, by the way, that this physician has been a student abroad. If he had studied in one of the medical colleges in America, instead of using the expression $\frac{6}{36}$ he would probably have used $\frac{20}{100}$ referring to feet instead of meters. O. D. and O. S. are the abbreviated expressions for the right and left eyes, respectively. In this case a scar was left covering nearly the whole pupil area, following a severe corneal ulcer. He was totally disabled 59 days and the board awarded him in addition to his total disability allowance of 55 per cent of weekly wages, a lump sum of $325.

Dr. DONOGHUE. What was the basis of the $325? Was that based on his earning capacity?

Mr. KINGSTON. We treated that as a 6 per cent case or approximately that. Having regard to the fact that 16 per cent would be the basis for total loss of sight, we regarded his remaining vision in that eye as equivalent to about one-third the value of a good eye. This therefore being an under 10 per cent case, we awarded a lump sum in accordance with the provisions of section 38.

Mr. ARMSTRONG. Is that done in all cases under 10 per cent?

Mr. KINGSTON. Practically all under 10 per cent cases are paid by lump sums unless the man happens to be an alien enemy or we have reason to believe he would be very improvident with a lump sum if he got it, in which event we usually dole it out to him in small sums. I may say that we do not deprive workmen who happen to be citizens of enemy countries of their compensation should they be injured in industry, if they behave themselves, but we do not consider it wise to give them lump sums.

The next case No. 07403 is that of a planer hand working in a carriage factory. He was struck by a piece of wood in the eye, causing a leucoma—i. e. a dense white spot on the cornea. This was only a slight injury and the doctor reported the eye to read $\frac{6}{12}$; that would be regarded as indicating very little disability. I don't know whether any of the jurisdictions would allow anything for that. The doctor says he had an infected ulcer reaching into the pupillary region. We gave him $100 in addition to two weeks' total disability. The fact that the scar was over the pupillary area is probably the reason

we made even this small allowance. When a scar is immediately over the pupil, of course, it is much more serious than if the scar was merely over the iris or sclera, as anything involving the pupillary area disturbs the sight.

The next case, No. 0678, is a very interesting one, one of the very few cases of this kind that are met with, and I will be interested to know if any of you have ever had a case of this sort. An electrical worker got a 13,000 volt shock from a high-voltage wire while standing on top of a transformer in one of our large electrical power houses. He fell to the cement pavement a few feet below and in addition to the shock he got quite a severe scalp wound. I was told by a doctor with whom I discussed the case that the scalp wound was probably his salvation. Strange to say he recovered from the apparent effects of the shock within a few weeks. His sight began to be impaired, however, about eight months after. The man enlisted about the time his sight began to fail or a little before. At all events, he had sight good enough to pass the medical examination for enlistment in the military service. Shortly after he enlisted his sight became very bad and he soon to all appearances went completely blind. He was then examined by the military doctor of his regiment and it was found that he had developed double cataract as a result, it was thought, of the shock several months before; claim was then made to the board. Our eye specialist said that he had had only one case in his experience where a shock of this sort caused cataract, and I ran across a French book dealing with this subject which refers to two such cases in the author's experience. I presume, however, this type of case is likely to become more frequent as the years go on and more use is made of electricity. My friend from Wisconsin mentioned to me yesterday that he met a case in his State recently almost similar. This man has been successfully operated on for cataract in one eye but he can not see to do any close work at all. He can tell 30 or 40 feet away whether two men or one man is passing by; large objects he can distinguish fairly well, but as his former employer told me, he would be a very unsafe man around machinery. Put a paper in front of his eyes like that (12 inches away), and he will read quite well with his very strong artificial lens. Certainly he would be an unsafe man around a power house or around machinery, but in coarse work around the farm where he is actually working now he will probably be able to make himself useful. However, for the present he is being carried as a totally disabled workman and I am not sure how long we may have to continue this.

Dr. DONOGHUE. What was the age of that man?

Mr. KINGSTON. He was 28. It will be of interest to read what our eye specialist in that case (Dr. F. C. Trebilcock) said in a report dated November, 1916:

About the end of March, 1916, the vision of the right eye failed and in June the left one followed suit. [The accident, bear in mind, happened in July of 1915.] During the winter following the accident he was at the exhibition camp and had no difficulty in his target shooting. That was six months after the accident, so it may be considered that his sight was normal at that time. The lesion is formation of cataract in both eyes. The right lens has been removed with very satisfactory result. It is too early to be sure of the resulting vision but it promises that with a proper glass he will see practically as well as ever and be able to read his paper with the drawbacks incident upon the loss of his accommodation and need for wearing very strong lens. The left eye sees about $\frac{6}{18}$. The lens shows marked changes, and I am not able to say whether it will get worse or not. It appears to have been stationary for three months.

It would appear that the point of debate is whether these lesions are the direct result of the electrical charge which he received. This is a difficult matter to decide. The majority who receive such injuries do not survive the initial shock. It so happens that there is one of my own cases who received the same sort of charge in September, 1915, with more disastrous results generally and developed a double cataract the following spring.

In both these cases, men about 28 years of age, having received an electrical charge of 13,000 volts entered through the skull, double cataract developed in the course of the next few months and my own mind is clearly made up that the electrical charge entering through the head was the causative agent in both cases. Of course, I realize that the point is one which can not be absolutely proven and one would not take such strong ground if this man was in the age limits of the ordinary senile cataract changes.

I have looked up the textbooks dealing with cases due to electric charges and I find that nearly all the cataracts recorded in this connection are following lightning strokes or experimental. The definite causes suggested by different men are: 1. Concussion; 2. Heat; 3. Chemical change in the body fluids electrolytic in character. In this connection, Hess has proven to his satisfaction that following a high charge of electricity there follows death of the cells of the anterior capsule of the lens, so the aqueous can get at the lens fibers and that always causes cataract.

All authorities agree that cataract may follow the administration of ergot and naphthol compound, the latter even when used in ointment form for skin disease. This result would be toxic of course and the electrolytic result might be in a sense auto toxic.

It would appear, however, that the whole question is too vague for anyone to be positive about and I am unable to say how the effect is brought about, but there appears to be no questioning the fact that cataract does follow electric charges of high voltage passing into the body in some, perhaps a few, cases.

In this case it appears that the vision of the right eye was down to $\frac{6}{60}$ in June last. With that vision he could not use a rifle from his right shoulder at all. Then he says his duty required him to read small ammeter scales so I feel sure that we may take it for granted that the condition of lens change has come on subsequently to the accident. It is impossible, however, to absolutely prove a cause and effect relationship, although I think it exists.

I would be glad, Dr. Donoghue, if you would say whether or not you have come across a case of that character in your experience in Massachusetts.

Dr. DONOGHUE. We have not had a case as far as I know in connection with our board, but that fact has been recognized, although we have not had such a case—the charge from heavy voltage either entering the head or arcing across the head; in other words, heavy voltage entering the body directly is pretty sure to kill; 15,000 or 20,000 volts can not cross the head and not kill and still give electrical charges in the head tissues. We have not had such a case, but the possibility is recognized. The possibility is recognized under the cataract agents; over that there is grave doubt whether it is due to accident, i. e., to the electrical charge instead of to the man's age. If that man was above 45, there would be considerable doubt; at 28 I think not.

Mr. KINGSTON. That seemed to be the idea in Dr. Trebilcock's mind. Senile cataract change would not be looked for in a man only 28 years of age.

The next case, No. 02579, was that of a worker in a silver mine. A piece of rock flew into his left eye, causing a long oblique cut through the cornea and sclerotic with prolapse of the iris. Surgeon successfully operated for removal of prolapse and incarcerated iris, but the vision was left permanently defective due to a small opacity of the lens and a corneal scar, together with an irregularly shaped pupil sometimes called a keyhole pupil. Surgeon describes the injured eye as reading $\frac{20}{200}$ but can be corrected with glasses to $\frac{20}{100}$. He was totally disabled 78 days, and in addition to this time allowance we gave him a lump sum award of $500.

That was on a basis of an impairment of about 6 per cent. Awards in like amounts, however, do not always mean the same percentage in these cases; we give a man more or less in money, depending on his "average earnings," and a 6 per cent award to a $20 per week man would give him considerably more than the same percentage to a $12 or $15 man.

Now, I will run hurriedly over a few other cases. I can not hope to deal with all I have here.

No. 05405—the case of a man working in a box factory being struck by a piece of ice. The injury was merely to the cornea. Surgeon's report reads $\frac{20}{200}$ but the eye can be corrected to $\frac{20}{70}$. Changing these figures to the metric basis the eye would read about $\frac{6}{60}$ corrected to about $\frac{6}{18}$. The epithelium and corneal tissue were cut and some ulceration resulted, leaving permanent opacity over the right pupil. We gave the workman $300 in addition to six weeks' total disability. Surgeon says he would probably soon need

to wear glasses apart from his injury, but we now force him to wear a special glass to make practical use of the damaged eye. As you all know it is very difficult for workmen, particularly of the more ordinary laboring class, to accustom themselves to the wearing of glasses in their daily labor.

