

1936 Convention of the International Association
of Industrial Accident Boards and Commis-
sions, Topeka, Kansas

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Discussion of Industrial Accidents and Diseases



Bulletin No. 10

UNITED STATES DEPARTMENT OF LABOR
DIVISION OF LABOR STANDARDS

UNITED STATES DEPARTMENT OF LABOR
FRANCES PERKINS, Secretary
DIVISION OF LABOR STANDARDS
VERNE A. ZIMMER, Director

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ANNUAL MEETINGS AND OFFICERS OF THE INTERNATIONAL ASSOCIATION OF INDUSTRIAL ACCIDENT BOARDS AND COMMISSIONS

Annual meetings			President	Secretary-treasurer
No.	Date	Place		
1	Apr. 14, 15, 1914.....	Lansing, Mich.....	John E. Kinnaue.....	Richard L. Drake.
	Jan. 12, 13, 1915 ¹	Chicago, Ill.....	do.....	Do.
2	Sept. 30-Oct. 2, 1915.....	Seattle, Wash.....	do.....	Do.
3	Apr. 25-28, 1916.....	Columbus, Ohio.....	Floyd L. Daggett.....	} L. A. Tarrell.
			Wallace D. Yaple.....	
4	Aug. 21-25, 1917.....	Boston, Mass.....	Dudley M. Holman.....	Royal Meeker.
5	Sept. 24-27, 1918.....	Madison, Wis.....	F. M. Wilcox.....	Do.
6	Sept. 23-26, 1919.....	Toronto, Ontario.....	George A. Kingston.....	Do.
7	Sept. 20-24, 1920.....	San Francisco, Calif.....	Will J. Franch.....	Charles H. Verrill.
8	Sept. 19-23, 1921.....	Chicago, Ill.....	Charles S. Andrus.....	Ethelbert Stewart.
9	Oct. 9-13, 1922.....	Baltimore, Md.....	Robert E. Lee.....	Do.
10	Sept. 24-26, 1923.....	St. Paul, Minn.....	F. A. Duxbury.....	Do.
11	Aug. 26-28, 1924.....	Halifax, Nova Scotia.....	Fred W. Armstrong.....	Do.
12	Aug. 17-20, 1925.....	Salt Lake City, Utah.....	O. F. McShane.....	Do.
13	Sept. 14-17, 1926.....	Hartford, Conn.....	F. M. Williams.....	Do.
14	Sept. 27-29, 1927.....	Atlanta, Ga.....	H. M. Stanley.....	Do.
15	Sept. 11-14, 1928.....	Paterson, N. J.....	Andrew F. McBride.....	Do.
16	Oct. 8-11, 1929.....	Buffalo, N. Y.....	Frances Perkins.....	Do.
17	Sept. 23-26, 1930.....	Wilmington, Del.....	Dr. Walter O. Stack.....	Do.
18	Oct. 5-8, 1931.....	Richmond, Va.....	Parke P. Deans.....	Do.
19	Sept. 26-29, 1932.....	Columbus, Ohio.....	Wellington T. Leonard.....	Do.
20	Sept. 11-14, 1933.....	Chicago, Ill.....	R. E. Wenzel.....	Charles E. Baldwin.
21	Sept. 24-28, 1934.....	Boston, Mass.....	Joseph A. Parks.....	Do.
22	Sept. 30-Oct. 3, 1935.....	Asheville, N. C.....	J. Dewey Dorsett.....	Verne A. Zimmer.
23	Sept. 21-24, 1936.....	Topeka, Kans.....	G. Clay Baker.....	Do.

¹ Special meeting.

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Letter of Transmittal

UNITED STATES DEPARTMENT OF LABOR,
DIVISION OF LABOR STANDARDS,
Washington, December 2, 1936.

MADAM: I have the honor to transmit herewith the proceedings of the 1936 convention of the International Association of Industrial Accident Boards and Commissions, which met in Topeka, Kans., from September 21 to 24, 1936. Proceedings of the convention have been prepared for publication by the staff of the Division of Labor Standards.

VERNE A. ZIMMER, *Director.*

HON. FRANCES PERKINS,
Secretary of Labor.

Proceedings of the 1936 Convention of the International Association of Industrial Accident Boards and Commissions, Topeka, Kansas

September 21—Morning Session

G. Clay Baker, President, I. A. I. A. B. C., presiding

The twenty-third annual convention of the International Association of Industrial Accident Boards and Commissions convened at Topeka, Kans., September 21, 1936, Mr. G. Clay Baker, Commissioner of Workmen's Compensation, State of Kansas, president of the association, presiding.

[President Baker introduced Mr. J. H. Jenson, member of the Kansas Commission of Labor and Industry, and Col. Wm. A. Biby, of the chamber of commerce, who delivered addresses of welcome to the delegates. Mr. Charles E. Baldwin, former secretary, responded in behalf of the participating members.]

President's Address

By G. CLAY BAKER, *Commissioner of Workmen's Compensation, State of Kansas, and President, I. A. I. A. B. C.*

It has been a distinct privilege to have served as president of this organization during the past year. I have received so much in benefits from this association and its proceedings that I have welcomed the opportunity to make any contribution that in my small way may be possible, and it was only with this in mind that I accepted the presidency of this splendid organization at Asheville, N. C. And, may I say, it was with some reluctance that I accepted the presidency, for the high type of service which has been rendered by presidents heretofore has set such a high standard that I could not help feeling a little diffident about taking on the responsibility. As I look back over the few short years I have attended meetings of this association and take stock of the benefits obtained, I come to realize that as important a benefit as any received has been the personal friendships acquired by those engaged in a common work and dealing with similar problems. May these friendships always live on in our memories. To me these friends have been extremely helpful and beneficial. I have from time to time called upon them for their method of handling problems with which I have had to deal. These friends have always responded, and they have never failed me when called upon for information and advice.

And so it is my hope that first and foremost at this convention personal friendships will be renewed and strengthened and new ones made. I hope you will take advantage of every moment, outside convention sessions as well as during sessions, to discuss problems with each other and to have a closer acquaintanceship. We will be in session but 4 days, and these days will pass only too quickly.

My first attendance at these conventions was at Buffalo, N. Y., in 1929. Some of our foremost members at that time, I am sorry to say, are not with us today—in a few instances because they have passed from this realm and in other cases because their connection with our work has been severed. I pause to think of those outstanding individuals before we start in on the work of this convention, and of the precedents that have been set by them. I am pleased to have had no report of any loss of membership during the past year by death.

Appreciation has been expressed on behalf of the Kansas Commission for the honor that has been paid us by the decision of the International Association of Industrial Accident Boards and Commissions to hold its twenty-third annual meeting in the State of Kansas. I feel it is appropriate that at some time or other Kansas should have been so honored. Kansas has long been a member of the association and active in its proceedings. It is numbered among the first States to have enacted a valid workmen's compensation law. It has cooperated with this organization and it has been a pioneer State in the field of workmen's compensation legislation.

Contrary to past custom, there is to be no joint meeting of this association and the International Association of Governmental Labor Officials. I think it is the desire on the part of each of these associations that their meetings be independent. The International Association of Governmental Labor Officials will start its convention Thursday morning with a business session. The only exception to these associations not meeting jointly is that at luncheon on Friday our Association is invited to convene with the Governmental Labor Officials, which session will be addressed by the Hon. Frances Perkins.

We have a definite purpose in meeting here—that purpose is stated in article II of our constitution, which reads as follows:

The object of the association is to bring representatives of the various jurisdictions together at least once a year to discuss the problems and experiences arising out of the administration of workmen's compensation laws.

May I recommend that we give exclusive consideration during these 4 days to the purpose of our organization? Many of us are members of other similar organizations but with different programs of procedure. But here our purpose is confined and yet is broad enough in scope to draw upon us to the fullest measure.

Modern industry brought on many problems, and one is the matter of caring for those disabled because of accidents. This is being dealt with by the scheme of workmen's compensation, which scheme was advanced in this country at a time when there would have been no other thought than that of individual State laws and administration, and so we had compensation laws enacted by the various States. The process of making the plan general in the United States might have been considered slow, and yet in the course of a quarter of a century we find the plan adopted by all but two States. It is now

general throughout Great Britain and her dominions and the civilized world. And in the short time since the inception of workmen's compensation laws we have seen their beneficence in providing aid for those disabled by industry, and more especially in the reduction by 50 percent, more or less, in the number of industrial deaths and disabilities. And we see the States gradually drawing to a common plane in the plan of administration and benefits and a tendency to uniformity in extending the scope and benefits of the acts to what they should be, and so, when we take stock, we must conclude that the plan has been a successful venture.

There is a distinct need of this organization's giving the opportunity to the various administrators to meet and discuss problems of administration, for after all the problems of the various administrators are similar.

Our purpose being to discuss problems of administration, I feel attorneys and claim representatives may find the discussions of this association beneficial, and that they should try to absorb a clearer understanding of the various laws and their relationship to the administrators and what part they can play in assisting to promote fair and just administration. I also think this applies equally, and probably more so, to the medical profession. In Kansas we have a fine medical profession, and I would not cast any reflection upon it, yet the difficulties I have had in administering the law because of lack of its full understanding by and the duties of, the medical profession thereunder, caused me to reach the conclusion that we should give the medical profession a special opportunity, in attending these conventions, to become more compensation minded and more cognizant of the law and their duty with reference to the administrators. The executive committee agreed with this conclusion, and we have provided that on Wednesday the doctors will have a separate medical session during their attendance at this convention. This is the first time this association has attempted a separate medical section as a part of its convention. I suggest you take cognizance of this fact so that you may fairly determine if such a course of procedure should be continued at future conventions. Anything that can be done to give the medical profession a keener insight into the problems of administration would be most beneficial.

The executive committee met at Washington and reached general conclusions on association problems of the year and the program of the convention. Details as to these were in the main handled by your secretary, who has been faithful to his duty and most cooperative with me during the year. I appreciate very much the cooperation that has been given me on every hand.

I recommend that the executive committee meet at least once each year between conventions to discuss association problems and convention programs. The president and the secretary should have this guidance.

The report of this convention will make the twenty-third. Our secretary has heretofore made the statement that these reports comprise the best textbook available on workmen's compensation. In this I think he is right. We can well afford to look to these reports for information. If a general index of these reports is made and kept up to date, it would facilitate their use. I recommend that the

incoming executive committee be empowered to employ a competent individual or individuals to accomplish this.

In the program this year we have departed from our usual custom in that one entire session is set aside for the discussion of questions that may be placed in the question box, which you will see here in the convention room. It was thought this would give opportunity for discussion and answers to questions any member might want to suggest, and, in case all the questions cannot be discussed because of lack of time, they will at least serve as suggestions for the executive committee in formulating the program for next year.

A review of the reports shows that the matter of rating eye disabilities has not been discussed since 1927, and at that time no conclusion was reached. Ample opportunity is afforded at this convention for a rather thorough discussion of this question. The States are considerably at variance as to the method of rating eye disabilities and the factors that should be taken into consideration. After the discussion at this convention, unless the convention feels it can formulate uniform recommendations without doing so, I recommend the appointment of a special committee to report back, for consideration at the 1937 convention, a recommendation of uniform method of rating eye disabilities. This committee might well be instructed to make a first report to the executive committee in time for it to consider the report and make suggestions thereon before the next convention.

At the Asheville convention your president was empowered to appoint a committee, the size to be left to his discretion, to study the question of universal compulsory coverage of all risks, and in compliance with that resolution he appointed a committee composed of J. Dewey Dorsett, chairman, North Carolina; Peter J. Angsten, Illinois; John J. Toohy, Jr., New Jersey; H. A. Nelson, Wisconsin; Wm. H. Wise, Michigan. In fairness to that committee I want to say the reports of the proceedings were late in publication and passage of the resolution not therefore authenticated until late in the year so that this committee has not had the time it should have had. After its appointment the committee immediately went to work on the problem. This is a most serious question. I am confident you will give it weighty consideration to the end that you will act fairly and judiciously on the matter and that ultimately your action will lead to security of compensation—a factor that is necessary if compensation is to be effective.

As has been the case in the past, this year's program does not provide for the discussion of safety problems. The executive committee felt all phases of our problems could not be covered, and for this year it did not provide safety subjects as a part of our proceedings. However, the Kansas Safety Council is conducting an industrial safety meeting on Wednesday and Thursday to which some of our members have been invited to speak, and that organization is making available for this convention late Wednesday afternoon demonstrations on first-aid problems.

During this year a national conference on silicosis was called at Washington, and committees were appointed to make specialized studies and report back at a later national conference, which is to be held, I understand, some time late this year. I had the pleasure of attending one of these conferences, and later the executive com-

mittee appointed Voyta Wrabetz, of the Wisconsin Commission, to represent this association. Commissioner Wrabetz has kept in touch with the work of the national conference and will give a report of its proceedings to date at this convention.

A new standing committee, known as the "Committee on administration and procedure", has been appointed this year.

A statement was made by the president last year, which I think bears repetition. That was:

For several years it has been apparent that the system of workmen's compensation no longer represents insurance only against industrial accidents, for which it was originally designed. Through legislative enactments, judicial interpretations, and the action of administrative boards it has been broadened to include both health insurance and unemployment insurance without so naming them. In my opinion, workmen's compensation laws might easily face a complete break-down unless the tendency toward extending their scope to include life, health, accident, old-age, and unemployment insurance for workers is promptly altered.

I am certain this is a statement over which we can well afford to ponder. Our compensation laws in the main are too limited as to benefits for those cases coming truly within their scope. However, these laws have constituted the only vehicle on which to load all problems of modern industry. The future will see a well-developed program to care for the other problems of modern industry, and thus compensation laws can be applied exclusively to cases that should come within their scope. This should be an aid in bringing about better compensation legislation and better administration.

The legislatures of all of the eight Canadian Provinces having workmen's compensation laws met in regular session during 1936. Of the eight Provinces, only three of them—Alberta, Manitoba, and Nova Scotia—amended the workmen's compensation acts. In Alberta the provincial legislature liberalized the classification of industries by authorizing subclassifications, differentials, and proportions in the rates. The legislature in this Province also provided that one commissioner may now exercise full jurisdiction of the workmen's compensation board. Formerly it was required that two commissioners be present at a hearing to constitute a quorum. The board has also been authorized to extend the time during which an injured workman must submit to an operation in hernia cases and also has been authorized to make a per-diem subsistence allowance to a workman undergoing treatment at a place other than that at which he resides.

The Province of Manitoba extended the coverage of compensation to workmen contracting silicosis as a result of their employment in the mining, iron, steel, or metal foundry industries. For the payment of such compensation a separate "silicosis fund" was authorized to be established. The legislature in this Province also authorized the workmen's compensation board to exclude certain industries from the scope of the collective-liability system. By this act of the legislature an industry employing less than a stated number of workmen may be excluded from a class and thus from the collective-liability system. However, employers in the excluded class may elect to become members of the class and therefore liable for the payment of contributions to the accident fund.

Several amendments were passed by the legislature of Nova Scotia. It enlarged the definition of "employer" so as to include a contractor and a subcontractor as well as the principal. The legislature also

authorized the workmen's compensation board to extend the time within which an application for compensation may be filed, provided, however, there is good reason for the delay on the part of the injured workman.

In the United States it is an accepted practice for a majority of the State legislatures to meet in regular session in odd-numbered years. In the year 1936, therefore, we are limited in our consideration of workmen's compensation problems to 9 States which met in regular session, and approximately 15 which met in special or extraordinary sessions. In nearly all of the States which met during the current year in regular session legislation was passed amending the workmen's compensation laws. There are today only two States (Arkansas and Mississippi) without the benefits of workmen's compensation.