No. 04441—an electrician in one of our big steel plants was struck in the left eye by a piece of steel from an emery wheel. This workman had previously lost the sight of the other eye, but even this misfortune does not seem to have been sufficient to make him feel the necessity of always wearing goggles, particularly while engaged on this type of work.

The present injury, fortunately, was not as serious as it easily might have been. Surgeon reports that the foreign body was removed from the eye the following day, but an infected ulcer resulted, leaving a scar on the cornea directly over the pupil. Vision $\frac{20}{40}$ but with glasses this can be brought up to $\frac{20}{30}$. This, to a man with the other eye perfect, would not indicate an injury of any consequence, but as this is the only eye he has we considered the injury on this account somewhat more serious and allowed him $500 in addition to eight weeks' total disability.

No. 09036—the case of a riveter, aged 29, in a shipbuilding plant. While engaged cutting out rivets with an air hammer a small steel chip pierced his right eye, causing a lacerated wound of the cornea and prolapse of the iris. An iridectomy was immediately done by surgeon, but the ultimate result was a pupil shaped like an ordinary keyhole.

There was also some opacity in the lens capsule and vision read $\frac{20}{70}$. This could not be improved with glasses. The uninjured eye, however, read $\frac{20}{30}$, so on the assumption that he formerly saw alike in both eyes it was considered that the workman did not have perfect vision in the injured eye before accident.

The award in this case was $275 in addition to the usual allowance of 55 per cent of wages during the period of total disability. This award was on a basis of an impairment of about 5 per cent in earning capacity.

The element of disfigurement enters to some extent into the consideration of this case. It is considered that in the labor market a workman with a disfigured eye such as this man has does not stand quite so good a chance of employment as the man who, though with no better vision, has no visible disfigurement.

Mr. KINGSTON. I would like now, Dr. Donoghue, if you will give us the benefit of your experience in Massachusetts in the matter of these lesser injuries to the eye.

Dr. DONOGHUE. Mr. Gleason of our board is here.

Mr. CHESTER E. GLEASON, member, Massachusetts Industrial Accident Board. I have only been on the board a year and I think Dr. Donoghue is more familiar with those cases than I am.

Dr. DONOGHUE. Our compensation is different from that of yours apparently. Our compensation is based first upon the inability to work and then it is based on a specific payment when the vision is reduced below one-tenth normal vision; then they get 50 weeks' extra compensation based upon the wages at the time of the injury in addition to disability payment.

Mr. KINGSTON. Well, how do you ascertain or determine when a man has lost one-tenth of his normal vision?

Dr. DONOGHUE. That is a matter for determination by the eye expert who reports on the amount of vision that he has, based upon a so-called normal standard; if below one-tenth, which really means that he has no practical vision with a glass for near work, he is allowed as for a lost eye.

Mr. KINGSTON. That is, he has lost nine-tenths or one-tenth?

Dr. DONOGHUE. Nine-tenths: he has to lose nine-tenths and a glass can not improve it. If below one-tenth of normal vision with a glass, then he gets specific compensation of 50 extra weeks' payment in addition to the time he is disabled and that "normal vision" the board has interpreted to mean normal working vision; in other words, if he has an injury to the eye so that he has a keyhole pupil in the eye and that eye will not operate with the normal eye, then that eye is looked upon as being reduced below one-tenth normal practical vision, rather eliminating the one-tenth theoretical vision, and is treated as lost vision or vision below one-tenth.

Mr. KINGSTON. You treat a lost lens case or an eye on which a cataract has been removed as a lost eye?

Dr. DONOGHUE. As a lost eye if it will not work with the normal eye.

Mr. KINGSTON. What would you allow for a man who merely had a bad corneal scar with fibrous tissue over the pupillary area covering in bright light practically the whole pupil?

Dr. DONOGHUE. If the vision is not reduced to one-tenth normal—if he doesn't lose nine-tenths by that—he gets nothing extra but gets disability while he is getting well and getting readjusted to his new job.

Mr. KINGSTON. If the surgeon reports to you the fractional impairment, you don't have to read the surgeon's report as to whether the eye reads $\frac{20}{70}$ or $\frac{20}{100}$? You get away from that altogether and simply look at the certified fractional impairment of one-tenth, three-tenths, four-tenths, or whatever it may be?

Dr. DONOGHUE. He figures the percentage of normal vision.

Mr. KINGSTON. You get away from a lot of trouble.

One more case before I conclude—No. 00648, and this is one of peculiar interest. A workman employed by a mining company, while engaged in feeding a rock crusher, was struck in the head by a rock falling from the skip. The immediate result was a simple fracture of the vault of the cranium. This was the 29th of December, 1915. He made a fair recovery, however, and was able to return to work on a lighter job March 1, 1916.

Surgeon reports, however, in August following that he has a pulsating depression 2 inches by 2½ inches by 1 inch deep, just to the right of the median line; complained of a pounding sensation in the head on rising or when stooping and on exertion, also deficiency in vision; can not concentrate his eyes on one point any length of time, and the field of vision greatly narrowed.

We had the workman examined by Dr. Trebilcock as referee January, 1917. He reports:

> Both eyes appear perfectly normal except that there is a certain degree of horror of light and a hypersensitiveness about them when he thinks that one is about to touch them. Vision in right eye reads $\frac{6}{12}$ but greatly restricted in field so that he says he can see the last letters in the line but can not see the first ones at same time without turning to look directly at them. Vision in left eye reads $\frac{6}{9}$, also very much restricted in field.
>
> The slight falling off in central vision is probably not more than he had before the accident or it might be due to photophobia or nervousness.
>
> The main disability is in the very marked contraction of field and I am inclined to the opinion that this must be included in those contractions of field which follow traumatic neuroses.
>
> This condition will likely remain permanent or the improvement will be comparatively slight, though, of course, if it be all a neurosis and complete cure should take place then the fields would likely enlarge to their normal size.

In discussing the case with the referee, he demonstrated the condition by placing two ordinary mailing tubes before my eyes. One realizes at once from this simple illustration what a disability such a restricted field means to a workman.

Dr. DONOGHUE. That case looks to me like hysterical blindness with a contracted field of vision, almost a typical hysterical eye. He has hysteria from the bang on his head without anything that can be demonstrated in the brain or transmitting fibers. That is typical of hysteria.

Mr. KINGSTON. Would you treat such a case as a lost eye?

Dr. DONOGHUE. No, that man would not be dealt with on a lost-eye basis. Total disability would be continued up to the point where it might be considered necessary, in order to cure the man, to lump-sum him. He would probably get well within a short time after such

treatment. While he believes the trouble is there, however, to him it is a real disability. Perhaps I should not take up the time now, but I might touch upon this subject a little further for a moment. A man from hysteria becomes blind in one eye, and while hysterical remains blind. Those cases have caused us a lot of trouble. We had one very famous case in which the man undoubtedly had a deficient eye to start with. He received a blow on the head and lost more vision; he was hysterically blind; he was a high-grade hysteric; he was queer and troublesome and threatening; he threatened to "clean up" the board. His case was settled, reopened, and lump-summed, and after we really got rid of him on the basis of hysterical blindness he moved to another town. He was a stationary engineer, and could not go back to work. He had more hysteria, committed murder, and is now over in the State prison. He was undoubtedly hysterical all the way, and his eye trouble was hysterical blindness. Hysterical blindness is a very difficult and trying thing to know what to do with, whether to treat it as a permanent loss or as a partial loss, and if the latter to what extent.

Mr. KINGSTON. We disposed of this case finally on a 30 per cent basis, i. e., 30 per cent impairment of earning capacity, and allowed him a pension of $10 a month for life, which at his age represents a charge on our accident fund of about $2,000.

I have taken up more time than I am entitled to in presenting this subject, and I will not pursue it at any greater length. Perhaps in the few cases I have presented, however, there has been sufficient variety to indicate in a general way how our eye cases are treated in Ontario. I wish I might hope that the time would come when all compensation jurisdictions could unite on some common standard or basis of valuation of eye injuries. I do not claim that the Ontario method of valuation is ideal or that it is better than others, but if any of you gentlemen have a plan which you think is an improvement we would like to study it.

We are all, I am sure, anxious to improve our respective systems of compensation in every way we can, and if we could get to a better understanding of each other's methods of dealing with the problem of compensating for injuries to the eye we would, I think, be appreciably nearer the point from which we might hope to reach common ground in this respect.