The subject of occupational diseases continued to be of interest in several of the States, particularly in Illinois, New York, and Rhode Island. The legislature of Illinois repealed a former occupational disease law which was limited in scope and passed a new and enlarged detailed law on the subject. The Rhode Island legislature first passed a detailed occupational-disease law during its recent session but later adopted another one limiting the payment of compensation to certain specified occupational diseases. While New York, at a previous session of the legislature, amended their occupational-disease law to cover any and all diseases, at the 1936 session special legislation was passed authorizing the payment of specific compensation to workmen who had contracted silicosis or other dust diseases.

Since our last meeting at Asheville, the second session of the Seventy-fourth Congress has met. The Congress at this session amended the Federal Employees' Compensation Act. This amendment, which was approved on May 13, 1936, by the President, authorized an additional award, limited to a maximum of \$50 per month to an employee permanently and totally disabled and requiring the constant services of an attendant. The Congress of the United States during the closing days of the session also enacted legislation granting to the States jurisdiction and authority to apply their workmen's compensation laws on all property belonging to the Federal Government whenever an injury or death has resulted from an industrial accident while the employee has been engaged in work on property belonging to the United States Government.

Mention has already been made of the passage of a new occupational disease law in Illinois. The legislature in this State made changes in the basic act especially in reference to appeals and also in its administrative provisions. In the case of the latter subject matter it has been provided that the committee to determine disputes in workmen's compensation cases hereafter shall consist of three members and any party in interest instead of either party, as formerly provided for, may now elect to have a dispute decided by a committee. The administration of the act will hereafter be vested in the industrial commission instead of the industrial board. Liberalization of benefits to dependents was also provided by the legislature in this State and by the provisions of the Health and Safety Act. The industrial commission was authorized to make rules governing

the sanitation and ventilation of work places and other safeguards for the benefit of the employees.

While the legislature of Alabama meets in regular session only once in 4 years, it did, however, at the 1936 session provide that hereafter for the loss of two feet the injured employee shall be entitled to compensation for 400 weeks.

It is of particular interest to note, in the deliberations of some of the legislatures, that provision was made for a general reorganization of the State government departments. This was the case in Kentucky, where a department of industrial relations was established and the workmen's compensation board has been continued as a part of this department. Hereafter, all decisions and findings of the board are required to be certified to the commissioner of industrial relations, and this administrative officer is required to handle all financial matters for the board.

In Massachusetts the legislature made several changes in the Workmen's Compensation Act. While it was formerly required that \$250 was to be paid by an insurance company into the treasury in those cases of the death of an employee without dependents, this amount has now been increased to \$500. The Massachusetts legislature also enlarged the coverage provisions of the workmen's compensation law by including additional public employees within the purview of the act and also has authorized that an injured employee may now be treated by his own physician at the expense of the insured. The legislature also attempted to provide for a stricter coverage in cases involving employees injured while operating a machine deemed dangerous by the industrial accident board.

As in the case of Massachusetts, enlarging the amount to be paid into the treasury in the case of the death of an employee who has no dependents, the Legislature of Minnesota at a special session increased the amount so payable from 1 percent to 2 percent. Also in relation to this subject, the Legislature of New Jersey amended the provision as to the second injury fund. Hereafter, in that State, whenever a total sum of \$200,000 has been paid into the fund, the law has provided that no further contributions need be made. The New Jersey Legislature also supplemented the workmen's compensation act by considering relief workers as casual employees and therefore not entitled to workmen's compensation benefits under the act. In connection with this subject, it is interesting to learn that at a special session the Nebraska Legislature provided that while relief workers shall not be deemed to be within the scope of the Nebraska Workmen's Compensation law, nevertheless in cases of disability the injured employee shall continue to receive relief.

In addition to the enactment of legislation in New York providing for compensation for silicosis and other dust diseases already mentioned in this review, the Legislature of New York enlarged the coverage of the act by including internes of certain institutions operated by a municipal corporation or any other public subdivision of the State. The legislature also eliminated from the Workmen's Compensation Act those persons who are recipients of aid from a religious or charitable institution who perform incidental work for the institution in return for assistance and who are not under an express contract of hire.

Perhaps the largest number of amendments to the workmen's compensation laws in the several States was made by the Legislature of Rhode Island. Mention has previously been made of the passage of an occupational-disease law in which 31 specified occupational diseases are compensated for under the State Workmen's Compensation Act. The waiting period was reduced from 1 week to 3 days, and hereafter compensation shall begin on the day of the injury whenever the incapacity extends beyond a period of 2, instead of the former provision of 4 weeks. The maximum payments under the act were considerably increased by the legislature, and the maximum period during which compensation is payable was extended. The subject of the computation of the average weekly wages was also considered in Rhode Island, and attention was given by the legislature to the payment of double compensation in the case of illegally employed minors and to appeals and review of compensation awards. It has now been provided that authority to review such awards or agreements is given to the director of labor instead of the superior court as formerly. Of particular importance in the control of dust and unhealthy work places was the establishment of a division of industrial hygiene. Under the terms of the act this division has been authorized to make a scientific study of industrial hygiene and occupational-disease problems in industry.

In Virginia the legislature made several changes in the basic law. Perhaps the most important one to consider is that of third-party injuries. In this regard the legislature has decreed that when an injury is caused by a third party and the employee files a lawful claim for compensation such act will constitute an assignment to the employer of the employee's right to recover damages. It has also been provided that hereafter the employees of an independent contractor shall not be considered the employees of the person or corporation employing the contractor.

In the limited time at my disposal, it is impossible to analyze in full all of the amendments passed this year by the various legislatures. However, from a brief examination of the changes which were made by the few States in session so far this year, it is at once evident that the general tendency has been to improve, enlarge, and broaden the existing laws and to provide for better administration. In particular is this true of the tendency which has been shown not only this year but in the last 2 or 3 years when the legislatures have considered the problem of occupational diseases. We observe that investigative commissions have been appointed and their reports and findings have brought forth remedial legislation in several instances. We have attempted to cover in our review the work of the Territorial legislatures which met in regular session in 1936. Alaska made no changes in the basic workmen's compensation law. From what we consider as fairly reliable reports, the Legislature of Puerto Rico did not consider the subject of workmen's compensation during the current year. It has been difficult to ascertain whether amendatory legislation was passed in the Philippine Islands, as the legislature does not convene until midsummer and usually continues in legislative session for 100 days. The Legislature of Hawaii did not meet in 1936.

(President Baker here called upon the chairmen of the standing committees to present their reports.)

REPORT OF COMMITTEE ON STATISTICS AND COSTS

By SIDNEY W. WILCOX, *Chairman*

It has been impossible for the members of the committee on statistics and costs to meet during the past year, but substantial progress has been made in carrying out the recommendations of the committee made in the report of a year ago.

The work of the committee can be identified to a large extent with the work in the field of accident statistics carried on during the year by the United States Bureau of Labor Statistics, the chief statistician of the Bureau having served also as chairman of this committee. In February of this year the Bureau of Labor Statistics added to its staff a specialist in research in the fields of accident statistics and workmen's compensation, and substantial progress has been made not only in improving the basic statistical reports of the Bureau but in research on the list of subjects recommended for consideration by this committee in 1935.

It is evident that statistics of industrial accidents on a national scale must be compiled primarily from those reported to State boards and commissions in accordance with requirements of the workmen's compensation law in individual States. In most States the statistical set-up is inadequate, both as to number and training of personnel. This is usually because there are insufficient funds for statistical purposes, and the meager appropriations may, in turn, be a reflection of meaningless statistics compiled in the past with little thought as to the uses to which the figures might be put and without subjecting the data to analysis with a view to practical application. The statistics should be compiled with a view to—

(a) Indicating in what industries accidents are happening and the relative hazards of the industries, as a gage to show where safety work and rehabilitation are most essential.

(b) Checking on the effectiveness of activity in these two fields to determine whether measures put into operation have accomplished their purpose.

(c) Measuring the degree to which compensation offsets wage loss, the speed with which payments are made, the type of insurance carriers which are delinquent, and the causes of delayed payment in the commission's administrative set-up.

To accomplish these purposes it is essential that the statistics adhere to certain standards which will render the data comparable between States and industries. The Bureau of Labor Statistics is prepared in cooperation with the I. A. I. A. B. C. to develop standards which are in effect a telescoping of what is ultimately desirable so that within a comparable framework data may be utilized from States with only a minimum number of items reported, and from those States where the work is more advanced. Realizing the need for liaison between States in developing these standards, the Bureau of Labor Statistics will attempt to become acquainted with the work of each and will stand ready to assist in the development of a program in individual States.

Within its own organization the Bureau of Labor Statistics has made several innovations in this field. Accident rates are now computed from reports of identical establishments in consecutive years in order to measure changes more adequately. The sample is being enlarged, not only within the 30 manufacturing industries now covered, but also to include other manufacturing industries and such additional fields as public utilities, communications, motorbus transportation, street railways, mining and quarrying, and so forth. The Bureau is publishing for the first time a figure for the total number of acci-

dents in the industries and States it surveys, by estimating the number of "waiting period" accidents for States which do not require reporting during this period or where reports are not obtained. When the number of industries covered has been sufficiently expanded, it is hoped that the total number of lost-time accidents for the country may be estimated, at least for major industries.

The Bureau has entered into arrangements with other Government agencies, such as the Interstate Commerce Commission and its Bureau of Motor Carriers, and the Bureau of Mines, whereby access will be accorded to data compiled by these agencies for inclusion in Bureau of Labor Statistics analyses. Trade associations have been contacted for the purpose of using their data, if compiled in a usable manner, and for the purpose of interesting and assisting them in the compilation of such data. It is pointed out that the associations can render service to their members by being able to tell them how and where accidents occur, with resulting saving to the employer in accident costs and with increased safety to the worker.

In its 1935 report the committee recommended entering into cooperative arrangements with graduate departments of universities in pursuing research subjects in accident statistics and workmen's compensation. The Bureau of Labor Statistics has issued an announcement to universities covering a suggested list of topics and describing the assistance it is prepared to give to students undertaking the research. Many of the subjects recommended for research by this committee last year are included in this list. A copy of the announcement is attached to this report. In May 1935 the research specialist of the Bureau visited the universities of Wisconsin, Chicago, Michigan, Ohio, Pennsylvania, Columbia, New York University, and Harvard, including the School of Public Health at Harvard, and subsequently the University of Illinois was contacted. Keen interest has been shown by the professors who have been contacted, and it is expected that work will get under way during the present academic year.

A survey of workmen's compensation administration in the United States and Canada, undertaken in 1934 by the Bureau of Labor Statistics, is nearing completion. Forty-two States and four Canadian Provinces have been visited by a representative of the Bureau. Three special articles based on the survey have appeared in the Monthly Labor Review for January, February, and March 1936, and work on the complete report will be begun shortly upon the completion of the field work. Although the survey is a study of administrative procedure and not an official investigation, many State compensation officials have requested recommendations for the improvement of their work, and such recommendations have been made informally.

Representatives of Federal agencies dealing with accident statistics have been organized in Washington during the past year as the Federal Accident Statisticians. The group has elected officers and has adopted a plan of regular meetings. A report is being prepared on the scope and methods of each Federal agency in the field to acquaint the members with the work of other organizations and to strive for comparability so far as possible. At its last meeting, held September 17, Mr. Leonard W. Hatch, chairman of the sectional committee of the American Standards Association covering definitions and rates and accident causes, addressed the group on the history and present status of this project.

The I. A. I. A. B. C. is one of three sponsors of the American Standards Association sectional committee on standardization of methods of recording and compiling industrial-accident statistics; the other two sponsors are the National

Safety Council and the National Council on Compensation Insurance. A letter ballot on a draft of this proposed standard, dated November 25, 1935, brought to light certain differences of opinion still existing among members of the subcommittee. A meeting was held in New York on March 19, 1936, and a new draft, dated August 11, has been prepared and voted upon. The vote is now 31 in favor, 1 against and 11 not yet heard from.

The two points on which committee members had differed were (1) whether the time charge for temporary partial disability in severity rates should include all calendar days or only week days, and (2) whether temporary partial disabilities (involving no other disability) should be included in frequency rates.

The first point has been decided on a basis which includes all calendar days. On the second, provisions have been worked out recognizing both points of view. Definitions of injuries have been extended to cover temporary partial and first-aid cases in addition to those previously defined, thus setting up uniform definitions for all possible disability classes. Six classes of injuries are distinguished. In the interests of comparability it is provided that every agency shall, as a minimum, compute frequency and severity rates based on four classes of injuries (death, permanent total, permanent partial, and temporary total), to be designated as "four-class" rates. The computation of "five-class" and "six-class" rates (to include also temporary partial disabilities and first-aid cases, respectively) is recommended for such agencies as can secure dependable data for these types of injury. They are, in all cases, to be in addition to "four-class" rates.

Your committee submits the three following motions:¹

I. That upon recommendation of the committee on statistics and costs the International Association of Industrial Accident Boards and Commissions hereby adopts the draft dated August 11, 1936, of the "Proposed American Standard for Compiling Industrial Injury Rates", a copy of which is attached hereto and made a part hereof, subject to such minor changes as may result from expressions of opinion developed in connection with the poll of the sectional committee of the American Standards Association now being taken by means of letter ballot, or as the result of the overture to the International Labor Office provided for in a separate resolution, said changes to be recommended by the committee on statistics and costs and accepted by the executive committee. It is understood that if any changes in principle seem called for, they shall be submitted to vote by the members of the association.

II. That the International Association of Industrial Accident Boards and Commissions as one of the sponsors shall, through its executive committee, make immediate overtures to the American Standards Association, the National Safety Council, and the National Council on Compensation Insurance asking them to join in a recommendation to the United States Department of Labor that it request the International Labor Office to take under consideration the "Proposed American Standard for Compiling Industrial Injury Rates, August 11, 1936" and take such action as may be deemed appropriate toward the development of an international standard of industrial injury rates.

[The second motion carries this note of explanation: There was no instrumentality for establishing uniform standards on an international basis at the time, some 10 years ago, when the American Standards Association was asked to head up the movement to establish an American standard for compiling industrial-injury statistics. By the adherence of the United States to the International Labor Office some 2 years ago it has now become appropriate to seek consideration of the "Proposed American Standard for Compiling Industrial Injury Rates" by the International Labor Office both for possible improvements in the present formulation dated August 11, 1936, and also as a possible contribution to the setting up of statistical standards on an international basis.]

¹ At the suggestion of President Baker the first two motions were later put in the form of resolutions and placed in the hands of the resolutions committee for reporting out to the association.

III. That the association places itself on record as favoring the revision of the basic manual of standard procedure, commonly designated as Bulletin 276 of the United States Bureau of Labor Statistics. That the problems of statistical procedure to be covered in the revised manual be defined as those associated with industrial injuries, workmen's compensation, safety, rehabilitation, and reemployment, so far as these may be necessary to bring out the facts and the analysis of the facts to bear on the sequence of events from the time that the employed workman is injured to the time when he is again employed after the injury. That the task of revision shall be committed to the committee on statistics and compensation insurance costs.

ANNOUNCEMENT OF RESEARCH PROGRAM

MAY 5, 1936.

The United States Bureau of Labor Statistics of the Department of Labor calls attention to economic and statistical problems in the fields of industrial accidents, industrial hazards, and workmen's compensation for dissertations leading to higher degrees.

In order that statistical data in the field of industrial accidents and workmen's compensation may be available to the Bureau, it is prepared to assist competent students who desire to engage in such studies in the following ways:

1. To aid in the supervision of approved studies.
2. To help make the necessary arrangements with State agencies, such as industrial commissions or departments of labor, for access to State records.
3. To make contacts with nongovernmental agencies capable of rendering assistance.
4. To furnish clerical assistance in tabulation and in putting manuscripts into shape, all clerical work to be done at the Bureau of Labor Statistics at Washington, D. C.
5. To publish the study if of sufficiently high caliber.

In addition, the Bureau is willing to provide to graduate students, whose choice of study it approves, a travel allowance for necessary expenses incurred in making contacts with:

- a. State agencies when in different cities from the university.
- b. Individual concerns or workers when the study requires such contacts.
- c. Agencies with whom findings can be checked and discussed for suggestions and criticisms.
- d. Bureau of Labor Statistics at Washington, D. C., for conferences.

A list of suggested subjects is attached, and may be expanded within the general field of inquiry.

The materials collected by students under the above arrangement are to be made available to the Bureau of Labor Statistics. Full credit will be given to individual students for such materials as are used by the Bureau. All applications must be approved by the professor under whom the student is writing his thesis.

ISADOR LUBIN,

Commissioner of Labor Statistics.

Tentative Suggested Topics for Graduate Students of Universities

(Other subjects may be added)

A. Industrial accidents and industrial hazards.

1. Relation between industrial accidents and business cycles. What is the course of industrial accidents during the various phases of business cycles? Why? Differences between experiences of various industries.

2. Industrial-accident trends of major industries. How and why do industries differ as to their industrial-accident experiences and hazards? Consider effects of technological changes, size of establishments, etc.

3. Statistical technique for measuring industrial-accident hazards of industries. Consider possibility of an index.

4. Adequate and practical classification of industries for use in accident statistics.

5. Adequate and practical classification of occupations for use in accident statistics.

6. A technique for securing statistics on causes of accidents as distinguished from causes of injuries. For illustration, a broken arm may be due to a fall,

which is the cause of the injury. But the fall may be due to poor lighting, or carelessness, or poor housekeeping, etc.—the cause of the accident.

7. Comparison of frequency and severity rates with other statistical measures capable of use in accident statistics.

8. The interpretation and application of accident statistics compiled by the States and Federal Government. What practical use is made of such statistics? (For accident prevention, factory inspection, rehabilitation, regulation of compensation rates, legislation, etc.).

9. Technique for obtaining and interpreting statistics of occupational diseases.

10. Mortality of permanent disability cases. Consider the benefit limitations of workmen's compensation acts and what happens to permanently disabled workers during the course of compensation benefits and after such benefits have ceased.

11. Relation between time spent on job and time accident occurs. Consider age and experience of worker, work at straight time and piece work, rest periods, fatigue, length of working day, etc.

12. Statistics of safety work—devices used and their effectiveness: administrative and budgetary control of safety work (a) within corporations, (b) carried on by States.

B. Workmen's Compensation.

1. Extent to which workers are covered by workmen's compensation acts in the various States. Consider size and industrial hazards of excluded industries and establishments.

2. Degree to which compensation actually compensates for wage loss. Consider particularly the economic life and impairment of earning power in permanent disability injuries.

3. Adequacy of benefit provisions for dependents in fatal accidents; for permanent total disabilities.

4. Lump-sum settlements—their use and results. See study by Norcross.

5. Cost of various provisions of compensation laws.

6. Relative benefits under the various compensation laws (quasi-actuarial subject, cf. Skelding).

7. Proper basis for calculation of benefits under workmen's compensation laws. Particularly significant during depression and early recovery years of a business cycle when benefits depend on earnings during a period preceding the disability. For instance, should a benefit be based on the average annual earnings of a worker who was injured after a long lay-off?

8. Adequacy of medical provisions of workmen's compensation laws.

9. Judicial and administrative statistics: How much time elapses before disputed cases are heard? Settled? What and who causes delays? Consider adequacy of available mechanism.

10. Types of insurance carriers; e.g.—

(a) Private insurance companies (stock, mutual, etc.).

(b) State fund, competitive to private insurance companies.

(c) State fund, exclusive.

Consider premium rates, promptness of payments, degree of litigation, etc.

11. The financing of workmen's compensation commissions:

(a) From appropriations by legislature.

(b) From appropriations by legislature anticipatory of payments from insurance companies.

(c) From payments by insurance companies.

Proposed American Standard for Compiling Industrial Injury Rates

AUGUST 11, 1936.

NOTE.—The latest version of the A. S. A. proposed Standard at the time of this report was that dated August 11, 1936. All material which has been added to the Standard in this draft is shown in italics; material included in earlier drafts but now omitted is enclosed in parentheses.

SECTION 1.—Exposure

1.1. The Average Number of Employees shall be the daily average number of workers employed, during a stated period, in the industrial unit whose accident experience is under consideration. Each unit shall include all departments,

such as production, maintenance, transportation, clerical, office, and sales. See R1 and R2.

1.2. Man-Hours of Exposure shall be the total of man-hours actually worked by all employees. See R3 and R15.

SECTION 2.—Industrial Injuries

2.1. An Industrial Injury shall be the term applied to any injury arising out of and in the course of employment (that results in death, permanent total disability, permanent partial disability, temporary total disability, temporary partial disability, or first-aid case, as hereinafter defined). See R4, R5, R6, R9, R14, and R16.

Six classes of injuries are distinguished as defined in paragraphs 2.2 to 2.7, inclusive.

(Class A Injuries.)

2.2. Death shall be the term applied to any injury which involves the loss of the life of the injured.

2.3. Permanent Total Disability shall be the term applied to any injury other than death which permanently and totally incapacitates the injured from following any gainful occupation. The loss of, or loss of use of, both hands, or both arms, or both legs, or both feet, or both eyes, or any two thereof, suffered in one accident, shall be considered a permanent total disability.

2.4. Permanent Partial Disability shall be the term applied to any injury other than death or permanent total disability which involves (a) the complete loss of any member of the body or part thereof, or (b) the permanent impairment of any function of any member of the body or part thereof. See R9.

2.5. Temporary Total Disability shall be the term applied to any injury other than death, permanent total disability, or permanent partial disability which in the opinion of the doctor makes it impossible for the injured employee to return to work on the (next) calendar day following the day on which the injury occurred, or on some later day. See R6.

(Class B Injuries.)

2.6. Temporary Partial Disability shall be the term applied to any injury other than death, permanent total disability, permanent partial disability, or temporary total disability which in the opinion of the doctor makes it impossible for the injured person to return to his regular job *on the calendar day following the day on which the injury occurred, or on some later day* (but which does not make it impossible for him to perform the normal duties of some other regularly established job). See R6.

(Class C Injuries.)

2.7. First-Aid Case shall be the term applied to any injury, other than death, permanent total disability, permanent partial disability, temporary total disability, or temporary partial disability, which receives at least first-aid or medical treatment, but which in the opinion of the doctor does not make it impossible for the injured person to return to his regular job at or before the start of the next calendar day following the day on which the injury occurred.

SECTION 3.—Time Charges

3.1. The term "Time Charge" is the measure of disability stated in days, as specified in sections 3 and 4 of this code.

3.2. Time Charge for Death.—Six thousand days shall be charged for each death. See section 4, also R5 and R10.

3.3. Time Charge for Permanent Total Disability.—Six thousand days shall be charged for each permanent total disability. See section 4, also R5 and R10.

3.4. Time charge for permanent partial disability shall be as follows:

(a) The time charge for any injury resulting in the complete loss or complete loss of use of any member of the body shall be the number of days specified in the "Scale of Time Charges." See section 4, also R5, R9, and R10.

(b) The time charge for any injury resulting in the loss of a part of a member or the permanent impairment of any function of any part of the body or part thereof shall be a percentage of the number of days specified in the "Scale of Time Charges." See section 4. The percentage to be used shall be the percentage loss or loss of use sustained by the injured worker, as determined by the local compensation authorities. See R5, R8, and R10.

3.5. Time charge for Temporary Total Disability.—The time charge for (any) each temporary total disability shall be the total number of calendar days of disability, excluding the day on which the injury occurred and the day on which the employee returned or in the opinion of the doctor was able to return to work. See R6, R7, R9, and R11.

3.6 Time Charge for Temporary Partial Disability.—The time charge for each temporary partial disability shall be the total number of calendar days of such disability multiplied by a factor not exceeding unity. Such factor shall be developed by the agency computing the time charge and shall be clearly stated. The total number of calendar days shall exclude the day on which the injury occurred and the day on which the employee returned, or in the opinion of the doctor was able to return, to his regular job.

3.(6) 7. Time Charge for (Temporary Partial Disabilities and) First-Aid Cases.—No methods are specified for determining these time charges for first-aid cases. Any agency computing (AB or ABC Severity Rates) such time charges shall indicate the method used.

SECTION 4.—Scale of Time Charges

4.1. The accompanying scale shall be used to determine the time charges in number of days as specified in definitions 3.2, 3.3, 3.4 (a), and 3.4 (b).

Death	6,000
Permanent total disability	6,000
Arm, at or above elbow	4,500
Arm below elbow	3,600
Hand	3,000
Thumb	600
Any one finger	300
Two fingers, same hand	750
Three fingers, same hand	1,200
Four fingers, same hand	1,800
Thumb and one finger, same hand	1,200
Thumb and two fingers, same hand	1,500
Thumb and three fingers, same hand	2,000
Thumb and four fingers, same hand	2,400
Leg, at or above knee	4,500
Leg, below knee	3,000
Foot	2,400
Great toe or any two or more toes, same foot	300
Two great toes	600
One toe, other than great toe. See R9.	
One eye, loss of sight	1,800
Both eyes, loss of sight	6,000
One ear, loss of hearing	600
Both ears, loss of hearing	3,000

NOTE.—Days shown in table are charged for complete dismemberment or complete loss of use of member. Definition 3.4 (a). For partial dismemberment or partial loss of use of member a percentage of these figures is charged, as explained in definition 3.4 (b).

NOTE 2.—The charge for any permanent injury other than those specified in the scale shall be a percentage of the charge for permanent total disability corresponding to the ruling of the governing workmen's compensation commission. See R9.

SECTION 5.—Injury Rates

5.1 (Standard) Frequency Rate shall be the number of (class A) injuries per 1,000,000 man-hours of exposure. See R12.

5.2. (Standard) Severity Rate shall be the total time charges (for class A injuries) per 1,000 man-hours of exposure. See R13.

(5.3. Frequency Rate AB shall be the number of class A and class B injuries per 1,000,000 man-hours of exposure.)

5.3. In the interest of general comparability, every agency shall, as a minimum, compute frequency and severity rates based on classes of injuries as defined in paragraphs 2.2 to 2.5, inclusive. Such rates shall be designated as "four-class" rates. The computation of additional rates based on classes of injuries as defined in paragraphs 2.2 to 2.6, inclusive, is recommended for such

agencies as can secure dependable data on temporary partial disabilities. Such rates shall be designated as "five-class" rates and shall in all cases be in addition to "four-class" rates. Rates based on classes of injuries as defined in paragraphs 2.2 to 2.7, inclusive, if computed, shall be designated as "six-class" rates.

(5.4. Severity Rate AB shall be the total time charges for class A and class B injuries per 1,000 man-hours of exposure. See Definition 3.6.)

(5.5. Frequency Rate ABC shall be the number of class A and class B and class C injuries per 1,000,000 man-hours of exposure.)

(5.6. Severity Rate ABC shall be the total time charges for class A and class B and class C injuries per 1,000 man-hours of exposure. See definition 3.6.)

SECTION 6.—Rulings and Interpretations

R1. Any report made on any basis other than the all-inclusive basis provided in definition 1.1 shall state which groups or departments are included and which are excluded.

R2. Average Number of Employees.—To obtain average, count names on pay roll and salary roll of those at work for each day during period covered and divide the aggregate number of names by the number of working days. For example: 25 working days in November; aggregate number of names of those on pay roll and salary roll and at work, 15,000. Divided 15,000 by 25 and the quotient 600 represents the average number of employees.

R3. Total Man-Hours Exposure.—This figure should preferably be calculated from the time clock or foreman's card, or pay roll records. If such records are not available, the man-hours exposure should be estimated from the average number of employees. Assume a plant with 600 average number of employees working 50 hours per week for 52 weeks. The total man-hours exposure for the year, all employees, would be $600 \times 50 \times 52$ or 1,560,000 man-hours.

R4. The Number of Injuries, not the number of accidents, shall be recorded. For example, if 10 employees are killed in 1 boiler explosion, 10 injuries shall be recorded.

R5. Every Permanent Partial Disability as well as every death and permanent total disability shall be counted as an injury even though the injured does not lose any time from work.

R6. No matter at what time of day the employee is injured, if no permanent disability exists and if at the beginning of the next calendar day he is unable in the opinion of the doctor to perform his ordinary duties or the normal duties of some other regularly established job, i. e., a job which is not set up solely to avoid counting the case as a temporary total disability, the injury shall be counted as a temporary total disability. On the other hand if he is able to perform the normal duties of some other regularly established job, the injury shall be counted as a temporary partial disability.

R7. Example of Time Charge.—Example 1: Employee is injured March 5 and returns March 22. Calendar days of disability, 16. Time charge, 16 days.

Example 2: Employee is injured April 2. and returns April 9. He again was unable to work on April 15 due to same injury and returns May 1. Calendar days of disability, 22. Time charge, 22 days.

R8. Permanent Impairment of Function.—Example: If a complete loss of a hand is compensated by payment of 150 weeks, any impairment of function of the hand which is compensated by payment for 75 weeks shall rate as one-half of the complete loss of the hand or one-half of 3,000 days as specified in the "Scale of Time Charges", section 4, or 1,500 days of disability. See also R10.

R9. Hernia, Loss of Teeth, and Loss of Any Toe other than the great toe, are considered temporary disabilities only. For details, see R6.

R10. The Actual Time Lost due to injuries specified in definitions 3.2, 3.3, 3.4(a), and 3.4(b), SHALL NOT BE CHARGED.

R11. All injuries should preferably be charged to the calendar period in which they occurred. For example: Man scratches hand on July 31. He reports for first aid on August 2, but on August 3 infection sets in, causing several days disability. The injury should be charged to July 31. An exception may be made if the change affects an annual summary. Thus, if an injury in December 1931 does not cause any disability until February 1932, after the 1931 summary has been prepared, the work involved in changing the annual summary is hardly worth while, and it is better to consider the injury as occurring in 1932.

R12. To Obtain the (Standard) Frequency Rate multiply by 1,000,000 the total number of (class A) injuries and divide by the total man-hours of exposure.

$$\text{Formula : (Standard) Frequency Rate} = \frac{\text{No. of (class A) injuries} \times 1,000,000}{\text{No. of man-hours of exposure}}$$

R13. To Obtain the (Standard) Severity Rate, multiply by 1,000 the total time charges (for class A injuries) and divide by the total man-hours of exposure.

$$\text{Formula : (Standard) Severity Rate} = \frac{\text{Total time charges (for class A injuries)} \times 1,000}{\text{No. of man-hours of exposure}}$$

R14. When in doubt as to whether or not to count a specific injury case, the decision shall be made in accordance with the ruling of the governing workmen's compensation commission on this or similar cases.

R15. For Ship Operations, compute man-hours of exposure by using (8) hours daily for each employee, regardless of actual length of time worked. Man-hours of exposure for longshoremen should be computed from pay roll.