Mr. B. E. KUECHLE, adjuster, Employers' Mutual Liability Insurance Co. of Wausau, Wis. In Wisconsin we had a case that is very similar to the electric-shock case Mr. Kingston mentions. A young boy 18 years of age got a terrific electrical burn from a high-voltage wire; it entered his forehead, traveled through his body and burned the two large toes of both feet completely off; he had a severe burn about

3 or 4 inches in diameter on his forehead. He got along very well considering the nature of his burns and actually went back to work in about four months after his injuries, but about four months after that he developed a very rapidly growing cataract on one eye and a slow growing cataract on the other. We brought him up to Wausau, our home office, and had our eye specialist take care of him; he performed a cataract extraction on one eye, and after about four weeks the boy went back to work again and worked for several months, when he again came to Wausau to have the other eye operated on. He went back to work a second time, and something happened to the iris of his first eye, and he went blind again. We brought him up to Wausau once more, had another operation, and he is now back to work, earning $3.50 a day on cement work, laying cement sidewalks, where he formerly earned $2 a day. He really made a remarkable recovery.

The CHAIRMAN. We have heard a good deal about the different compensation acts; sometimes I think we are too apt to see only the good points about compensation and we are apt to overlook the fact that many of the acts, even the best of them, have defects that should be remedied. One of the closest students that we have in Massachusetts upon workmen's compensation acts was a former associate of mine on the industrial accident board, and he has given many, many years of study to compensation and kindred subjects and is well qualified to point out defects in compensation laws. It gives me great pleasure to introduce Mr. Edward F. McSweeney, a former member of the Massachusetts Industrial Accident Board.

DEFECTS IN THE ADMINISTRATION OF COMPENSATION LAWS.

BY EDWARD F. M'SWEENEY, FORMER MEMBER OF MASSACHUSETTS INDUSTRIAL ACCIDENT BOARD.

The first step in considering the defects in the administration of compensation laws is to find out the extent of our knowledge as to the character and aspirations of the administrators of the law and the imperfections of the machinery involved.

Generally speaking, the results of the law have been most satisfactory, but as workmen's compensation is the foundation stone of social insurance, the time to correct mistakes and strengthen weak spots is now.

The great need is for uniformity, both of law and administration. At present a great corporation doing an interstate business may have to write 35 policies to cover the workmen's compensation risk on its employees, which proves that some such organization as this is vitally needed to standardize conditions. Also, there is need of uniformity as well as exact information regarding accident prevention work. Claims of results, in any particular jurisdiction, of diminution of accidents, betterment of conditions in hazardous trades, etc., may be true as far as they go, and show that the good work is spreading, but they lose most of their value unless comparison with the records of other States and other periods of time is possible.

Like most other branches of our code of industrial laws on this continent, workmen's compensation has grown up without any systematic information or even any precise idea of the extent of its ultimate application. Each year brings additional surprises. The law in most States, as interpreted by supreme courts who are in sympathy with its spirit, has gone much farther in protecting and reimbursing wage earners than was originally intended. Its history is one of constant increase in the number of grounds upon which compensation can be claimed, and of a gradual extension of benefits to an increasingly larger proportion of workers.

General acceptance of the workmen's compensation law has changed bitter and sometimes unreasonable opposition to everything in the shape of industrial insurance to a feeling of receptivity toward the extension of the social insurance idea, even to the extent that omissions, defects, or actual invitations to injustice, fraud, or oppression in existing compensation laws and administration are glossed over and forgotten in the anxiety to take the next step. Yet it is supreme folly to try to extend the social insurance field to old-

age pensions, health insurance, etc., until workmen's compensation laws and administration are standardized.

The principal arguments used in the various States for the passage of the workmen's compensation law were that industrial accidents "should be treated as part of the cost of production"; that there was need for a law that would "operate to prevent injuries"; that in the interests of justice it would be better to have control under "an administrative board"; and that it was unwise "to allow the law to be administered by the judges of the courts," as under such a process details of administration would differ as widely as the situation of the various courts.

Workmen's compensation boards, under whatever name, were therefore designed primarily to provide for the uniform settlement of controversy, to reduce the waste of money connected with litigation, and to provide a system of procedure whereby the determination of any given case of industrial injury should be not on the ground of legal liability, but on the ground of the physical incapacity of the injured wage earner and of the extent and duration of his injury.

The principal defect in the administration of the workmen's compensation law is the general tendency toward reversion to the controversial methods of the old employers' liability law. The prevailing method of determining the right or wrong of any claim by presentation of witnesses and arguments on terminology is neither conclusive nor in accord with the spirit of the law. This system brings about a lack of uniformity to the extent that favoritism in the selection of experts to give testimony, or in the appearance of friendly counsel, becomes possible, and gives occasion for the determination of cases upon personality and prejudice rather than upon any standardized line of accepted, settled theories of medical cause and effect.

It was also recognized by the committees which studied the subject before the enactment of these laws in the various States, that the larger part of their administration would be medical and not legal. Yet in actual practice the legal and technical aspects overshadow the medical, to the detriment of all concerned. The nature of the work urgently demands the services of one or more reputable and skilled medical officers on every board. After appointment, medical officers should have stability of tenure of office.

In Massachusetts and some other States occupational diseases are regarded as injuries under the law. The investigations of the Massachusetts Industrial Accident Board and the Massachusetts State Board of Labor[1] have demonstrated that industrial diseases may be

[1] Gunn-McSweeney report, 1914; Dr. M. V. Safford report, 1915.

contracted so gradually that it is a matter of considerable difficulty—indeed practically impossible—to adjust equitably the liability of each employer to any given disabled worker. The line between public health and industrial hygiene is by no means clear, and it is therefore almost impossible to assess the relative responsibilities of industry on the one hand and society on the other, even if it were desirable to do this. There is constant difficulty in deciding, by the method of presentation of evidence at arbitration or other hearings, whether the incapacity in any given case is due to the alleged injury, or to the ordinary progress and result of disease, or to degenerative changes incident to age which would have arrived independently of the industrial happening. While it is true that the burden of compensation is shifted by the employer onto the consumer and consequently the community at large really pays the cost, this payment is extravagant, and frequently, in fact, fails to provide adequately for those whom it is supposed to benefit. All this goes to emphasize the claim that under workmen's compensation acts, medical service and care are the most important factors.

Closely connected with this matter of medical service is the question of hospitals. The hospital should not only serve the patient, but society, and should be properly organized and equipped. The best medical service must be placed within the reach of all. The National Government is now feverishly attempting to remedy the hospital unpreparedness to care for anticipated injuries to our soldiers. Yet there is no real difference in the preparation for the treatment of injuries of battle and injuries of industry. This fact was seen years ago by certain of our industrial accident board members, but they were not able to arouse effective attention to the need. If this had been done, the Nation would now be prepared for the rehabilitation, reeducation, treatment, and readjustment of injured men, whether victims of peace or of war. If the vision of the Nation is to-day in any way equal to its opportunity, every reconstruction hospital built will be available in the future either for peace or for war. Every condition made acute by the War existed previously in industry in a minor degree.

Administrators of workmen's compensation laws, in the various States, including their medical advisers, are technically well prepared to advise on this work of reconstruction, and if it is not placed under their direct charge, they should be consulted so that the experience gained in industrial accidents may be utilized for war work and appropriations of money for such war purposes be continued later for our national peace needs.

Lack of uniform medical methods by the insuring companies and lack of the control of medical treatment by the commissions, with

commercial exploitation of charitable funds and charitable institutions by insuring companies, leading to inability to exact from hospitals accountability as to the kind of diagnosis, treatment, character, result, or accuracy of records, which is not only desirable and important, but necessary, are defects demanding consideration.

The granting by insurance companies of reduction of premiums because of the establishment of first-aid rooms has in some cases led to the establishment of such rooms under the control of male attendants, who do not approach in experience even the trained nurse. These attendants are called upon to pass upon what cases require doctors and what cases do not. This gives opportunity for unlicensed and untrained people to practice medicine at the expense of the employee, simply to save the employer an insurance premium.

I have some personal acquaintance with the administrators of the industrial accident boards in the various States, and since 1912 have carefully followed their work. Speaking generally they are an efficient body of public servants, devoted to their work and attempting honestly and sympathetically to work out their problems. In practically all the commonwealths in the United States appointments to these boards have been by political favor. When new governors are elected, diligence, industry, and intelligence have not operated to retain experienced men. It may be true that the new men appointed were as good to start with as were the ones superseded, but under political methods, the six months or a year before a member's term expires are not useful, because he is naturally giving his time to securing a reappointment. If, as is now accepted, there is a loss to ordinary industry in hiring and firing employees, measurable in terms of dollars and cents, this applies in incomparably larger measure to the replacement of a capable administrator of workmen's compensation by an inexperienced one. In Canada, officials are appointed during good behavior, and because of this continuity of tenure the Dominion is taking the lead in working out some of the most important problems in workmen's compensation.