R16. For Ship Operations, count all injuries occurring on shipboard, or off ships while on duty. For injuries to longshoremen count only those cases occurring while on duty.

R17. If at the time rates are to be computed the time charge for any injury is not definitely determinable, the doctor shall estimate the time charge to be used.

(R18. Standard Rates should be compiled by all agencies. When AB or ABC rates are compiled, they should be in addition to standard rates.)

REPORT OF ELECTRICAL SAFETY CODE COMMITTEE

By CHARLES H. WEEKS, *Chairman*

[Read by Stephen J. Lorenz]

This year your committee has kept in touch with such electrical safety rule developments as were already before it or have come to the attention of its members. It is a fact that the part played by the I. A. I. A. B. C. in influencing these rule developments so that they shall best serve the purposes of our members is not what it should be. Your committee has, from time to time, called to your attention this lack of adequate influence, but the condition has not been remedied. This is the most serious problem confronting us.

Foremost among the electrical safety rules now being applied by various agencies, and now operative throughout the whole country in premises for whose safety conditions members of the I. A. I. A. B. C. are legally responsible, is the National Electrical Code. The management of this code is nominally in the hands of the National Fire Protection Association, but only nominally. Its real management is in the hands of an electrical committee, which has a so-called balance of representation settled upon by an electrical standards committee of the American Standards Association, and these latter two bodies have, like the electrical committee itself, very little or no representation from the I. A. I. A. B. C. This brings about the result that development of the National Electrical Code often fails to stress sufficiently, for real safety, the durability, ruggedness, nontemperability and quick-acting protective devices which are the features of an electrical wiring installation which need to be assured where large numbers of workmen or visitors are exposed to danger by any wiring defect, as in the case of industrial occupancies.

Thus it comes about that this National Electrical Code is not proving to be a sufficient code for our members, but we must apply also supplementary codes which add the necessary safeguards which are omitted from the National Electrical Code, because commercial pressures operate to make the code standards somewhat too low in many kinds of locations and occupancies, including most industrial occupancies.

In the past we have requested a considerably greater number of members on the electrical committee, with a view to making our experience and judgment more effective in keeping the code at a somewhat higher level of safety, at least

where many lives are at stake. Thus far our requests have not been successful. We must find a way to secure this greater representation or must proceed separately and actively on the needed supplementary electrical safety rules.

Other associations which, like ours, represent the public directly, having no commercial biases, are like ourselves becoming aware that the public authorities are not securing the voice nor the results the public needs in the code development. This very year the National Municipal Signal Association and the International Association of Electrical Inspectors have before them reports on this unsatisfactory representation and have begun action looking for a review and recasting of the membership of the electrical committee, so that the representatives of municipalities and of the States will have not only a greater proportionate representation than now but enough to secure code changes which they deem wise. Not only are more votes and voices necessary but more activity by public representatives on the many subcommittees of the electrical committee. We are at this time asking that at least four representatives from the International Association of Governmental Labor Officials and the I. A. I. A. B. C. be given membership on the electrical committee of the National Fire Protection Association in time for work on the current revision of the 1937 edition of the National Electrical Code. If this additional representation is granted our committee will make the necessary nominations from our memberships.

At this time we continue to keep in touch with the following broad developments affecting code work to assure safe conditions:

1. The active International Association of Electrical Inspectors committee work in preparation of suitable legislation on sales control, so that only safe electrical equipment can be sold. The movement for increased labeling by Underwriters' Laboratories is also noted with approval.

2. The active electrical committee work in changing the entire editorial form and arrangement of the Electrical Code. This work has been done with such care under Dr. Lloyd that any weakening of the code has been avoided.

3. The active study by an American committee on grounding of the proposals by certain utilities for methods of wiring to be recognized in the code, which allow current escape from wires at various points in an interior wiring installation.

4. The constructive proposals for code changes, as made in 1936-37 by International Association of Electrical Inspectors will come to our attention so that your committee may endorse them or offer modifications before the electrical committee meetings of March 1937.

5. The limitations on the time of members of your committee have not permitted us to prepare, as was the intention we reported last year, a series of supplements to the National Electrical Code, perhaps in the form of departmental orders. This work is needed and must be undertaken soon. Its extent will depend on how much more the code itself in the future is made to reflect our needs.

As heretofore, our aim is to cooperate constructively with all other organizations concerned with preparing and applying electrical safety standards. We hope to make the electrical contribution to compensation insurance cost small. To do this we must have good standards. The number and seriousness of electrical fires and accidents are far too great. A very interesting report on electrical fires and accidents, with causes, is to be found in the September 1936 issue of the International Association of Electrical Inspectors' News Bulletin.

Detail items of interest in our committee work include the following:

1. In the territories of several industrial commissions, due to the lack of funds to provide adequate inspection service in the different communities, bulletins have been resorted to in order to present the necessity of installing

electrical equipment by competent parties and in accordance with rules and regulations on safety. One such publication is Bulletin No. 1, issued by the Industrial Commission of Wisconsin, with which no doubt most of you are familiar. This bulletin has been forwarded to electrical contractors, members of the rural electrification cooperatives, and others interested in rural wiring. These rules have been elaborated in such a manner that the laymen can understand their provisions.

2. We have also received a report from one of the members of our committee as to the method of grounding transformers, which has been in effect for some time in several of the industrial plants owned by one company in his territory. While their practice conflicts apparently with the practice of some of the public utilities and rules of local boards, they have found by experience that their method is satisfactory both from a maintenance and safety standpoint. They provide a solid ground on one phase of the secondary of all transformers, and while the present code calls for grounding only up to 300 volts they ground up to 550 volts, and have been doing so for a number of years.

3. Another member of our committee reports on the cost of compensable accidents in his territory, as follows: "The electric public utility field shows the greatest hazard, both as to workers associated with electrical hazards and those not associated with them, having a grand total of approximately \$92,000. Electric railroads come second in the group, with a high figure for those directly associated with the hazard, and those not associated with the hazard, of approximately \$56,000 having been paid. This is followed in industry by compensation of approximately \$41,600 paid to persons injured that were not associated with the hazard. This is followed by electrical contractors with a total of \$33,000. I wish to call your attention to the amount paid by industry to persons not associated with the hazard as against those directly associated with such hazard."

Your committee requests your approval of its work and program and this report, and your suggestions for additional undertakings.

REPORT OF COMMITTEE ON SAFETY AND SAFETY CODES

By THOMAS P. KEARNS, *Chairman*

There is no report to be made on the activities of the committee itself as nothing has come up during the year for consideration or action of the committee, but we are pleased to submit a brief report on the status of code projects developed under the procedure of the American Standards Association for which the I. A. I. A. B. C. is sponsor and on which the association has representation on sectional committees.

Codes for Which I. A. I. A. B. C. is Sponsor

Definite progress has been made on the Code for Exhaust Systems. Subcommittees covering various industrial processes have been authorized by the section committee and are being organized to develop standards in their respective fields. The subcommittee on fundamentals has prepared a report that has been tentatively approved by the sectional committee, a draft of which is being prepared and will be printed for general distribution.

The National Advisory Committee on Toxic Dusts and Gases, appointed on recommendation of the sectional committee of the Exhaust Code project, has had one meeting and is preparing a bulletin covering the use of threshold limits of toxic dusts and gases in regulations and in industrial groups. As soon as additional information has been received from various subcommittees the advisory committee will establish threshold limits for toxic dusts and gases for use by the subcommittees.

During the past year substantial progress has also been made on standardization of methods for recording and compiling industrial accident statistics in reconciling differences of opinion which have been responsible in the past for

delay in completing this work. What is hoped will be the final draft of this standard is now out for letter ballot by the sectional committee. Mr. Wilcox, who is chairman of your committee, will no doubt present a full report to the association on this subject.

No revisions have been made and none is contemplated at present on the Code for Use, Care, and Protection of Abrasive Wheels, Mechanical Power Transmission Apparatus, Code for Rubber Machinery, Code for Woodworking plants.

Projects for Which I. A. I. A. B. C. Has Representation on the Section Committees

The last edition of the Building Exits Code was approved by the American Standards Association on March 12, 1935. The new edition covering minor changes and a new section on exits in hotels and apartment houses reported as being under development at the last meeting will be presented to the American Standards Association for approval in the near future.

Drafts of reports from three subcommittees on standards for safety in the construction industry on excavating, foundation work, blasting, compressed-air work, scaffolding, ladders, temporary guard rails and toeboards, floor openings, stairs, runways, ramps, life lines, safety belts, steel erection, and temporary floors have been prepared and plans for holding a meeting of the sectional committee at the National Safety Congress are under way. It is expected the committee will now proceed with the development of the code.

A revision of the code covering dumb waiters and escalators is out for letter ballot and should be submitted to the American Standards Association for approval this fall.

A revision of the Code for Mechanical Refrigeration is now under way. Subcommittees have been appointed to prepare new classifications for refrigerants and prepare a completely revised draft of the code for submission to the sectional committee.

A number of meetings of sectional committees on the Code for Compressed Air Machinery have been held, several drafts prepared, and the work has now reached its final stages.

A revision of the Code on Paper and Pulp Mills was developed and approved by the American Standards Association early in 1936 and copies sent to all regulatory bodies.

Progress is also reported on the work of revision and compiling of several other codes and standards which we have not included in this report, for the reason that as has been the custom in the past, Mr. Ainsworth, of the American Standards Association, will no doubt submit a complete report on the status of all codes under process of development, which will be made a part of the proceedings of this convention.

Industrial commissions, industrial employers, and industrial workers all have a vital interest in the many problems set down for discussion during this session, but almost invariably they deal with conditions following accidental injury or the development of an occupational disease, with no emphasis placed on the subject of prevention, which is, or should be, the ultimate objective of every compensation board.

Organized safety, the records clearly show, is winning a place in the sun. Last year, while accidents in other fields were rising, industry succeeded in bringing down its frequency rate. Obviously, there is only one reason for this condition. Safety effort in industry is bearing fruit.

While your chairman is not intimately familiar with the records of the several States, it is certain that they must all have made some contribution to the effort that forced industrial-accident frequency down in 1935 as com-

pared with 1934, despite a marked increase in both exposure and accident hazards due to abnormal conditions. But he is familiar with the situation in Ohio, where, during the 9-year period of 1926-34, for which employment figures are available, employment decreased only 17.5 percent while accident frequency decreased 30.2 percent. Considering only compensable cases, the reduction was even greater between the first and last years of the period, being 48.1 percent, or a reduction in accidents of 30.6 percent greater than the reduction in employment.

While these figures are gratifying as evidences of the rewards of safety, we must look behind the statistics for the abstract and greater gains. These are reflected in the phenomenal growth of safety spirit and safety consciousness that is evident on every hand, particularly in the industrial field.

On the whole, it is apparent that safety in the field of industry is steadily becoming recognized as a policy comparable in importance with that of production or marketing, and that it is destined to hold a place of permanency in all industrial ventures. The limits of its expansion are bounded only by the extent of the interest taken in it by accident boards, industrial associations, employers, and employees. We may expect no millenium in our generation, but the time will come when all preventable accidents will be controlled. The hastening of that time depends entirely upon the vigor with which the movement is sustained and the thoroughness with which industry is permeated with the spirit of safety consciousness through organized educational methods.

REPORT OF COMMITTEE ON REHABILITATION

MARK M. WALTER, *Chairman*

[Presented by H. L. Stanton]

To the seriously and permanently injured worker vocational rehabilitation is just as essential as workmen's compensation. Workmen's compensation provides physical restoration and relief from financial stress during the period of physical recovery and economic readjustment. Vocational rehabilitation plans direct and assist in the economic readjustment. Without such a compensation and rehabilitation service the workman who becomes crippled for life and is no longer able to follow the occupation in which he is experienced, and by which he has supported himself and family, inevitably becomes depressed in spirit and antagonistic to society. He often resorts to the makeshift of the shoestring peddler or the tin-cup mendicant.

The story is quite different when the right kind of compensation and vocational rehabilitation service awaits the unfortunate worker. He finds friends awaiting him who encourage him to take a fresh start, restore his physical condition, give him financial relief, guide him through a practical course of training for a vocation in which his disability will not prove a handicap, and help him to find suitable employment. From a nonproducer and a potential mendicant is evolved a happy, independent, self-supporting, and useful citizen.

To provide injured industrial workers with the satisfactory compensation and rehabilitation service, it is just as necessary to have a close and effective cooperation between the State compensation board or commission and the State rehabilitation department as it is to have cooperation between the injured worker and his attending physician.

As a member of your rehabilitation committee and as a representative of the United States Office of Vocational Rehabilitation, I am here to briefly discuss with you this subject of cooperation between industrial boards or commissions and State rehabilitation offices.

Your committee has made a study of the industrial-accident cases which were rehabilitated in the 45 States having a vocational rehabilitation service during the year of 1934-35.

I agree with the fellow who said that if all statisticians were laid end to end, what a wonderful thing that would be. But when you think of the few figures I shall give you as representing permanently disabled industrial workers who through compensation and rehabilitation service have had their earning power restored and are now self-supporting, I believe you will find these figures of real interest. Out of the 9,422 cases rehabilitated that year, one-fourth of them, or 2,350, were industrial-accident cases. Of this number, 1,734 were compensable, and 646, noncompensable. In other words three-fourths of these injured industrial workers received compensation.

One of the most significant facts discovered by your committee in this study was that only 900 or 38 percent of these injured industrial workers were reported to the State rehabilitation offices by the compensation commissions.

We believe that the number of cases reported by commissions to their respective rehabilitation offices is indicative of the extent of cooperation between these State departments. We found New York leading the States with 302 cases, or more than twice the number from any other State. This is due not merely to the large industrial population of New York State but naturally resulted from the very effective cooperative relations between the compensation commission and the rehabilitation office. By way of contrast, the records failed to show a single rehabilitated case reported by the compensation commission in one industrial midwestern State. Michigan followed New York with 142, then came Pennsylvania with 108, followed by California with 106. All of these States have excellent cooperative arrangements between the two offices. The records also indicated cooperation in Ohio, New Jersey, Virginia, Oregon, Minnesota, Wisconsin, Maryland, Connecticut, Maine, Massachusetts, North Carolina, and the District of Columbia. The records for the other 30 States with compensation commissions indicated ineffective working relations between these State departments. If there is any error in this statement, it is due to inaccurate records and reports, and we shall be glad to be corrected. In some of the States, mentioned as having cooperative relations, the records indicate that all of the injured industrial workers in need of rehabilitation service are not being brought to the attention of the rehabilitation department.

My observations lead me to believe that some commissioners have missed the true philosophy and spirit of workmen's compensation laws. If they fail to see their duty beyond the judicial function of determining whether a case is compensable and of making an award according to schedule, they fall short of their obligations to the injured worker and to society. Unless they perceive compensation as a phase of the injured worker's rehabilitation, a step in his economic reestablishment, they are lacking in vision and a full comprehension of their measure of responsibility.

It would seem that commissions would at least feel a responsibility of bringing cases in need of rehabilitation services to the attention of the government agencies established for rendering such a service. On the other hand, we must admit some State rehabilitation supervisors have fallen short in their failure to plan and aid in a mutual cooperative service to injured industrial workers.

In any State where an injured worker is not receiving constructive services, on a cooperative basis, from the two departments established for the purpose of preventing his becoming a charge on society, he has a just complaint against the rehabilitation department, or the compensation commission, or both.

We believe you will be interested in knowing something of the characteristics of these 2,400 injured industrial workers who were rehabilitated and something of the services rendered them.

1. Only 65 of them were females.
2. Only 27 were below 18 years of age.
3. 67 percent or more than two-thirds were between 18 and 40 years of age. They were in their most productive years, with many years of work expectancy ahead of them.
4. 2,036, or 85 percent, had less than a high-school education.
5. 73 percent had one or more dependents; 21 percent had four or more dependents.
6. 46 percent had amputations of some kind; 20 percent were amputations of upper limbs; 26 percent were amputations of lower limbs.
7. 30 percent had crippled limbs, that is other than by amputation, making a total of 76 percent with disabled limbs.
8. 7 percent had back injuries.
9. 1 percent head injuries.
10. 3 percent vision defects.
11. One-half of 1 percent cardiac cases.
12. One-half of 1 percent pulmonary tuberculosis.

I believe it will interest you to know something of the services rendered the disabled workers by the State rehabilitation departments.

827, or 35 percent, were retrained for new jobs or occupations.

211, or 9 percent, were aided with their living expenses during their training.

15 were given treatment or physical restoration.

589, or one-fourth of the cases, were provided with artificial appliances such as legs, arms, and braces. This latter service represents an expense of \$75,000, most of which, we believe, should have been borne by the industries. If industry robs a man of a natural limb, surely it should replace it with an artificial limb. In many States the law requires this. In the others we believe the acts should be amended to require it.

Of these 2,400 cases, 763, or about one-third, were returned to their former employers; 1,098, or nearly one-half, were placed with new employers; and 517, or 22 percent, were placed in business for themselves, usually financed with lump-sum settlements.

A new book has just come from the press which deals largely with lump-sum settlements. The title is Vocational Rehabilitation and Workmen's Compensation, by Dr. Carl Norcross, with an introduction by Dr. R. M. Little, director of the rehabilitation department for New York State, whom many of you know. Dr. Little spoke on lump-sum settlements at your Asheville meeting last year. This volume treats of such subjects as "Description of men receiving lump-sum settlements, physical condition of men following settlement, employment status following settlement, how lump sums are spent, and neurotic cases."

Returning to the study of rehabilitated cases, only 157, or less than 7 percent, were earning under \$10 a week when reported rehabilitated. Many of these were too severely handicapped to be returned to full-time, regular employment.

Half of them, or 1,602, were earning \$10 to \$25 a week, and 611, or more than one-fourth, were earning over \$25 a week.

In closing, let me urge you to cooperate to the fullest possible extent with your State rehabilitation department, to look beyond the payment of compensation to the vocational rehabilitation of each injured worker that he may again take his place in society as a self-supporting, self-respecting citizen.

We shall furnish each commissioner with a copy of this report. It is the purpose of the Federal Rehabilitation Office to bring to your attention, from time to time, significant information regarding the rehabilitation of industrial-accident cases and the relations of State commissions and rehabilitation departments.

DISCUSSION

Mr. COFFEY (Nebraska). The gentleman who just submitted a report said he would like to have comments. In Nebraska we have a very close and active cooperation between the compensation court, which administers the law, and the vocational rehabilitation division. Both activities are located in the capitol building, and when there is any suggestion of need of rehabilitation the department is contacted by the compensation court. I should like to have that report show that fact, inasmuch as it is going to be published.

Mr. STANTON (North Carolina). We are very glad to be corrected.

Dr. PATTON (New York). I have a copy of the volume the speaker referred to. It does have a larger amount of concrete information, based on actual experience, as to lump-sum settlements, compromise cases, cooperation between the compensation division on the one hand and the rehabilitation service on the other than anything else that to my knowledge has ever been presented.

I think the speaker will bear me out in the statement that similar studies on other features of cooperation between workmen's compensation and rehabilitation divisions should be carried out in other States.

Mr. STANTON. I just want to say that it is the purpose of the rehabilitation service of the Federal Government to make studies of that kind and make them available to all of the State divisions, and we will be glad to do that.

Mr. MARTIN (South Carolina). In discussing with Mr. Stanton this lack of rehabilitation cooperation I asked how more definite cooperation could be obtained. He made a very practical suggestion, that in all cases where the first report of injury was made out a copy should be sent to the rehabilitation officer of the State in which the accident occurred, giving him a definite check on all accidents in which it appeared that rehabilitation services would be needed. This might be brought about through a resolution of this association.

President BAKER. We are very glad to have these remarks. May I suggest with reference to the rest of the reports in order to be able to get them all in before noon, that we defer discussion.

If there is any one of these reports in particular that any of you would like to have discussed Wednesday afternoon at the question-box session, I wish you would make a note of it and place it in the question box.

REPORT OF THE MEDICAL COMMITTEE

By Dr. J. F. HASSIG, *Chairman*

The medical committee had an unusual opportunity afforded it during the year, inasmuch as a meeting was held in May, at the time of the eighty-seventh annual session of the American Medical Association in Kansas City, Mo. Due

to various reasons, not all the members of the committee were present at the meeting, but those who did attend favorably considered the recommendations of the executive committee of the association as to a medical program for Tuesday, and for a separate medical session on Wednesday.

On the theory that the medical profession plays a very important part in the matter of proper administration of the compensation laws, the medical profession for the first time in the history of this association is being given special recognition, and a separate medical program is to be conducted on Wednesday.

A special effort has been made to secure a good attendance on the part of the medical profession, and especially by those in this immediate vicinity who do a great deal of compensation work. The medical committee is of the opinion that the provision for a medical section in the convention program will be the means of bringing about special attention and consideration of the medical profession to the matter of adjusting their practice so as to be more helpful and more cooperative both to the injured party and to the administrators of the compensation law. It is believed that through the commingling of doctors here at the convention with the administrators of the compensation laws, the doctors may become better acquainted with the problems of the administrators and with those things desired by the administrators on the part of the medical profession to bring about greater efficiency and justice in the administration of the compensation law.

Your committee, therefore, urges that this association give special consideration to the results obtained through laying stress on the attendance of the medical profession by providing a place for it in the convention.

REPORT OF THE LEGISLATIVE COMMITTEE

By JOSEPH P. CRAUGH, *Chairman*

The committee on workmen's compensation legislation submits the following report:

At the last annual meeting of the association the legislative committee considered and reported its recommendations as to the drafting of an occupational-disease provision and suggested two types of laws which might serve as a guide to those States which have as yet failed to adopt suitable legislation for the inclusion of occupational diseases within the purview of the workmen's compensation law. A copy of this report was sent to the various States for their study and consideration. No further action was taken by the association which might be construed as being in the nature of instructions for the guidance of the committee during the year.

After considering various subjects that might serve as a basis for legislative enactment by the several States by way of remedying certain deficiencies in our present laws and strengthening certain provisions of our laws, which experience has proven to be vulnerable and ineffective in accomplishing the beneficent purposes of the law, it was the sense of the committee that the association should deliberate the advisability of recommending the enactment of appropriate legislation to assure to persons entitled thereto the payment of compensation provided for employments insured in insolvent stock and mutual carriers by the creation of special security funds.

The depression brought within its wake insolvency to a considerable number of stock and mutual insurance companies licensed to underwrite workmen's compensation risks throughout the United States. The havoc and misery

wrought by the collapse of these carriers are still fresh in the minds of those charged with the administration of workmen's compensation laws throughout the country. Thousands of injured workmen were denied compensation to which they were justly entitled and at a time when unemployment had reached its peak; delays in the litigation of cases involving the rehabilitator or the liquidator of the defunct insurance company were unavoidable in contrast with the customary expeditious disposition of such cases; awards that were proportioned to the proceeds salvaged in the liquidation of the insolvent company were pitifully incommensurate with the amounts justly due the disabled workman; employers were proceeded against directly in many instances to their great financial loss and even bankruptcy. The ruin and hardships which resulted from a contingency wholly unprovided for and which are wholly destructive of the essential purposes of the law should determine us all to safeguard against the recurrence of such a catastrophe in the future.

It is the sense of your committee, therefore, that the association recommend to the various State agencies the necessity of establishing special security funds to be created out of compulsory contributions to be made to the fund by stock and mutual insurance companies based upon a fixed percentage of the net written premiums as shown by the returns for the previous calendar year. Legislation to this effect should contain among other provisions the following:

1. Such funds shall be applicable to the payment of awards for compensation or death benefits heretofore or hereafter made and remaining unpaid, in whole or in part, by reason of the default of an insolvent stock or mutual carrier.

2. For the privilege of carrying on the business of workmen's compensation insurance in a given State, every stock or mutual carrier should be required to contribute to the fund a fixed percentage of its net written premiums for the previous calendar year.

3. When the aggregate amount of payments into such funds has reached a certain maximum figure to be determined according to particular circumstances in individual States, further payments should be suspended until such time as payments from the fund shall reduce it below the maximum amount fixed.

4. The fund should be administered by the State superintendent of insurance or similar officer charged with the supervision of insurance companies.

5. The fund thus created should be maintained separate and apart from any other fund and from all other State moneys, and the faith and credit of the State pledged for its safekeeping.

6. Payment of an award from the fund should not give the fund any right of recovery against the employer and any employer paying any award or part thereof in advance should be subrogated to the rights of the employee against such fund.

7. The claimant's remedy should be against the fund exclusively and the insured employer relieved of all liability for the payment of compensation.

8. The expense of administering the fund should be paid exclusively out of the special fund.

9. Provision for such security funds should supersede any existing legislation providing for a bond or undertaking to be furnished by a carrier conditioned upon the payment in full of any and all compensation to persons entitled thereto under any policy or contract of insurance.

Certainly we should profit by the bitter experience brought home to us by the depression. Other governmental agencies have been quick to adopt precautionary measures against the recurrence of similar calamities. Bank deposits are now insured against the insolvency of the bank by Federal legislation. The evils of unemployment are now being safeguarded against in 16 States by systems of unemployment compensation. Why should not claimants justly entitled to compensation be shielded against the future possibility of default by an insurance carrier? Now that we are on the high road to recovery, is this not the propitious time to recommend the enactment of suitable legislation to accomplish this salutary purpose?

Your committee urges that the association recommend to each commission faced with this contingency that such legislation be speedily enacted.

In the event the association acts favorably upon such a suggestion, the committee is prepared to forward a proposed model of such a legislative act which may be adjusted to particular circumstances in each State.

REPORT OF COMMITTEE ON ADMINISTRATION AND PROCEDURE

By VOYTA WRABETZ, *Chairman*

In considering the various matters pertaining to the administration of workmen's compensation laws, probably the most acute problem facing most commissions is the problem of adequately and properly administering the laws with insufficient funds to maintain efficient organizations. With an increasing number of controversial matters before commissions and boards, but with budgets remaining unchanged or even reduced, it should not be surprising that there may be impairment in workmen's compensation administration. Because of deficient financial support it has been necessary to curtail or forego activities in certain phases of administration in favor of others more important from the standpoint of minimum requirements.

While in spite of this handicap the quality of the services of commissions has remained relatively of high character, nevertheless, there is room for such improvement as should come from continuing experience. The situation is sufficiently critical to give all administrators concern as to better and more secure methods of adequately financing the work of workmen's compensation administration.

The methods of supporting compensation departments today are either by legislative appropriations or by income derived through assessments on those directly involved by self-determination processes. The first method in times of depression cannot wholly be depended upon because of the legislative urge for economies and reduced appropriations.

The second method when utilized without restriction is subject to serious criticism. The exercise by any administrative department of the right of self-determination as respects its financial income as well as respects its program and policies of operation and public relations, gives to such department the supervisory control which should be exercised by legislative action. Governmental agencies with such exclusive control will inevitably extend their functions and tend toward administrative detail which is relatively unimportant and exceedingly costly to the State.

Much, if not all, of this criticism might be eliminated if a fixed assessment were levied by the legislature upon all compensation carriers and all self-insured employers or if, through legislative rule, a plan of financial self-determination were made subject to confirmation by some properly constituted State financial agency. There should be no objection by administrators to present their requirements in full to such a State financial agency. The findings of such agency could be made automatically effective.

The question of adequately and reasonably supporting a workmen's compensation department is important, and with respect to which there may be difference of opinion as to the proper method of raising funds. At any rate, the time is ripe for advocating attention to the problems involved in the fiscal administration of our departments.

In the field of workmen's compensation insurance there are still quite a number of States which are referred to as "unregulated States." The term "unregulated" refers to the fact that the State has not provided for a work-

men's compensation rating and inspection bureau to supervise the underwriting practices, the pay-roll audit practices, and the premium collections of commercial carriers of workmen's compensation liabilities. Without standardization in these fields of workmen's compensation insurance activities there can be no uniformity, and lacking uniformity, under pressure of competition, unfair and discriminatory practices are generally more or less rampant throughout the unregulated State.

State supervision over so-called pure premium rates is by itself quite ineffective. There is no assurance that the pure premium rate which has been actuarially determined will really be the effective rate where insurance companies compete with one another in extending coverage to employers under individual company practices, which oftentimes mean misclassification of risks to extend a lower premium rate; or incorrect audits of pay rolls in order to impress the employer that he is not being charged in full as might be the case if he were insured with another carrier. The application of merit rating (particularly schedule rating) also presents many possibilities for illegitimate underwriting practices.

It seems desirable, therefore, that this association endorse legislation providing for workmen's compensation rating and inspection bureaus in States where such bureaus are in fact sorely needed at this time.

Further, in the field of insurance, to aid in the administration of the law so far as assurance of coverage is concerned, provision should be made in every State law so that all employers whose risk is in such shape that they are *in good faith* entitled to insurance coverage will be able to procure compensation insurance. Such good faith should, of course, mean that premiums must be paid and that reasonable safety measures are adopted and used both in the physical set-up of the industry and in practices of its operations. Attempts have been made by voluntary agreements on the part of insurance carriers to cover employers who had been unable to procure insurance through regular channels. This procedure is usually found to be wholly inadequate because some of the carriers were unwilling to take their share of the risks. Therefore, provision should be made for establishment of a "pool" to be supervised by a compensation rating and inspection bureau. All insurance carriers should by law be required to be members of this bureau. If such an employer cannot otherwise procure insurance, the pool should be compelled to afford coverage.

Unregulated cancelation or termination of insurance coverage is found to be a handicap in the administration of workmen's compensation laws which compel insurance coverage. To aid in this phase of administration and to accomplish greater assurance of such coverage, the law should provide for continuous insurance coverage by a company which has accepted a risk until notice has been given of cancelation or termination and a sufficient period (about 30 days) has elapsed to enable the employer to provide other coverage. Frequently employers have had no notice of the fact that a company did not intend to renew, and in some cases have been unable to procure other coverage for some period in so short a time, even though the employer stood ready to take insurance and to make payment for it.

Our attention has been called to rather serious complaints of the inaction or indifference of some State commissions in protecting workers against attorney's exorbitant charges. One of the principal reasons for the enactment of workmen's compensation laws was to secure prompt and certain benefits without intervening high costs of collection. In the administration of the law each board or commission should have the power, in its discretion, to fix attorney's fees with, perhaps, a maximum limitation which may be charged without exercise of this discretion. This control would afford full opportunity to review the facts as to the necessity for the services of an attorney and as to the extent and character

of services performed and to approve a fee on a commensurate basis. Administratively, the fixing of arbitrary fees seems undesirable in view of the wide variation as to the necessity for the services of an attorney and the type and extent of services performed.

There is a wide field in which this committee on administration might study and report on in the future. For instance, State agencies administering workmen's compensation acts might give some consideration to checking up on self-insured employers. While less than 1 percent of all employers subject to the law are self-insurers, it is estimated that about 30 percent of all employees subject to the law are employees of self-insurers.