The creation of administrative boards with both administrative and judicial functions to have charge of workmen's compensation was a radical step when viewed from the standpoint of precedent, or surveyed from the morass of legal technicalities. The provision in practically all the State constitutions regarding the separation of the legislative, executive, and judicial functions is substantially the same. The supreme courts of the various States have not yet given any intimation that the executive and judicial functions were being illegally combined under the workmen's compensation act. In California the supreme court did, in 1916, make this intimation, although the opinion was not final. As a result, steps were taken at the last legislature to reenact the whole workmen's com-

pensation act in order to bring it under a recently adopted section of the State constitution, which is believed to be broad enough to remove all doubts as to the act's constitutionality. In addition, a special constitutional amendment covering this particular point was passed by the legislature of 1917 and will be submitted to popular vote for ratification.

Inasmuch as this same contingency may occur elsewhere, it may be well for the other States to take initiative in having all constitutional doubts removed. The fact that there is a constitutional convention now in session in Massachusetts gives special opportunity in this State.

In Massachusetts, and there is a similar situation in other States, there is an unwise distribution of responsibility between the accident board, handling compensation, and the State board of labor and industries, dealing with safety. An additional distribution of responsibility so as to put the rehabilitation of injured employees on the Massachusetts State board of education is now being sought.

Lack of uniformity of practice among the three kinds of insurance systems operating under the law is causing trouble in many States. Lack of exactness and stability in workmen's compensation rates is reflected in constant attempts to shift responsibility and swap risks in the effort of the smaller companies to escape bankruptcy. Antagonism between State compensation insurance funds and the private casualty companies which write this form of insurance continues to be shown. There is also conflict of jurisdiction between the Federal liability law and the laws of the States on the question of liability for injuries to employees of interstate commerce carriers.

The people of the United States will never again be deluded into refusing to do anything that is right of itself because of the plea that we can not "afford it." The first Liberty loan of $2,000,000,000 will pay the combined war bill for but 20 days. Yet a quarter of this sum would more than pay for all the measures proposed during the last 10 years to protect the lives and limbs of wage earners. The common business proverb that "Things won't stay still; if they don't go forward they will go backward," is very true regarding workmen's compensation, which for two years has been forced to a subordinate place in the social insurance program, due largely to the fact the work has lacked "team play." In the interest of national defense, as well as of the worker in industry, workmen's compensation practice should be perfected.

CLAIM ADJUSTMENTS UNDER WORKMEN'S COMPENSATION.

BY B. E. KUECHLE, ADJUSTER, EMPLOYERS' MUTUAL LIABILITY INSURANCE CO., OF WAUSAU, WIS.

The legislative committee which drafted the Wisconsin workmen's compensation law gave four principal reasons for its enactment:

1. To furnish certain, prompt, and reasonable compensation to the injured employee.

2. To utilize for injured employees a large portion of the great amount of money wasted under the old common-law system.

3. To provide a tribunal where disputes between employees and employers in regard to compensation might be settled promptly, cheaply, and summarily.

4. To provide means for minimizing the number of industrial accidents.

To absolutely assure to injured employees the benefits of the compensation law, the Wisconsin act provides that an employer must either insure his liability with some insurance company licensed by the State or satisfy the industrial commission of his ability financially to assume his own liability.

Everyone knows that a license granted to an insurance company is not a guaranty by the State that the company so licensed will be solvent and able to discharge all obligations promptly during the life of the license.

We hear frequently of bank failures, and banks are licensed by the State. So do we hear of insurance company failures—only more frequently.

The failure of an insurance company writing compensation insurance affects, more than anyone else, the injured employee—the very one whom the law primarily intended to protect. And usually it is the man who is very seriously injured or some widow, both drawing long-period payments, who suffers most by such failures. Liability for pending claims following the failure of an insurance company always reverts back to the employer. He may be able to discharge a small loss, but a large one may put him out of business.

Our company has adopted a plan in its policy by which employees are absolutely guaranteed their compensation when it extends over a long period of time.

The policy guarantees that in all cases where compensation payments run for a period of six months or more the personal obligation

of the employer for such a claim shall be discharged in one of the following ways provided in the Wisconsin law:

1. Lump-sum settlement.
2. Purchase of an annuity in some life insurance company.
3. Depositing the present value of the claim with some bank or trust company which in turn makes periodic payments.

Since our company was organized in 1911 we have had a total of over 36,000 accidents reported. Of this number 145 were death cases. Ninety-two of these were cases of total or partial dependency. In 40 of these cases we purchased annuities for the dependents, the deposits for such annuities totaling $78,000; in 8 cases we placed the money with some bank or trust company to be held in trust for the beneficiary; and the rest were settled by lump sums.

With the exception of a few cases pending awards before the industrial commission, only one death case has not been disposed of in one of the three ways mentioned. In that case three minor children survived and the commission deemed it advisable to have us make weekly payments, as that would assure greater flexibility of increasing the weekly allowances as the children grow older and their expenses of living higher.

At present we are using the last method almost exclusively to discharge long-period claims. Its advantage is that the money can usually be placed in the home bank of both the assured and the beneficiary, where both parties may have personal accounts and in which they usually have great confidence.

To discharge such long-period claims by the methods mentioned is quite costly to an insurance company, because of the interest loss. The law provides that such accounts can be commuted only on a 3 per cent basis. As our investment earnings average between 5 and 6 per cent, the loss in interest on a single maximum death claim amounts to slightly over $200. As far as we know there is no other company operating in the State of Wisconsin which has such a guaranty in its policy.

One of the stock company arguments against mutual companies writing compensation insurance is that the mutual companies, having no capital, do not offer as great a protection against long-period claims as stock companies. The argument falls absolutely flat where a mutual company adjusts its long-period claims as our company does. In fact, a mutual company, with the assessment liability of its members, positively guarantees compensation to every injured employee. Mutual, as compared with stock insurance, is the only safe way to make compensation certain, as the law intended it to be.

This fact was brought home to Wisconsin in the failure of the Casualty Co. of America. This company had a bad case with non-

union of the bones of the leg. The industrial commission, after a hearing, ordered payment of compensation due to the date of the hearing and weekly compensation payments thereafter till further notice. The company paid the compensation due to the time of its failure—about $200—but did not pay the doctor and hospital bills, nor has it made any weekly payments. It was necessary for the injured to recover from his employer, who thought he was insured. To cap the climax, the employer about this time took sick and died, and the Lord only knows when the poor employee will get his money. Such a condition could never have come up had the casualty company guaranteed in its policy to discharge long-period cases promptly.

Even more than the certainty of compensation payments is promptness dependent on the insurance carrier. About one of every hundred cases reported to our company is adjusted before the industrial commission, after formal hearing, and this average, I believe, holds true for other companies operating in the State. In other words, the adjusters personally settle 99 per cent of all cases. The carrying out of the main objects of the law, especially the first—to furnish certain and prompt compensation to injured employees—you can see, therefore, rests largely with the insurance companies and adjusters.

One of the important problems in furnishing prompt compensation is the medical. Even before an accident is reported, the adjuster should have made arrangement with the assured that the best medical attention available is furnished and furnished promptly. Our company has found, after six years of experience under compensation law, that the choice of physicians should be strictly exercised by the insurance company. Very few men who are injured or their families are in a position to choose the doctor who is best suited to treat their particular injuries. Family physicians are generally not surgeons, nor are they usually experienced with industrial-accident treatment. The insurer, on the other hand, is in constant touch with physicians and is certainly in the best possible position to select the most capable men.

We in Wisconsin—and by we I mean employees and employers alike—are particularly fortunate in the generous medical allowances in our law. The law, as it has been in effect since 1911, provides for 90-day medical attendance at the expense of the employer. There are but very few cases in which disability has not terminated at the end of 90 days. While the medical expense is considerably higher than in most other States, there can be no doubt that on the whole the results, through shorter disability periods and fewer permanent injuries, more than pay for this added expense. In fact, insurance companies have generally found it to their advantage to

continue treating employes at their expense after the 90-day period, especially when by so doing they could prevent or remedy some permanent injury. On September 1 of this year an amendment to our law becomes effective which grants medical attention for 90 days and thereafter as long as it tends to reduce the period of compensation disability. This amendment merely puts into words what has been the actual practice of most companies up to date.

In uncontested cases our law provides that compensation shall be paid beginning with the end of the second week, and weekly thereafter. The average workmen has no savings that he can fall back on, and to get his compensation weekly usually removes a great burden from his mind—namely, "What will become of my family?"—and will hasten recovery. Especially in death cases is a prompt adjustment of great importance. Most widows are under the impression that they must engage an attorney to recover compensation, and unless prompt adjustments are made, this is done and a useless expense incurred. I have made a practice of sending widows a few hundred dollars on account immediately on proof of death—even before the funeral—and then of stipulating the facts before the industrial commission at the earliest possible date.

An adjuster's object should be to get men back to work just as soon as possible. There is a certain hesitance on the part of workmen, especially after serious injuries, to attempt work. This seems to be especially true following major fractures and major amputations. After a bone has properly knit, it takes exercise to overcome the pain. The convalescent period is invariably longer than estimated by the attending physician. I have found that by allowing a few weeks more compensation than estimated by the physician, and paying the compensation in advance, the actual disability period is reduced. Of course, you really pay a man more compensation than he has legally coming, but without a settlement he might have laid off longer than you estimated and would certainly not be as well satisfied. It is remarkable how the idea of having obtained a "good settlement" appeals to an employee.

DISCUSSION.

The CHAIRMAN. Mr. A. A. McDonald, chairman, State Industrial Commission of Oklahoma, will lead the discussion.

Mr. MCDONALD. Though I have been a member of the Industrial Commission during the last three conferences, this is the first one I have had the opportunity of attending. I have sat here during the four days the meeting has been in session and must say that I have received many very valuable ideas.

On the point of unlimited medical attention raised by the claim agent for the liability company, we very nearly have it in our State; though we have a 15-day limit, medical attention has now become almost unlimited where any practical results can be obtained. I worked rather hard during the last session of the legislature to increase our period of medical attention to 60 days, and while I thought it a very liberal consideration I must confess that this meeting has practically converted me to the California period of unlimited attention. I feel there should be some instructions given, or some discretion allowed the administration board as to how far and to what cases it should apply, but as a general proposition I believe it ought to apply to all.

I hope there is no industrial commission or accident board in the United States that has any more distressing experience than our board in Oklahoma. I guess we had the worst record last year of any State in the Union. Our law does not cover death cases, which consequently reduces the amount of compensation paid out. For every $100 paid out last year as compensation to the workman, $84 was paid to doctors and hospitals. I have often remarked that while our compensation law got us away from the shyster lawyer, we "jumped from the frying pan into the fire" when we fell into the hands of the green medical profession. I am going to come to the defense of the profession now. That is not a general condition over the entire State. In the agricultural communities and the older cities where the profession has been established there has been no trouble. It is in the new oil towns that have sprung up over night, that maybe last night were prairie and to-day are cities of 5,000 or 6,000 people, doctors are rushing in. Everybody is getting rich and the doctor in common with everybody else wants to get his share while he can. In such cases the doctors are giving little in return. In accord with the theory of rehabilitation there is now being urged upon the insurance companies the advisability of bringing men

injured in these oil fields away from the local hospitals. One I have in mind is in a town in Woods County where a doctor had a very ambitious hospital over a moving picture show, while his room was over one of these mechanical pianos—very quiet surroundings. We tried to encourage him to bring the men into the larger cities where they could receive skilled medical treatment.

I was very much interested in the paper of Mr. Kingston, of Ontario, in regard to handling eye cases. We have an entirely different statute from Ontario. Our statute provides that for the loss of an eye they shall be paid a specific award of 100 weeks. Another provision, following all specific awards, says the loss of the hand, foot, leg, eye, etc., shall be equivalent to the loss of the use of such member, including the eye. We have had, I think, more than our share of eye cases during the time of our workmen's compensation law. A quarter of a million steel tanks for holding oil are being erected in the State, and it seems impossible to get the men working on them to wear goggles. They are continually getting slivers of steel in the eye and the result is that we have many cases where a scar will form over the eye such as the doctor from Massachusetts has described. We have had cases where the vision of one eye was impaired and only an operation would relieve it, and then it would not focus with the other eye. In those cases we have allowed for the loss of the use of the other eye. With one eye a man can not do that work. If he afterwards loses the other eye, of course an operation would be advisable on the injured eye.

Now, we have not the advantage of the Massachusetts law in deciding those questions on the basis of one-tenth. I remember writing one case where we held that loss of nine-tenths, one-tenth remaining, was equivalent to the loss of the eye and gave compensation. In another case a man lost half; we decided it was not equivalent to the loss of the use of the eye and allowed him temporary disability. We have another case now involving two-tenths, which the commission has under advisement. It is a very difficult proposition to solve under our act. It may be fair enough to allow 10 weeks for each one-tenth he might lose, but the great trouble is that every man has not a normal eye and there is no way of telling how many tenths he has lost as the result of an injury. Of course we always have the relief of allowing him one-half his wage-earning capacity before the injury. That is theoretically sound, but it causes many perplexities. We have so many cases of sudden industrial activity that have lured men from the farm and after the accident they have naturally gravitated to the only occupation they knew. I heard a case a few days ago where a man in the employ of a large steel company received an injury that is undoubtedly going to be permanent. He rented two

hundred-odd acres of land and he and his wife and six children are very energetically cultivating cotton. Now, how is anybody going to determine whether that man is making as much as he made before? Are you going to consider the fact that when he was working at his former occupation he was the only one contributing any work? Now, as is customary in growing a crop of cotton, it takes the whole family. How are you going to calculate what portion of wages should be allowed his wife, his six children, and how much to him?

We have had another perplexing question that there has been difficulty in determining. A man has a serious injury to his hand; his thumb may be badly lacerated and he may lose his first phalanx. It is the uniform contention of the liability company in Oklahoma that under the provision of the act for specific awards there should be full compensation allowed. Now, the commission has taken the view that if a man has another injury distinct from the injury entitling him to specific award that extends beyond the time that the other injury healed, he should be entitled to temporary disability during the period he is recovering from the temporary injury, and then after that the specific award for the loss of the member. I notice the chairman of the Massachusetts commission is shaking his head. I would ask him what he would do in the case of a man having an accident that happened a year ago. The man fell; he was working on a scaffolding built around a smokestack for taking away the fumes; the scaffolding gave way and four men were precipitated a distance of 271 feet. One was killed; three survived. Now, supposing for instance, that one man had lost the first phalanx of the little finger; he would be entitled under our act to 7½ weeks or $75. He might have received an injury to his head or any other part of his body that would have laid him up for a year; yet he would be entitled to only $75 for the loss of the little finger.

There is just one thing—I think this body and commissioners generally want to be impartial in handling these matters. We should not let ourselves become biased by constantly viewing these matters from one angle. As a general proposition we just see the side of the employee who has been injured. We start in open-minded on these questions but we get to thinking we can not do enough for the man injured; we can not pay for what he suffers, and naturally we go from one thing to another and take up other burdens of social welfare. There is going to be just a little danger that these things may be carried a little too far. It does not make much difference how a man was hurt, how the injury arose; whether it arose out of course of employment or whether he was run over by an automobile or was hurt falling down the cellar stairs. The fact is that he received an injury that will cause him permanent disability which is

just as severe in one case as in another. I don't think we ought to let our sympathies for the injured employee give him everything where the accident arose out of the course of employment and exclude the man hurt outside in the course of employment. The injury to the man who falls down the cellar steps is just as severe and grieves him just as deeply as the injury to the man who got it in the course of his employment.

I am not saying this with the idea of throwing any damper on anybody's enthusiasm for this work; but I do feel there is danger if we don't try to consider everybody interested, society as a whole rather than one class, and that we may somewhat overreach ourselves in this propaganda. I don't want you to gather from this that I am not in sympathy.

Dr. DONOGHUE. What do you mean by that?

Mr. MCDONALD. I think there is a tendency to unduly exalt the duties of society to the injured workman to the exclusion of people who are just as deserving. In other words, I don't think where a man has been hurt without anybody in particular being at fault—and really it is more or less difficult to put your finger on it and say anybody is responsible; the accident just happened—I don't think the fact that a man has been hurt in the course of employment makes him any greater object of charity or consideration than a man who has had another unavoidable accident.

Dr. DONOGHUE. Can he have compensation?

Mr. MCDONALD. Don't misunderstand me on that point. I am advocating in my own State and I advocate everywhere an enlargement of the compensation law, but I don't think we want to go loping into social insurance and all these other excellent provisions, if society can stand the cost of them, without at least going slowly. That is merely a word of caution.

Dr. DONOGHUE. You don't think a man is an object of charity when he gets compensation?

Mr. MCDONALD. Oh, no; I think he is entitled to it, but it is a different theory than what the world has been proceeding on through all the ages. There is a danger of continually looking at it from one viewpoint.

Dr. DONOGHUE. Is there more than one viewpoint? Are there two viewpoints of a man receiving compensation that the law provides?