With this rather large coverage, many questions arise. Are self-insured employers actually complying with the Workmen's Compensation Act? Are there any who resort to the settlement of claims as a private matter without reporting same to the industrial commission? To what extent is the experience of self-insurers to be collected and compiled for purposes of testing the efficacy of self-insurance in reducing workmen's compensation losses? How is the employer's attitude towards safety influenced by direct responsibility for compensation costs under self-insurance? Have self-insured employers undertaken medical examinations for employees on any restrictive basis, such as may be unreasonable and discriminatory to labor, and so forth?

Having in mind that approximately one-third of all employees subject to the Workmen's Compensation Act are employees of self-insurers, one might suppose that administrative agencies would have made careful studies of how self-insured employers have carried their obligations and responsibilities under the workmen's compensation law of their State. Practically no information regarding self-insurers as a class of employers is available under the records of the administering agencies in any State. In general, the conditions under which employers are permitted to self-insure workmen's compensation liabilities are poorly defined.

Some statement should be made available to employers to indicate the conditions under which it may be good business to self-insure as opposed to the conditions under which it is imprudent to assume the obligations of a self-insurer. A short treatise on the general subject should give the employer the principles which should guide him in deciding for himself whether self-insurance is desirable in his case, irrespective of the question of whether he can qualify for the privilege to self-insurance.

Further study might be directed to rules and regulations of practice and procedure before industrial accident boards and commissions. Such information as is available shows that relatively few States have any published rules. It is true that much of the practice is specifically set forth in the compensation laws; nevertheless, it would be of value to promulgate certain fundamental rules or guides to expedite the administration of compensation laws.

There are many important topics to which the committee on administration and procedure might give consideration which would be of much value to the members of this association. We therefore recommend the continuance of the committee for the study of such problems as may be deemed by it to be most urgent.

REPORT OF COMMITTEE ON UNINSURED RISK PROBLEM

By J. DEWEY DORSETT, *Chairman*

At the Asheville meeting last year Commissioner Wise of the State of Michigan made the following motion: "I move that the president be empowered to

appoint a committee, the size to be left to the discretion of the president, to study the question of universal compulsory coverage of all risks." The motion was adopted. President Baker appointed the committee, and that committee now begs leave to make the following report of its study, together with certain recommendations concerning the problem.

The States of Nevada, North Dakota, Ohio, Oregon, Washington, West Virginia, and Wyoming are monopolistic State fund jurisdictions, and of course the administrators of compensation laws in those States do not have the problem of uninsured risks. Arkansas and Mississippi have no workmen's compensation laws. Now as to the remaining States, we find that in 21 of them there is either a voluntary plan in effect or State legislation covering the subject. Incidentally it might be said that neither the legislation nor the voluntary plans in those States are perfect by any means. In 18 States there does not appear to be any form of guaranty of coverage to employers subject to the compensation laws.

The arbitrary cancelation of compensation-insurance policies and the inability of employers to procure promptly other coverage have become most embarrassing to both administrators of compensation laws and employers subject to the provisions of those laws. It is not too much to say that the situation threatens to destroy confidence in workmen's compensation legislation. Insurance carriers undoubtedly believe that through the science of underwriting they have met their responsibility, but have they? Their consistent retreat from risks that are not in themselves most favorable is sufficient proof that the carriers have not met their responsibility. Either their practice in this respect is a product of the greed that would "eat its cake and have it, too" or the public is paying for an underwriting service that is inefficient.

Those of us who stand to defend the American system of individual enterprise and private capitalism will not shut our eyes to the perils of its perpetuation that come from within the unregenerated ranks. These constitute a menace to the preservation of private management. Unless the insurance companies in their own name and right and by the weapons of their own self-government are able to force the individual units to respond to the social necessity of these days, such a failure obviously will become an open invitation to the State to step in and do in the name of the public welfare that which the carriers, privately controlled and managed, prove themselves unable to achieve. Compensation acts, by taking away the common-law defenses of employers if the employers fail to operate their businesses subject to the provisions of these laws, are compulsory to all intents and purposes. Employers everywhere subject to the provisions of these laws ought to be able on short notice, if they have the money to pay the premium, to procure the coverage. "Red-tape", technicalities, and long drawn-out arguments between bureaus enforcing coverage plans and insurance companies writing compensation coverage should no longer be tolerated, because too much is at stake from the standpoint of the public interest to allow this practice of private control to run amuck. We have come into a day in our economic evolution when some measure of social control will be inevitable if private control, either by its method and machinery or by lack of social conscience, is unable to operate in the public interest. We are attaching to this report a letter from the National Council on Compensation Insurance with reference to the resolution that was adopted at the Asheville meeting concerning this problem. In this letter we find this language:

"We have been very much interested in the resolution that was adopted at the Asheville meeting of the International Association of Industrial Accident Boards and Commissions. We can fully appreciate the thoughts underlying the resolu-

tion, but we believe that the goal intended for attainment, through universal compulsory coverage of all risks by legislation, can be reached by a more cooperative method, which, in the long run, will be more satisfactory to all concerned."

Your committee, in view of the above quotation and in closing our report, recommend that this association call upon compensation insurance carriers everywhere to meet the problem voluntarily and report through their agents to our 1937 convention the progress that has been made. Your committee has drawn the proper resolution to take care of this situation.

Be it resolved:

First, That the report of the committee on the uninsured risk problem be, and the same is hereby, adopted as expressing the sense of this convention, and

Second, That through the National Council on Compensation Insurance the compensation insurance carriers be requested to submit to the 1937 convention of this association for the association's careful consideration [there is not any legislation in there] such plan as the compensation insurance carriers shall have unanimously agreed upon for guaranteeing to all employers willing to pay the premium adequate and prompt compensation coverage, and

Third, That the president of this association appoint a special legislative committee to draft a universal compensation coverage bill to be presented to the 1937 convention of this association for its consideration and recommendation to the several States in the event the insurance carriers should fail to submit a coverage plan meeting the need of a guarantee of coverage for all employers subject to the compensation laws.

I move the adoption of that resolution.

[After some discussion it was agreed to hold this motion over until the afternoon.]

NATIONAL COUNCIL ON COMPENSATION INSURANCE,
45 EAST SEVENTEENTH STREET, NEW YORK, N. Y.,
September 8, 1936.

Re uninsured-risk problem.

Mr. J. DEWEY DORSETT,

Chairman, North Carolina Industrial Commission, Raleigh, N. C.

DEAR SIR: Mr. Roeber has referred your letter of August 31 to me, and has requested me to give you any information which may be of assistance to you in connection with the general uninsured-risk problem.

We have been very much interested in the resolution that was adopted at the Asheville meeting of the International Association of Industrial Accident Boards and Commissions. We can fully appreciate the thoughts underlying the resolution, but we believe that the goal intended for attainment, through universal compulsory coverage of all risks by legislation, can be reached by a more cooperative method, which, in the long run, will be more satisfactory to all concerned.

It has always been the feeling of the National Council and its member companies that no risk can be considered uninsurable. There may be decidedly unsatisfactory and extraordinarily hazardous conditions obtaining in connection with a particular risk, but with appropriate accident preventive activities, and with appropriate rates that risk may be made sufficiently attractive to make its coverage a matter of reasonable simplicity.

Of course, the general level of rates in a particular State may be inadequate to a point where the carriers feel it necessary to carefully select the risks which they may cover. It is hardly fair, either to the carrier or to the public, in the long run, to require the coverage of all business unconditionally where this rate inadequacy exists. If, on the other hand, rates in general are adequate, there are generally but very few risks that the carriers are not willing to accept as direct business.

Then, too, there are risks which are not in good faith entitled to insurance. Failure to pay premium; deliberate refusals to cooperate with a view to accident prevention, and other similar points frequently make a risk unattractive, and we believe that you will agree that it would be hardly fair to force the carriers to take risks of this kind by legislation or otherwise.

In the last 2 years the carriers have recognized the fact that in many States there are employers who for various reasons find it difficult to obtain coverage. In order to correct this condition, they developed what we term voluntary plans, under which such risks are brought for specific assignment for coverage. Wherever the situation is called to our attention we immediately take steps to introduce this voluntary plan, and from then on no employer who is in good faith entitled to coverage need be without insurance.

I am attaching an exhibit of the various States with columns to indicate where voluntary plans are in effect, and by whom they are administered. I have also shown the effective date in each case, and I have shown in the column on the extreme right the total number of risks which have been assigned to the carriers for coverage since the respective plans have been inaugurated. There are a few States where special procedures are in effect, but for the most part standard voluntary plans adopted by the governing committee of the National Council and subscribed to by all carriers operating in the various States are the ones used.

It is interesting to note that in some of the States where the problem was considered acute there has been little use for the plan since it was inaugurated. Nevertheless the fact remains that the plan is available for any case that may arise.

It would be our thought that rather than introduce legislation or to take other steps towards compulsory coverage a further extension of the voluntary plans in States experiencing trouble might well be considered. The council and its members will be only too glad to do all they possibly can to assist any State in connection with this problem. If the supervising authorities in any State where there is not now a plan feel that it is necessary and desirable to introduce a method for granting coverage to uninsured risks, they can readily get in touch with us, and we will be only too glad to discuss the matter with them, and take such steps as may be necessary.

I trust that I have given you all of the information that you desire, but if there is anything else that you need, please do not hesitate to again get in touch with us.

Yours very truly,

G. V. FULLER, *Secretary.*

Status of voluntary plans in United States as of Sept. 1, 1936

State	Voluntary plan in effect	Administered by	Plan effective	Risks assigned to date
Connecticut.....	Standard.....	National Council.....	Mar. 1935	
Delaware.....	do.....	Pennsylvania Bureau.....	Pending.....	55
District of Columbia.....	do.....	National Council.....	July 1935	3
Florida.....	do.....	do.....	Nov. 1935	20
Georgia.....	do.....	Southeastern Bureau.....	Apr. 1935	65
Illinois.....	Special.....	Local administrative commission.....		
Indiana.....	Standard.....	National Council.....	July 1935	19
Iowa.....	do.....	do.....	do.....	
Kansas.....	do.....	do.....	do.....	
Minnesota.....	Special.....	Minnesota Bureau.....	Apr. 1934	299
Missouri.....	Standard.....	National Council.....	July 1929	(1)
Nebraska.....	do.....	do.....	Dec. 1934	12
New Jersey.....	Special.....	New Jersey Bureau.....	May 1935	1
New York.....	State fund.....	May not decline risk.....	Apr. 1932	(1)
North Carolina.....	Standard.....	North Carolina Bureau.....	May 1935	(1)
Oklahoma.....	State fund.....	May not decline risk.....		
Rhode Island.....	Standard.....	National Council.....		
South Carolina.....	do.....	do.....	Nov. 1935	
Vermont.....	do.....	do.....	Mar. 1933	5
Virginia.....	do.....	do.....	Dec. 1930	6
Wisconsin.....	do.....	Virginia Rating Board.....	July 1935	(1)
	Special.....	Wisconsin Bureau.....	Oct. 1934	(1)

¹ Number unknown, as administered by independent bureaus.

REPORT OF THE SECRETARY-TREASURER

By VERNE A. ZIMMER

Most of our large corporations have in fact or in prospect an annual occasion known as the dividend period. Likewise, in this wholly noncommercial organization we have a yearly date on which our stockholders can write their own

checks in the form of benefits to themselves, to their States, and particularly to the vast number of persons who come before them for adjustment of injury claims under workmen's compensation laws. The amount of dividends we collect at these meetings depends pretty much upon ourselves, upon the interest and application we tender the sessions and subject matters. Certainly the opportunity to draw from the experience here pooled is not one to be lightly passed up. Compensation administration is not only one of the most important of State functions, but it is also one of the most complex and difficult. I am fully convinced that the compensation official who finds his task easy and who is complacent and unworried in carrying out his work is either lacking in a proper sense of responsibility or has become crystallized through years of routine.

The fact that after 23 years this organization shows no lessening of membership nor abatement of interest in exploring and reexploring the problems constantly encountered speaks well for the caliber of many of our accident boards and commissions. The attendance and interest shown in this meeting at Topeka is an indication that the members of this association have a serious regard for their important work and are bent upon improving their own technique of administration and bettering the compensation laws generally.

On the score of membership, we now have 33 active members and 18 associate members. I am glad to direct your attention to the fact that three States have come into the organization this year—Rhode Island, Delaware, and Michigan. As some of you are aware, Delaware was formerly a member but withdrew several years ago. On the other hand I inform you with regret that two of our members have withdrawn—the Washington Department of Labor and Industries and the New Brunswick Workmen's Compensation Board, the former for budgetary reasons and the latter for reasons not stated in the communication to me. In addition to regular membership the new State insurance fund of Puerto Rico has become an associate member, and there are a few applications pending for consideration by the executive committee. There is appended to this report a complete list of the membership as of this date.

In respect to finances, the report prepared for distribution will indicate that we are substantially better off than last year, with even a larger cash balance on hand. Dues are paid up for the year by all except 2 members, and their payments are in process, I believe. I find myself in agreement with a thought expressed by President Dorsett at Asheville last year to the effect that there is no good reason why we should build up a large surplus in the treasury. It seems to me that we might well spend our income fully, and perhaps even reduce our surplus, to give added service to our members. While this is obviously a matter of policy within the discretion of the executive committee, I am sure the committee will welcome constructive suggestions as to how and in what direction service can be further extended. President Baker in his address has pointed the way in some particulars. He has suggested a complete index of the subjects or topics discussed at these annual meetings during the past 2 years. It is true that each annual report contains an individual index but busy administrators are aware of the impracticability of looking through 20 or more of these proceedings in order to find the desired information on a particular subject. In looking over the old volumes of past reports I have been astounded by the wide range of the discussions covered and impressed by the practical and illuminating way in which the topics have been handled. The fact that discussions are for the most part by persons actually engaged in compensation administration rather than by academicians makes them, in my opinion, of much greater interest and usefulness to compensation executives.

Then, too, at the special meeting of the executive committee there was discussed the advisability of binding in one or two volumes the reports of the last 9 years. Unfortunately, when we set about this job we found it impossible to collect more than 30 copies of the 1933 proceedings. The Government Printing Office supply was entirely exhausted and from here and there we have been able to collect up to now only 30 copies. This number is still too small to permit of full distribution to the members. However, if no further copies are available, we shall proceed to bind the reports and distribute so far as we are able.

Early last year I suggested to President Baker that I might prepare a pamphlet outlining the history, purpose, and work of the organization for distribution in those States and Provinces not now represented in our membership. On going further into the matter, however, it occurred to me that a booklet worthy of this organization might cost more than I would feel justified in spending without the sanction of the executive committee. I shall discuss the proposition in more detail with the committee at this meeting.

At the Asheville meeting I indicated that we would make every effort to get out our annual report within 3 months' time. As you are aware, we failed to do so. It was simply impossible to get the job done because of the tremendous demands upon the Government Printing Office. We did, however, succeed in improving by 2 or 3 months the previous distribution date, and I am hopeful that it will be possible to do better this year. I might mention here that we had an extraordinary demand for the Asheville proceedings, and apparently this was due to the emphasis placed upon the absorbing topic of occupational diseases—particularly silicosis. As a matter of fact, immediately following the Asheville convention we distributed upon urgent requests a very considerable number of the prepared papers, thus in part offsetting the inconvenience of tardy publication of the complete report.