Mr. MCDONALD. Whatever you do for anybody, somebody is going to have to bear the cost. I don't think that one class is entitled to all the consideration. All these benefits given under the workmen's compensation law are costing somebody something and don't deceive yourselves that the cost is falling on the insurance companies. It is all being passed on to the ultimate consumer.

Mr. WRIGHT. The producer pays; the consumer doesn't pay anything.

Mr. MCDONALD. Well, somebody pays, and I always feel it is the consumer who pays.

Dr. MEEKER. I would like to ask Mr. McDonald if he thinks the burden from accident was invented by compensation laws.

Mr. MCDONALD. Why, not at all, only that we are now trying to scientifically distribute the burden. My remark was not really directed at compensation laws; it was just simply these other things. I am inclined to think we are going pretty fast. In our own State we are paying widows pensions, whose soldiers fought forty years before the State was organized. Now the last legislature has created a soldiers' home for the soldiers who fought in blue. I think there should be some limit, to say nothing of the terrific pensions we have always paid the soldiers. There should be some limit for the people who are going to be taxed for these things.

Dr. MEEKER. I would like to hear Chairman Mitchell of New York express his views. We so rarely get him at our conferences—I think I am correct in saying that this is the first conference that we have had the honor of having him with us—and I know he has a lot of things, if he will only tell them to us, that will be most instructive.

Mr. MITCHELL. The function which brought me here I spoke on today and I see my resolution has been reported to the committee on resolutions. Of course in the administration of compensation laws there are many problems that present themselves that are difficult of solution. I have been intensely interested to-night in the discussion of questions arising in the various States. It goes without saying that in a State like New York, where we had 325,000 industrial accidents and 60,000 compensable accidents last year, there are exceptional cases that are difficult to determine—that is, to determine the merits of them. We have eye cases and we have no rule for determining them. Our law provides if a man loses his eye or all his useful vision, he shall be paid 128 weeks' compensation at a maximum of $20 a week; that is to say, if his wages are $30 a week he would then receive $20. Our law makes that one exception; in all cases of amputation the maximum shall be $20, whereas in other injuries, it is $15 per week; that is, two-thirds of the wages as a basis. I don't know just what is the proper solution of these eye injuries. We amended our law during the last session of the legislature so as to empower our commission to pay for a portion of loss of vision. Theretofore the law had provided that a man receive 128 weeks for loss of vision but if he did not lose all his vision and still retained useful vision, then he was paid on the basis of partial incapacity to earn wages. He drew indefinitely and without limit two-thirds the difference between his

former wages and his wage-earning capacity. Our commission thought, as many other commissions have, that when a man lost 80 per cent of his vision he had lost all useful vision and we made awards for the loss of his eye, and our courts held that was not intended by the act and that we were bound and compelled to make our awards upon the partial disability basis. The last session of the legislature amended the act so as to give the commission discretion to determine the amount of vision gone, leaving entirely in the hands of the commission the amount to be paid. That also applies to injuries of the arms, hands, feet, or legs, so that now accidents arising after the 1st of July will be determined on that basis, and I think that will assist us in disposing of many difficult questions arising as to the amount to be paid for the partial loss of use of a limb or eye.

I think that what we need in most of the States is more physicians to assist in the administration of our compensation acts. In New York, of course, we have a very large force; our commission employs 700 people—not all in compensation work. About 300 are employed in the administration of the compensation bureau alone, the other 400 being employed in other departments under the supervision of the commission, so that we are able to give careful supervision to the administration of our act. Practically every injured workman has the opportunity of appearing before our commission or before one of its deputies. We have offices all over the State which are very well manned, so that advantage may not be taken of the injured workman. He is not required in New York, as he evidently is in Wisconsin, to go to the insurance company's office to settle his claim; he is not sent for and is not required to go. The injured workman, if he wants to, comes to the commission and not to the insurance company. It may be a very good plan and no doubt if it was properly administered the workman would receive the full amount of compensation allowed under the law, but I should greatly dislike it to be the general practice in the administration of compensation acts for the workman to be required to call upon the insurance company in order to make his adjustment. It seems to me that these cases cannot be too carefully supervised. Sometimes it is difficult to get the workmen to go back to work as early as they should go. It is equally true that a very large number of workmen return to work altogether too soon; that is, they return before they have sufficiently recovered. We have had many cases where men have attempted to work and have had to stop, being disabled for a much greater period than they would have been had they remained under medical care or at home until they had sufficiently recovered. Now, of course, I agree, and every friend of the law must agree, that malingering should be prevented; that the worst enemy of the

compensation law is the workman who takes undue advantage of it. At the same time, it is equally important that the commission shall see that the workman does not go back to work at an earlier date than it is safe for him to go.

I don't know whether you know of several amendments made to the New York act this last time, one of them being the power of the commission to pay for a portion of a man's eye, leg, or foot, as the case may be. The last session of the legislature made compensation payable from the first day of the accident provided the man is disabled for a period of more than seven weeks. We have a 14-day waiting period under ordinary circumstances, but if disability continues for a period of seven weeks then it relates back to the first day; that is, it takes in the first two weeks' waiting period. There has been a very strong movement in New York, among the workmen particularly, supported by others, to reduce the waiting period from two weeks to one week, and some advocate no waiting period. Of course, in most States it would be extremely difficult to administer the law if there was no waiting period at all. For instance, as I said a moment ago, 325,000 industrial accidents occurred in New York last year, of which about 60,000 were compensable. We have a force of about 300 in our offices taking care of compensation work alone. Now, if we had to compensate 325,000 instead of 60,000, it would necessitate the employment of perhaps 1,500 or 1,600 people, because it requires as much time to make up a case where a man is disabled two days as it does a case where he is disabled two months; in other words, the same number of papers have to be filed and examined. Therefore, I think it would be a physical impossibility to administer the law in a State as large as New York if there was no waiting period at all.

Now, this scheme of having the compensation relate back to the first day if the workman is disabled for a period of more than seven weeks does not increase the work very much because the case is made up anyway, all the papers are filed, and the man's awards have been made, so that all that it is necessary to do if his disability continues for more than seven weeks is, on the same papers, simply to add two weeks to what he has already had. I regard that as a proper change in the law. I am quite certain that the movement in the United States to reduce waiting periods is going to gain impetus. In Massachusetts the waiting period has been reduced to 10 days; in Wisconsin to 7 days; in Ohio to 7 days. The movement everywhere is for a reduction in the waiting period. Of course, in the unimportant and nonserious accidents it doesn't make so much difference, but if a man is disabled so that he has no income from his earnings for six or eight weeks it is rather an important matter to him that he be paid for the first two weeks, for, after all, he has suffered a very great re-

duction in his income when he accepts, as in the State of New York, 66⅔ per cent of his usual income. Of course, in New York I think men on the whole do receive more than 66⅔ per cent of their wages during disability; our law says 66⅔ per cent, but our law tells us how that wage is to be computed and we take the daily wage, multiply it by 300 and divide by 52; that is the means of determining the average weekly wage. Of course, in skilled work among the building trades and longshore work, which is not unskilled work, many of the workers do not work 300 days a year and with those men we would assume for the purpose of making up their compensation that they did work 300 days a year. On the other hand, there are some seven-day employments, where the men work all the time. In the case of a man working 332 days in the year we multiply his wage by 332 and divide by 52 in order to arrive at his average weekly wage. That is a ruling made by the commission that will possibly not stand the test of the courts. I think perhaps the court will hold that we may not use more than 300 as a multiplier.

I don't think the commissioner from Oklahoma meant to say exactly what he did. I should regard it as quite the function of the commissioners who are administering these laws to be in sympathy with them; the injured workmen are not receiving too much money and the State is not taking too much care of them. Social insurance is going to grow; there isn't any doubt about it. It may not be at an early date that we will cover the whole field of social insurance but just as sure as compensation grew, so will other forms of social insurance grow. As our country has developed, as we have changed from an agricultural to a great industrial nation, as men no longer are able to control themselves or protect themselves, just as surely as that growth has taken place so must the desire of the State and Nation grow to take care of the men in the industries. That will be a good thing for America, too. It will not be a burden upon industry; that is, it will not be a burden on an industry that will not be well able to take care of it. As a matter of fact, we know now that the apprehensions employers felt some years ago as to the effects of compensation insurance upon industry were not justified, and now the strongest supporters of workmen's compensation are largely employers of labor. They found it was a good thing for them, a good thing for their employees. It removed from the field of controversy a question that caused more friction between the workmen and employers than any other one thing I know of.