I have one other major suggestion in the way of improving our work and service. I feel that we are not getting the best possible results from the work of the standing committees. Primarily this is due to two factors. The committee members are busy administrators with plenty to do and with little time to spare on extra official duties. The other reason, of course, is the practical one of not being able to meet in conference to discuss pertinent subjects and evolve specific recommendations. It is not easy to overcome either of these handicaps. I think it possible, however, for my own division to be of more direct service to the committees than heretofore. I mean by this that my office is in better position to supply requested data and information to the several committees if and when the committees so request.

The president has indicated that this year we revived the original plan of getting the executive committee together in midyear to discuss policies and the program. Unquestionably there is great advantage to the organization in this procedure and there appears no reason from the financial standpoint why the plan cannot be continued.

Active members

Arizona Industrial Commission.
 California Department of Industrial Relations.
 Connecticut Board of Compensation Commissioners.
 Delaware Industrial Accident Board.
 Florida Industrial Commission.
 Georgia Department of Industrial Relations.
 Idaho Industrial Accident Board.
 Illinois Industrial Commission.
 Indiana Industrial Board.

Iowa Workmen's Compensation Service.
 Kansas Commission of Labor and Industry.
 Maine Industrial Accident Commission.
 Maryland State Industrial Accident Commission.
 Massachusetts Department of Industrial Accidents.
 Michigan Commission of Labor and Industry.
 Minnesota Industrial Commission.
 Missouri Workmen's Compensation Commission.
 Nevada Industrial Commission.
 New Jersey Department of Labor.
 New York Department of Labor.
 North Carolina Industrial Commission.
 North Dakota Workmen's Compensation Bureau.
 Ohio Industrial Commission.
 Oregon State Industrial Accident Commission.
 Pennsylvania Department of Labor and Industry.
 Rhode Island Department of Labor.
 South Carolina Industrial Commission.
 Utah Industrial Commission and the State Insurance Fund.
 Virginia Department of Workmen's Compensation, Industrial Commission.
 West Virginia Workmen's Compensation Department.
 Wisconsin Industrial Commission.
 Wyoming Workmen's Compensation Department.
 Department of Labor of Canada.
 Nova Scotia Workmen's Compensation Board.
 Ontario Workmen's Compensation Board.
 United States Division of Labor Standards.
 United States Bureau of Labor Statistics.
 United States Employees' Compensation Commission.

Associate members

American Mutual Alliance, Chicago, Ill.
 American Mutual Liability Insurance Co., Boston, Mass.
 W. F. Ames, Bethlehem Steel Co., Bethlehem, Pa.
 Association of Casualty and Surety Executives, New York, N. Y.
 R. M. Crater, American Telephone and Telegraph Co., New York, N. Y.
 Walter F. Dodd, 30 North La Salle Street, Chicago, Ill.
 Richard Fondiller, consulting actuary, 90 John Street, New York, N. Y.
 E. I. duPont de Nemours & Co., Wilmington, Del.
 Arthur Gaboury, general manager, Quebec Association for Prevention of
 Industrial Accidents, Montreal, Canada.
 Industrial Accident Prevention Association, Toronto, Ontario, Canada.
 R. G. Knutson, Hardware Mutual Casualty Co., Stevens Point, Wis.
 Lelfur Magnusson, American Representative, International Labor Office,
 Washington, D. C.
 National Council on Compensation Insurance, New York, N. Y.
 Pennsylvania Self-Insurers' Association, Philadelphia, Pa.
 Puerto Rico Industrial Commission, San Juan, P. R.
 Puerto Rico State Insurance Fund, San Juan, P. R.
 William Schobinger, London Guarantee and Accident Co., New York, N. Y.
 E. E. Watson, consulting actuary, Columbus, Ohio.

President BAKER. We do not have a report from the committee on forms, but I have this letter from Hal M. Stanley, chairman of the committee:

The committee on forms has no report to make at this session. After a conference with a number of the members, the National Council, and others interested, it was decided that it is impractical to attempt at this time the adoption of any additional forms. Last year the association approved certain changes in the final settlement receipt, and the attention of the members has been called to these changes. A study of the forms indicates that no additional forms can be agreed upon at this time. Perhaps the next committee on forms can devise some new form which will prove to be acceptable to the various jurisdictions. In the meantime the only work apparently possible is

that of undertaking to induce the jurisdictions which have not accepted the five uniform forms to do so.

With assurances of my highest esteem to all of the members, and trusting that the session at Topeka will be a pleasant and profitable one, I am,

Very truly yours,

HAL M. STANLEY.

I believe that covers all the committee reports. The question of acceptance of these reports has been raised. If it is agreeable with the convention, the Chair will rule that all the committee reports, except the one with reference to which there was a motion made and which has been laid over until the discussion this afternoon, be accepted and ordered filed as a part of the proceedings of the convention.

Mr. WILCOX (Washington, D. C.). I was wondering about the adoption of the reports. Accepting them does not indicate what action has been taken on them, but it would seem desirable that every report should have the same status, in the sense of being accepted.

Mr. DAWSON (Washington, D. C.). All that I meant by my question was this: The allocation of bad risks is a different thing from universal compulsory coverage, and it seems to me that this paper was talking about that.

President BAKER. The papers will be considered accepted.

Mr. BROENING (Maryland). I move that the reports be accepted and made a part of the official records of the convention.

[The motion was seconded and carried.]

President Baker announced the appointment of the following convention committees:

Nominating committee

F. W. Armstrong, Nova Scotia, chairman.
 Thomas M. Gregory, Ohio.
 Wendell C. Heaton, Florida.
 O. F. McShane, Utah.
 Frank Langley, Idaho.

Auditing committee

E. B. Patton, New York, chairman.
 Albert G. Mathews, West Virginia.
 Sidney W. Wilcox, Washington, D. C.
 Colman C. Martin, South Carolina.
 L. Metcalfe Walling, Rhode Island.

Resolutions committee

William F. Broening, Maryland, chairman.
 Edgar C. Nelson, Missouri.
 William H. Wise, Michigan.
 W. H. Nickels, Jr., Virginia.
 N. C. Joy, Oregon.

September 21—Afternoon Session

J. Dewey Dorsett, Chairman, Industrial Commission of North Carolina, Presiding

Mr. DORSETT (North Carolina). Our first topic is problems of a new commission. I happen to know that the gentleman who will discuss this topic knows all about the problems of a new commission, and I also know that he has successfully met most of them. We will be glad to hear now from John H. Dukes, chairman of the Industrial Commission of the State of South Carolina. Mr. Dukes:

Problems of a New Commission

By JOHN H. DUKES, *Chairman, South Carolina Industrial Commission.*

The organizing of the commission was one of the greatest problems faced at its beginning. On July 17, 1935, the present members of the South Carolina Industrial Commission were appointed by the Governor. The act provided that the effective date of the commission's jurisdiction should be September 1, 1935, which allowed us only 6 weeks to put into operation the machinery of our law. As the saying goes, we "started from scratch" and were confronted with the usual problems such as the selection of employees, adoption of the system to be used, and the placing of employees into positions that they were best qualified to fill.

Organization being completed, it was necessary to turn to the matter of educating employers and employees in the State. In this connection, of primary importance was the problem of instruction of employers in the proper manner of making and submitting reports. We have had the cooperation of the insurance carrier in this matter, and where an employer had in effect compensation coverage this problem was largely solved by the insurance carrier. However, a few companies operating through local representatives were unable to cooperate, and means had to be devised to cope with this situation. With those self-insurers who had already operated in compensation States we experienced little difficulty, but those without any experience presented a different problem. These parties with accumulated experience now understand the proper procedure, and things appear to be running smoothly enough.

Naturally there were some people who did not understand the law and mistook it for something else. I remember receiving a letter from a schoolteacher who said she had been unable to teach for a period of 15 years and stated that she was entitled to a pension. While the law clearly states that the compensation act is not retroactive, several employees were under the impression that they were entitled to compensation for injuries received several years before the law went into effect. Some of our citizens thought the law created a commission to solve labor disturbances while others thought it an organization to distribute old-age pension funds.

I hold in my hand a bulletin containing information about the South Carolina workmen's compensation law, which is sent with all letters of denial of liability to the injured employee. This bulletin is designed to give information to an employee as to his rights in a practical way, that he can understand his rights under the law. For instance, it explains what to do when injured, circumstances under which an employee is entitled to compensation, different types of disability, and of the provisions of the act relating to a proper claim for hernia.

Another problem that faced our newly created commission was the arrangement of hearings in an economical manner and at the same time insuring that they would be as convenient as possible to parties concerned. It was necessary to educate the parties as to the necessity and importance of holding hearings as scheduled. A number of requests for postponement of hearings were and are still being received. These requests, of course, are not granted unless there is a justifiable reason.

Our State, being one of the last to adopt a compensation act, is grounded on common law. We have experienced some difficulty, therefore, in substituting for the common law the Workmen's Compensation Act. That has been one of our greatest problems.

Every State has its damage-suit-minded contingent of citizens and it is this small class that has proven difficult to deal with. In several instances we have been informed by individuals in this group that they had refused to accept compensation because nothing has been offered for "pain and suffering." Others, due to the infancy of the set-up, being confused as to our place in the picture, have threatened us with vengeance from a lawyer. One party who was injured in our State but who removed himself beyond, after dismissal by the doctor, in reply to our notification that his compensation was terminated under certain conditions, advised that he was going to see a New York lawyer.

An employee complained to us that the attending physician had erroneously diagnosed his arm as broken when he "knew well and good it wasn't", and that because he was declared disabled he had been deprived of his right to earn his full wages. We were asked by this party to advise what he could do with the doctor for declaring his arm broken when he could hoe around the garden "just like he used to."

People of this type are fortunately few, but they present a problem to the newly formed compensation commission. Their differences with the insurance carrier often concern not the Workmen's Compensation Act but the problem of helping them to forget the common law.

This confusion of the common law with the Workmen's Compensation Act has not been confined to the layman alone. In several instances, attorneys have instituted suits at common law where the matter has been one of the commission's jurisdiction. Such suits have been nonsuited or dismissed, and the matter ultimately submitted us for determination.

Knowing little of the reports necessary for the employer to file when reporting and handling an injury, many lawyers have insisted upon supervising signing of the agreement for compensation by the employee when their services were unnecessary. Fee for the attorney

in such cases—the commission has to take into consideration the necessity of such services, and it appears that such supervision was useless—a fee in keeping with the commission's decision is to be approved.

Our commission feels that in numerous cases the services of the attorney were essential, and is pleased on such occasions to have them cooperate with us; however, it has been observed that in some cases the presence of the attorney was unnecessary.

The matter of educating the people to the point of understanding when the services of an attorney are required will be accomplished through a more thorough understanding of the act. Our commission has found employees for the most part cooperative and understanding of the medical provisions of the act. However, there are some who do not understand the law in this respect and have failed to avail themselves of the medical treatment provided, either by refusing to accept medical attention or by going to their family physician. Under our act the employer *must* provide medical care, and it is incumbent upon the employee that he accept it or have justifiable reasons for not doing so. To a great extent this problem has been eliminated, and we find that the parties are now cooperating favorably in this matter. (We have had more trouble with getting the employees to understand the medical provisions of our act. A lot of them want to get their own doctors, whereas our act provides that the employer furnish the doctor.)

Our act provides that the commission pass upon fees submitted by physicians and attorneys for their services in connection with compensation cases.

We have experienced some difficulty with certain members of the medical profession who, unfamiliar with the act, balked at the idea of the commission setting their fees. Our act provides, as do numerous ones, that the pecuniary liability of the employer for medical, surgical, hospital service, or other treatment required shall be limited to such charges as prevail in the same community for similar treatment of injured persons of a like standard of living when such treatment is paid for by the injured person.

Physicians have been unable to differentiate between the ability of employees to pay, and when it was found necessary to reduce a bill that the provisions of the act would be met, strenuous objections have been raised.

Our commission has been fortunate, however, in having the cooperation and advice of the South Carolina Medical Association. As a guide in passing upon proper fees this association has submitted a schedule of fees which has proved most helpful. In this connection, since the association requested the commission not to adopt and distribute this schedule as an official one, some misunderstanding arose with those members of the profession that requested the commission to supply them with a copy of this schedule. At the present time the commission does not operate under a free schedule. At the inception of the act we received some complaints from both hospitals and physicians, when their bills were reduced, that they did not know that the patient was subject to the commission's jurisdiction, and that if they had known they would have, of course, rendered bills in keeping with the provisions of the law. Through experience this problem has largely been settled.

On the whole, the commission's experience with the medical profession has been a very pleasant one, and only in isolated instances has friction developed.

In enforcing the provisions of the act, the commission has had to contend with political interference in more or less a mild form. Certain parties upon being thwarted in their designs have threatened to exert political influence to remove the obstacles. One of a professional class, when he failed to collect a fee in the amount which he submitted, assured us that his profession was up in arms on the subject and would fight the act to the last ditch if the commission had the power to fix fees. His attitude apparently was not shared by his profession as a whole, inasmuch as we have not to date seen any indication of concerted action in this respect. We feel that our differences with this particular party grew out of his unfamiliarity with the act.

There is no provision in our law which provides that the employer or carrier shall pay the fees of the claimant's attorney when, as a result of a hearing, an award is granted the employee. However, we were assured by a member of the legal profession who had a certain amount of political prestige that it was the contention of the act that such fees be paid by the carrier. When he was informed that the commission did not interpret the act to provide for these fees, besides appealing the matter from the decision of the one hearing commissioner to the full commission, in order that he could ultimately reach the courts, he intimated that the law would be amended in that respect. This party did not appear at the full commission hearing and it appears that he will not contest the matter further.

Recently, while one of the commissioners had under consideration a case for purposely issuing an award, a letter was received from one of more or less political significance urging him in a diplomatic manner to issue an award in favor of a particular claimant. This communication we felt came not from a desire to interfere but to demonstrate to the particular claimant that the gentleman in question was willing to exert himself in the claimant's behalf at all times.

Our compensation act provides for safety activities on the part of the commission, and this matter besides being one which we regard as an obligation to the employees and employers of the State, has developed into a hobby with the commission. It is our desire that our safety department become as efficient as possible in the administration of those provisions of the act which relate to safety. Through a fortunate selection of parties for the carrying on of this work the commission has made rapid progress. Results which have been obtained through the cooperation of both employee and employer have been very gratifying.

Numerous petty matters have arisen at various times to worry the commission, but that is to be expected. From our brief and happy experience we know that there will always be questions arising, for which we will have to exert thought and effort to settle. That is a part of the game and makes our work interesting and worthwhile.

I think the most important problem that faces a new commission is the matter of getting money to operate. I know that is the trouble we had our first year, to convince the legislature that, you cannot limit service.

Mr. DORSETT. I do not believe that the matter of getting money to operate with is necessarily confined to new commissions, because I do not consider ours new, and we still have that in North Carolina.

The next paper on the program for the afternoon is Compensation Jurisdiction on Federal Projects. That topic is to be discussed by Frank Langley, chairman of the Industrial Accident Board of the State of Idaho. Mr. Langley—

Application of the Workmen's Compensation Laws of the Various States to Private Employment on Property or Territory Belonging to the Government of the United States but Located Within the Exterior Boundaries of the Respective States

By FRANK LANGLEY, Chairman, Industrial Accident Board of Idaho

Until quite recently it has been presumed that the workmen's compensation laws of the respective States apply to all private employment not specifically excepted from the operation of the law, regardless of whether or not the work being done is on property or territory belonging to the Government of the United States but located within the exterior boundaries of one of the States. This general understanding of the law was changed by a decision of the United States Supreme Court on February 4, 1936, in the case of *Murray v. Gerrick & Co. et al.*, 291 U. S. 315.