As a matter of fact, I presume we have all had the experience of sitting in court hearing some attorney employed by the injured man denouncing a perfectly fair and generous employer as though he took personal delight in the suffering of his employee. The attorney

of course had no feeling about it, but he had to convince the jury, and the best way to convince the jury that the injured man was entitled to a large verdict was to paint the employer as a heartless man who had no interest in the welfare of his employees. On the other hand, we do know that practically every suit for damages that has been instituted has been attended by perjury of the worst sort on the part of both the injured workman and the employer; in other words, there has been no regard for truth. The employer, fearing a large judgment, would swear, perhaps not personally but through his superintendent or bosses, that the man was responsible for his own injury. On the other hand, the man and his friends would swear the injury was due to carelessness or negligence of the employer. Now, after all, you couldn't blame the injured man very much. If he got his arm cut off or his leg cut off, under the old system the only hope in the world for him and his dependents was to secure enough money in a lawsuit to take care of him for the rest of his life, and while no one will condone perjury, a person can readily understand why men were willing to perjure themselves in order that they might be protected for the rest of their lives.

Now, gentlemen, I have been keenly interested all the way through here to-day at the discussions. It seems to me that the gentlemen who have come from former commissions have given us very much useful information. I know the discussions I have heard will be helpful to me in the administration of the laws of New York. Unfortunately, we are all so busy all the while with our own little duties that possibly we can not get the broad vision of these questions that we get right here. I hope in the future to be able to get away to attend some of the sessions at each of the annual conferences. We have always sent our representatives, and we have been very ably represented by our own Dr. Lewy, and I understand from what reports have come to me that Dr. Lewy has given you information of value to the medical departments of your commissions. Dr. Lewy has been a savior to others; he is a wonderful man, and I doubt if there are many medical men in the compensation commissions that have rendered better service than Dr. Lewy has for this whole movement.

I am going to close by expressing the hope that we may evolve some plan, in those States in which the rates of compensation are wholly inadequate, as they are in many States, of bringing the rates there up to the rates paid in the States and Provinces having the best laws. Fifty per cent of wages is not enough compensation and $10 a week as a maximum is not enough compensation. The injured man can not live decently on either 50 per cent of his wages or on a maximum of $10 per week. As a matter of fact, even where the

rates are highest—I think New York probably has the highest rate on the whole, some States having 66⅔ per cent as New York has, but their maximum is $12 per week, whereas ours for ordinary accidents is $15 with $20 in case of amputation—the men are not overprotected. It seems to me now that we should try and bring the States having inadequate laws up to the standard of the best States in order that these men who have given their lives and limbs in our industrial enterprises may have a fair measure of protection.

The CHAIRMAN. We still have quite a little business and the first thing in the order of business would be the election of two members of the executive committee, because we are now working under the new charter which provides for such an election.

[Will J. French, of California, and Wm. C. Archer, of New York, were elected as members of the executive committee.]

REPORT OF THE COMMITTEE ON RESOLUTIONS.

[The following resolutions were adopted:]

(1) *Resolved*, That the thanks of the International Association of Industrial Accident Boards and Commissions be extended to the Hon. Samuel W. McCall, governor of Massachusetts, the Hon. James M. Curley, mayor of Boston, the Massachusetts Industrial Accident Board, our retiring president, Dudley M. Holman, and the citizens of Boston for the courtesies shown to the members attending this fourth annual meeting, and also to the press of Boston for publicity given to our proceedings.

(2) Whereas the members of this fourth annual meeting of the International Association of Industrial Accident Boards and Commissions were generously entertained by the General Electric Co., at its Lynn plant: Therefore be it

Resolved, That the thanks of this association be extended to the management of the General Electric Co., for the opportunity of viewing its factories and its efficient medical department, and for the hospitality shown in providing luncheon at the conclusion of our visit; and be it further

Resolved, That a copy of these resolutions be forwarded to the General Electric Co.

(3) Whereas in the death of Hon. Wallace D. Yaple, chairman of the Ohio Industrial Commission, this association has lost one of its most active and valuable members: Therefore be it

Resolved, That the International Association of Industrial Accident Boards and Commissions place on record its deep sense of the loss sustained and our sincere appreciation of the work and worth of our late president; and be it

Resolved, That we extend our heartfelt sympathy to the bereaved family; and be it further

Resolved, That a copy of these resolutions be sent to Mrs. Yaple and to the governor of the State of Ohio.

(4) *Resolved*, That the International Association of Industrial Accident Boards and Commissions extend the sympathy of its members to our esteemed president-elect Hon. F. M. Wilcox, because of the loss he has sustained in the death of his father, and that a copy of this expression of sympathy be sent to Mr. Wilcox.

(5) *Resolved*, That in accordance with the recommendations of Chairman A. J. Pillsbury, of the Industrial Accident Commission of the State of California, and Chairman John Mitchell, of the Industrial Commission of the State of New York, a committee of three, to consist of Royal Meeker, A. J. Pillsbury, and John Mitchell, be appointed to meet in Washington, D. C., at the earliest possible date for the purpose of formulating and promoting legislation for eliminating conflicts in jurisdiction between Federal and State authorities in cases involving industrial injuries occurring in transportation by railroad or water, or in the loading and unloading of cargoes, or kindred occupations.

(6) Whereas the question of restoring injured men to industry is only secondary to preventing injuries, and

Whereas our retiring president has brought to the attention of this body the importance of pending Federal legislation relating to those who may be injured in the military service of the United States, both as regards compensation or insurance, and the rehabilitation of such injured men, and

Whereas the support of the International Association of Industrial Accident Boards and Commissions has been solicited to further the aims of the pending legislation: Therefore be it

Resolved, That this association emphatically indorses every wise effort to rehabilitate those injured in industry and also those injured in military service; and be it further

Resolved, That the furthering of the Federal legislation mentioned above be referred to the committee chosen to work on the problem of conflict of jurisdiction between Federal and State authorities in cases involving industrial injuries.

(7) *Resolved*, That the attention of the incoming executive committee be directed to the wide variance in some of the provisions of the different compensation laws of the United States and Canada, and that this annual meeting requests the executive committee to report to the Madison meeting next year the most feasible plan of recommending such uniformity in the laws as is possible, for submission to the various States and Provinces.

[In the debate on Resolution 7 Mr. Wright made the following statement:]

Mr. WRIGHT. I am not a citizen of the United States and of course I am not entitled to say anything about your legislation, but I would like to say that in regard to the action of this body with reference to the restoration of injured men, the rehabilitation of injured men, that it is a most important thing and I think something very definite should be done. I would suggest the appointment of a committee of this association to act on this matter. I don't mean to refer to this resolution particularly; I might say that resolution might well be passed without any amendments, but I would suggest the appointment of a committee whose duty it would be to collect information both in the United States and Canada with reference to the rehabilitation of injured men. I think we might well act with those engaged in the rehabilitation of the returning soldiers. As I said before this evening, I hope you won't have as many to attend to as we have. I have great hopes, a great wish at any rate, that this

war may terminate without any very much greater bloodshed, but you are in it and I have the belief that you will go through to the end. I don't believe that it will be a case of "the last in the field and the first to leave it" with the United States. I think that though last in the field you will be in it until your work is accomplished, but if you will remember some things in Mr. Dean's paper yesterday, there was one point I did not quite agree with. He said that when a soldier was returned uninjured, unwounded, the debt was paid; he was returned as good as before. That never can happen; no man can go through the terrible strain of trench work in Flanders and come through unscathed. He won't be the same man; he can not go back to industry in the same way; he can not fill a job as he did before, and something must be done for that man, and I don't think that something should be done in this way.

You are going to give your soldiers pensions; we are going to give our soldiers pensions. That is all right and proper; they should get pensions, but that does not restore them to industry. It doesn't put them back where they ought to be. Suppose a man comes back from the front unable to hold a job through no fault of his—he isn't the same kind of a man as he was before he went out to the trenches. As Lord Kitchener said, he has tasted the very salt of life and he can not settle down to industry for quite a while to come—not steadily; he will be at one job to-day and another a week from to-day. Would it not be well to say to all the returned men, whether wounded or unwounded, "Get a job and we, the nation, will pay to your employer $5 every week to be paid to you to put you in a position a little better than your neighbor beside you"? Otherwise, you won't get employment for these men. They won't be looked upon as desirable employees. Steady men will get the preference over them. That would be an inducement for them to work and so long as they work they ought to get that $5 a week for say a year or perhaps more until they get steadily settled into industry again. I throw that out as a suggestion for a committee of this association acting together and trying to bring pressure to bear on public men and public business to help the returned soldier and the injured man in industry to get back in their proper places. We compensate a man for the loss of his leg. We never do compensate him until we make him as fit for work as he was before. It is all very well to say a man is as good as he was before, but a blind man is not as good a man as he was before he became blind. I know of one man who was blinded in South Africa who was a better man than he ever was before and he can earn more money, but that won't happen with every man and you can not use any two men alike.

We saw yesterday in Lynn that very interesting place in the apprentice shop there. They don't try the old fool system of appren-

ticeship; they don't say to this boy, "You will learn the trade, you will do this kind of work." They evidently say, "We are going to put each one in the job best suited to him." Our educational system is unfortunately not built on that plan. Take two boys in the same family; just because they happen to be sons of the same father and mother it doesn't follow that you can make good doctors out of both. I have often seen a man preaching in the pulpit and I have thought "Now, that is a pity; that man would have made a good butcher but he is a failure as a preacher. Society has lost a good butcher." And so with a blacksmith who is dreaming all the time; he might have been a splendid architect; he is in the wrong place, a square peg in a round hole. And so with the men returning to industry, we want to get the round pegs in the round holes as far as possible. I think if you would appoint a committee, or the incoming president would appoint a committee from this body to act on this, perhaps by correspondence, perhaps by meeting occasionally, great good might be accomplished.

[The following motion was carried:]

It is moved that a committee of this association be appointed by the incoming president to study the question of the rehabilitation and reeducation of cripples from the economic and social side, with particular attention to those crippled through industrial accidents and under the jurisdiction of the several boards and commissions of this association, and that such committee be requested to correlate existing data on this subject and to present at the next annual meeting of this association a comprehensive scheme on a national basis dealing with the subject.

APPENDIX—LIST OF DELEGATES.

Following is a list of those in attendance at the conference:

Miss Eunice G. Anderson, chief clerk, Workmen's Compensation Department of Wyoming, Cheyenne, Wyo.

Dr. John B. Andrews, secretary, American Association for Labor Legislation, New York, N. Y.

Charles S. Andrus, chairman, Industrial Board of Illinois, Chicago, Ill.

F. W. Armstrong, vice chairman, Workmen's Compensation Board of Nova Scotia, Halifax, Nova Scotia.

George E. Beers, compensation commissioner, third congressional district of Connecticut, New Haven, Conn.

P. D. Betterley, Graton & Knight Manufacturing Co., Worcester, Mass.

David S. Beyer, Liberty Mutual Insurance Co., Boston, Mass.

Ralph H. Blanchard, Columbia University, New York, N. Y.

Dr. William J. Brickley, Boston, Mass.

Mott A. Brooks, secretary and managing editor, Weekly Underwriter, New York N. Y.

Percy A. Broderick, assistant secretary, Massachusetts Industrial Accident Board, Boston, Mass.

Dr. Joseph M. Burke, chief surgeon, Seaboard Air Line Railroad, Petersburg, Va.

Mrs. Joseph M. Burke, Petersburg, Va.

H. R. Bygrave, Frankfort General Insurance Co., New York, N. Y.

George B. Chandler, compensation commissioner, first congressional district of Connecticut, Hartford, Conn.

Lucian W. Chaney, special agent, United States Bureau of Labor Statistics, Washington, D. C.

Dr. W. Irving Clark, jr., chief surgeon, Norton Co., Worcester, Mass.

John T. Clarkson, general counsel, legal department, district 13, United Mine Workers of America, Albia, Iowa.

E. S. Cogswell, third deputy commissioner, Massachusetts Insurance Department, Boston, Mass.

Dr. Andrew P. Cornwall, impartial physician, Massachusetts Industrial Accident Board, Boston, Mass.

Dr. F. J. Cotton, Boston, Mass.

H. M. Cousins, Richmond, Va.

T. Norman Dean, statistician, Workmen's Compensation Board of Ontario, Toronto, Canada.

James B. Doherty, commissioner of labor of Virginia, Richmond, Va.

Mrs. James B. Doherty, Richmond, Va.

Frank J. Donahue, member of the Massachusetts Industrial Accident Board, Boston, Mass.

Dr. Francis D. Donoghue, medical adviser, Massachusetts Industrial Accident Board, Boston, Mass.

Dr. James J. Donohue, compensation commissioner, second congressional district of Connecticut, Norwich, Conn.

E. H. Downey, special deputy, Insurance Department of Pennsylvania, Harrisburg, Pa.

Frank S. Drown, industrial expert, Children's Bureau, Department of Labor, Washington, D. C.

Dr. Lucile Eaves, director, Research Department of Women's Educational and Industrial Union, Boston, Mass.

Robert Fechner, International Association of Machinists, Washington, D. C.

Ora T. Fell, solicitor, Republic Iron & Steel Co., Youngstown, Ohio.

Will J. French, member of the Industrial Accident Commission of California, San Francisco, Cal.

Mrs. Will J. French, San Francisco, Cal.

Dr. A. W. George, X-ray referee for Massachusetts Industrial Accident Board, Boston, Mass.

James L. Gernon, first deputy commissioner, New York State Industrial Commission, New York, N. Y.

Chester E. Gleason, member of the Massachusetts Industrial Accident Board, Boston, Mass.

Dr. Cora B. Gross, Boston, Mass.

C. B. Hensley, statistician, Industrial Accident Commission of the State of California, San Francisco, Cal.

Dudley M. Holman, president of the International Industrial Institute, Boston, Mass.

Carl Hookstadt, expert, United States Bureau of Labor Statistics, Washington, D. C.

Chas. F. Horan, director of hygiene and safety, Hood Rubber Co., Watertown, Mass.

William W. Kennard, chairman, Massachusetts Industrial Accident Board, Boston, Mass.

Dudley R. Kennedy, assistant to the president, Youngstown Sheet & Tube Co., Youngstown, Ohio.

George A. Kingston, member of the Workmen's Compensation Board of Ontario, Toronto, Canada.

B. E. Kuechle, adjuster, Employers' Mutual Liability Insurance Co. of Wausau, Wausau, Wis.

Mrs. B. E. Kuechle, Wausau, Wis.

Dr. Timothy Leary, Boston, Mass.

Dr. Raphael Lewy, chief medical examiner, New York State Industrial Commission, Bureau of Workmen's Compensation, New York, N. Y.

R. M. Little, chairman, United States Employees' Compensation Commission, Washington, D. C.

Dr. John E. McCastin, Boston, Mass.

A. A. McDonald, chairman, State Industrial Commission of Oklahoma, Oklahoma City, Okla.

E. F. McSweeney, former member of the Massachusetts Industrial Accident Board, Boston, Mass.

W. N. Magoun, general manager, Massachusetts Rating and Inspection Bureau, Boston, Mass.

Dr. H. W. Marshall, Boston, Mass.

Dr. Royal Meeker, United States Commissioner of Labor Statistics, Washington, D. C.

John Mitchell, chairman, New York State Industrial Commission, New York, N. Y.

W. L. Mitchell, Chief of the Department of Workshop and Factory Inspection of Tennessee, Nashville, Tenn.

Dr. John W. Mowell, medical adviser, Industrial Insurance Co. of Washington, Olympia, Wash.

Mrs. John W. Mowell, Olympia, Wash.

Edwin Mulready, commissioner of labor of Massachusetts, Boston, Mass.

William Neill, assistant commissioner, Workmen's Compensation Board of Manitoba, Winnipeg, Manitoba, Canada.

Dr. Francis D. Patterson, chief of Division of Industrial Hygiene, Pennsylvania Department of Labor, Harrisburg, Pa.

C. W. Price, United States Employees' Compensation Commission, Washington, D. C.

Dr. I. M. Rubinow, director, Bureau of Social Statistics of New York, New York, N. Y.

E. B. Saunders, Associated Industries of Massachusetts, National Association of Manufacturers, Fitchburg, Mass.

Dr. Frank E. Schubmehl, General Electric Co., Lynn, Mass.

Dr. James W. Sever, Boston, Mass.

Robert W. Simonds, commissioner of industries of Vermont, Montpelier, Vt.

William M. Smith, chairman, Michigan Industrial Accident Board, Lansing, Mich.

Dr. E. E. Southard, Psychopathic Hospital, Boston, Mass.

Charles H. Verrill, chief statistician, United States Employees' Compensation Commission, Washington, D. C.

Charles H. Weeks, chief inspector, Structural Bureau, Department of Labor of New Jersey, Trenton, N. J.

Capt. William P. White, Associated Industries of Massachusetts, Lowell, Mass.

F. M. Wilcox, member of the Industrial Commission of Wisconsin, Madison, Wis.

Albert W. Whitney, general manager, National Workmen's Compensation Service Bureau, New York, N. Y.

John M. Wilson, chairman, Industrial Insurance Department of Washington, Olympia, Wash.

E. S. Winn, chairman, British Columbia Workmen's Compensation Board, Vancouver, Canada.

A. W. Wright, vice chairman, Ontario Workmen's Compensation Board, Toronto, Canada.

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