The *Murray v. Gerrick* case arose in the State of Washington, and the facts in the case were as follows:

Joe Gerrick & Co. entered into a contract with the Government of the United States to erect a steel tower at the United States Navy Yard at Bremerton, Wash., and employed one Louis Murray as a workman on the job. While thus engaged, Murray met with an accident resulting in his death. A widow and a minor child survived. The widow, in behalf of herself and of her minor child, filed an action in the proper State court. The defendant demurred to the complaint and the court sustained the demurrer and dismissed the case. The case was then appealed to the Supreme Court of the State of Washington.

The State Supreme Court affirmed the decision of the trial court on the grounds (1) that the widow was not the proper party to bring the action and (2) that the workmen's compensation law of the State of Washington (the Industrial Insurance Act, as it is known in that State) does not apply to employment at the Puget Sound Navy Yard because the Navy Yard is subject to the exclusive jurisdiction of the Government of the United States. See *Murray v. Gerrick & Co. et al.*, 20 Pac. (2d) 591.

The case was then taken to the Supreme Court of the United States by writ of certiorari. From that court's decision, 291 U. S. 315, the following additional facts are gathered:

By a statute passed in 1891 the State consented to the acquisition of a tract of land by the United States for a navy yard or other specified uses, and ceded jurisdiction over the same to the Federal Government, retaining only concurrent jurisdiction for the service of civil and criminal process issued under the authority of the State. Pursuant to this consent the United States acquired what is now known

as Puget Sound Navy Yard. At that time a State statute was in force permitting the heirs or personal representatives of one dying as a result of negligence to maintain suit against the wrongdoer.

In 1911 Washington adopted an industrial insurance law or workmen's compensation act which required every employer engaged in extra-hazardous occupations to report the work undertaken by him and to pay to a State insurance fund certain sums measured by the pay roll for the work. The act abolished all actions by employees against employers for injury in extra-hazardous occupations, and, in lieu thereof, conferred upon the injured workman the right to be paid from the fund; gave a similar right to named beneficiaries in case of an employee's death, and further provided that if an employer should fail to report or to pay to the State fund, the employee, or his beneficiaries, in case of death, might sue the employer for negligence.

In 1917 the prior statute relating to suits for death by wrongful act was superseded by an act vesting the right to sue in the personal representatives of the decedent. (Prior to that time, the action might have been brought either by the personal representative or by the heir of the deceased workman.)

February 1, 1928, an act of Congress became effective entitled "An act concerning actions on account of death or personal injury within places under the exclusive jurisdiction of the United States." It enacts: "In the case of the death of any person by the neglect or wrongful act of another within a national park or other place subject to the exclusive jurisdiction of the United States, within the exterior boundaries of any State, such right of action shall exist as though the place were under the jurisdiction of the State; * * * and in any action brought to recover on account of injuries sustained in any such place the rights of the parties shall be governed by the laws of the State within the exterior boundaries of which it may be."

The petitioner, believing this act of Congress made the State compensation law applicable to the navy yard, sued on behalf of her child and herself as beneficiaries, alleging the respondents had failed to report the work and make the payments required by the compensation act.

By its decision, the Supreme Court of the United States affirmed the decision of the Supreme Court of the State of Washington and said:

The State supreme court held that the compensation act does not apply to territory beyond the authority of the State legislature. But it also held that act could not have any force in the navy yard, since it was adopted many years after the cession of jurisdiction by the State and the consequent acquisition of the tract by the United States. In this the court was clearly right. After the effective date of the State's cession the jurisdiction of the Federal Government was exclusive, and laws subsequently enacted by the State were ineffective in the navy yard. Congress may, however, adopt such later State legislation as respects territory under its jurisdiction, and the petitioner claims it did so adopt the compensation act by the act of February 1, 1928. This argument overlooks the fact that the Federal statute referred only to actions at law, whereas the State act abolished all actions at law for negligence and substituted a system by which employers contribute to a fund to which injured workmen must look for compensation. The right of action given upon default of the employer in respect of his obligation to contribute to the fund is conferred as a part of the scheme of State insurance and not otherwise. The act of Congress vested in Murray no right to sue the respondents, had he survived his injury. Nor did it authorize the State of Washington to collect assess-

ments for its State fund from an employer conducting work in the navy yard. If it were held that beneficiaries may sue, pursuant to the compensation law, we should have the incongruous situation that this law is in part effective and in part ineffective within the area under the jurisdiction of the Federal Government. Congress did not intend such a result. On the contrary, the purpose was only to authorize suits under a State statute abolishing the common-law rule that the death of the injured person abates the action for negligence.

The petitioner urges that if the act of Congress failed to extend the workmen's compensation law to the navy yard, she is, nevertheless, entitled to maintain her action in behalf of herself and her child as heirs of the decedent, because the code of 1881, *supra*, was in effect at the date of cession and remained applicable until Congress altered it. She relies upon the principle that when political jurisdiction and legislative power over territory are transferred from one sovereign to another, the municipal law of the place continues in force until abrogated by the new sovereign. (*Chicago, Rock Island & Pacific Railway Co. v. McGinn*, 114 U. S. 542.) But the weakness of her position is that by the act of February 1, 1928, Congress did abrogate the code provision as respects the navy yard by enacting that "such right of action shall exist as though the place were under the jurisdiction of the State", and "in any action brought to recover on account of injuries sustained in any such place the rights of the parties shall be governed by the laws of the State within the exterior boundaries of which it may be." This plainly means the existing law, as declared from time to time by the state; and Washington, by the act of 1917, has substituted for the action, given in the alternative to heirs or personal representatives by the code of 1881, one vested exclusively in the personal representatives. It results that the petitioner could sue only under the act of 1917.

The same question of the application of a State's workmen's compensation law to territory over which the State has ceded exclusive jurisdiction to the United States has recently arisen in the State of Oklahoma where, prior to the enactment of the State workmen's compensation law, the State had ceded to the United States exclusive jurisdiction over the territory embraced within the Fort Sill Military Reservation. The supreme court of that State on March 10, 1936, in the case of *Utley et al. v. State Industrial Commission et al.* (55 Pac. (2d) 762) followed the rule as laid down by the Supreme Court of the United States in the case of *Murray v. Gerrick & Co. et al.*, *supra*, and held that the workmen's compensation law of Oklahoma does not apply within the limits of the Fort Sill Military Reservation in that State.

Since the decision in the case of *Murray v. Gerrick & Co. et al.*, *supra*, the question has arisen as to whether the workmen's compensation laws of the various States apply to private employment within territory or on premises belonging to the Government of the United States, regardless of whether or not the State within whose boundaries such territory or premises may be located has ceded to the United States exclusive jurisdiction over the same. It is not my understanding that the decision in the *Murray case* in any way affects the application of a State's workmen's compensation law to private employment within territory or on premises belonging to the United States unless the State within whose boundaries such territory or premises are located has ceded to the United States exclusive jurisdiction over the same; and if the State's workmen's compensation law is in effect at the time of such cession of jurisdiction, it remains in effect within the affected territory until superseded by an act of Congress. In any event, the question is now settled and the workmen's compensation laws of the States are effective within such territory under an act of Congress approved on June 25, 1936, which reads as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That whatsoever constituted authority of each of the several States is charged with the enforcement of and requiring compliance with the State workmen's compensation laws of said States and with the enforcement of and requiring compliance with the orders, decisions, and awards of said constituted authority of said States hereafter shall have the power and authority to apply such laws to all lands and premises owned or held by the United States of America by deed or act of cession, by purchase or otherwise, which is within the exterior boundaries of any State, and to all projects, buildings, constructions, improvements, and property belonging to the United States of America, which is within the exterior boundaries of any State, in the same way and to the same extent as if said premises were under the exclusive jurisdiction of the State within whose exterior boundaries such place may be.

SEC. 2. For the purposes set out in section 1 of this act, the United States of America hereby vests in the several States within whose exterior boundaries such place may be, insofar as the enforcement of State workmen's compensation laws are affected, the right, power, and authority aforesaid.

Chairman DORSETT. Thank you, Mr. Langley. We will now hear from Mr. Ramon Montaner, of the Puerto Rico State fund, on "Workmen's Compensation in Puerto Rico."

Workmen's Compensation in Puerto Rico—The Exclusive State Insurance Fund

By RAMON MONTANER, *Manager, State Insurance Fund, Department of Finance, San Juan, P. R.*

Ten years ago today it was my privilege to attend the thirteenth annual convention of this association held in Hartford, Conn., and it was also my privilege to address the convention extemporaneously on the subject of workmen's compensation in Puerto Rico. I regret that unavoidable circumstances prevented me from attending conventions held in successive years in other parts of the country. Today I have the honor and the privilege of attending this meeting as representative of the exclusive state insurance fund of Puerto Rico.

Conscious as I am of my own limitations, having to express myself not in my native language and confronting men and women such as are present at this meeting, it is with some apprehension that I undertake to discuss the subject indicated by the title of this paper.

Industrial accident insurance in the island of Puerto Rico has been a major issue before the executive and legislative branches of the government during the last 20 years. The inadequacy of the first act of 1916 and the failure of the exclusive State insurance fund in the year 1928, and the competitive State insurance fund in 1935 were matters that were yearly the subject of discussion in the Governor's message to the legislature.

The act of 1916 was superseded by the act of 1918, establishing the first exclusive State insurance fund. The failure of this fund in 1928 gave rise to the establishment of a competitive system which worked for a period of 7 years but which, since its inception, was doomed to failure.

In the year 1931 the problem in the hands of the government was becoming more acute as the deficit of the competitive Government fund was progressively increasing.

The services of Emile E. Watson, consulting actuary from Columbus, Ohio, were obtained and an actuarial survey was made of the

competitive government fund. The report rendered showed that, considering the conditions under which the fund was operating, it was impossible to expect good returns. Recommendations were made to the Governor and to the legislature. Bills were introduced and approved by both houses of the legislature in the years 1932, 1933, and 1934, but they were vetoed.

In February 1934, in his first message as Governor of the island to the legislative assembly, a week after his arrival, His Excellency Gov. Blanton Winship expressed himself as follows on the subject of workmen's compensation:

* * * It is therefore manifest that this problem demands your immediate and serious consideration. It has been the subject of similar comment in messages presented to you by the last two preceding governors. I concur with and reiterate their recommendations that the pertinent statutes be comprehensively revised and the system placed upon a self-supporting basis. * * *

The bills passed by the legislature in the year 1934 did not meet with the Governor's approval.

Conditions in the workmen's compensation field were so serious that in the spring of 1935 Governor Winship decided to take the matter into his own hands, and in the month of February, with a special message to the legislature, he transmitted a draft bill embodying those essential features in which his administration was interested.

The legislature, which had always been eager to further the solution of the problem, passed a bill which, although not in full agreement with the Governor's recommendations, did not fundamentally depart from the provisions in the draft bill submitted by the administration. So, on April 18, 1935, the bill was approved by the Governor and a new workmen's accident compensation act went into effect in Puerto Rico on July 1 of that year.

Fundamentally the new act contains the recommendations made by Emile E. Watson in his report to the Governor and the legislature in 1931, to wit:

1. It concentrates to the fullest possible extent the complete management and administration of the exclusive workmen's compensation fund plan in the hands of a manager, vesting in him full authority and fixing upon him full responsibility for the administration of the fund.

2. It provides for the appointment of an industrial commission comprising three members, the sole restricted duties of which commission are to pass upon claims.

3. It vests the manager of the fund with the authority to contest the decisions of the industrial commission.

4. It provides statutory requirements in the law to establish a merit rating system, and a statutory surplus fund predicated upon a given percentage of the premium income of the fund.

5. It prohibits the making of any lump-sum awards to the claimants or beneficiaries of the fund.

It would be practically impossible to discuss thoroughly the different aspects of workmen's compensation in Puerto Rico on this occasion due to lack of time. Its various features, the delicate and complicated problems it involves, and especially its peculiarities, due to the prevalent social and economic condition of our laboring classes, would necessarily carry me into fields which I am forced to avoid.

In order that we may get a clear view of workmen's compensation in Puerto Rico it will perhaps be best to bring to your attention

that part of our work which because of its unique problem I feel would be most interesting to you; that is, the coverage of farm labor.

In Puerto Rico, in the year 1916, when the first workmen's compensation act was approved, "*farm laborers not employed to work with machinery driven by steam, gas, or electricity or other mechanical power were excluded.*"

The provision left all activities in the field of our main occupation in the island unprotected, namely, agriculture or farm work.

In the year 1918 a new law went into effect and it excluded, "*farm laborers not employed to work with machinery operated by steam, gas, electricity, animal, or other mechanical power*", but it provided, however, that *farm laborers employed in agricultural work where animal power was used* were entitled to the benefits of the act.

It may be seen from the above that in 1918 farm laborers in general were still unprotected. However, the coverage of laborers employed in agricultural work where animal power was used, was the initial step in the course which the Puerto Rican Legislature was to follow regarding our principal occupation.

In 1919 the act was amended providing that "*farm laborers where animal power or instruments or tools the use of which may cause serious corporal injury are used* shall be entitled to the benefits of the act."

By the preceding amendment the scope of the exception clause was narrowed.

Controversies arose as to the instruments or tools used in farm work that could cause serious corporal injuries. The "machete" used in the harvesting of sugarcane was of course, one of them, but how about the hoe, spade, pick, and so forth? These controversies gave rise to the amendment of 1925 in which the only exclusions were *domestic servants and employees engaged in clerical work, in an office of any kind, and commercial establishments where machinery was not used.*

This amendment was the turning point with respect to full coverage of farm work on the island. At the present time, under the new workmen's compensation plan in operation on the island, farm labor is not excluded. Only those farm laborers working for employers employing from one to three workmen do not come under the act. However, if any employer with one to three workmen desires to get insurance he can voluntarily pay his premium to the fund, thus securing coverage for his men in the field.

The development of workmen's compensation on the island, broadening its scope as to the protection of farm labor, is a manifestation of the trend toward legislating in accordance with the necessities of the island, based on facts that could not be ignored. Puerto Rico's domestic and foreign economy is founded on agriculture, its principal activities being the sugarcane, coffee, and tobacco industries. Other industries have a very small effect on the island's finances, the controlling factor being the sugarcane industry.

Our experience during this first year has been that, in 289 different classifications in our insurance manual, a premium income of \$1,132,937.63 was derived in a total of 6,019 policies with a provisional payroll exposure of \$48,636,459 on June 30. Of the total number of policies, 3,920, or 65 percent, belong to employers in agricultural

work. These policies represent a pay-roll exposure of \$15,189,456 and a premium income of \$615,156.

Agricultural policies represent 31.5 percent of the pay-roll exposure and 54 percent of the premium income.

The classifications in the insurance manual that actually cover agricultural labor are four, to wit:

0000—Farms: All employees other than inservants, including drivers, chauffeurs, and their helpers, 1,408 policies; pay roll, \$1,123,789; premium, \$67,162.95.

0030—Sugarcane Plantations, Including Cutting: Including drivers, chauffeurs and their helpers, 1,618 policies; pay roll, \$11,285,679; premium, \$449,170.

0033—Coffee Plantations: Including all operations by employees of grower, including drivers, chauffeurs and their helpers, 867 policies; pay roll, \$527,899; premium, \$31,410.

2032—Sugar Mills: Mills and incidental operations including drivers, chauffeurs and their helpers, 27 policies; pay roll, \$2,247,089; premium, \$67,413.

These classifications represent 1.384 percent of the total number of classifications in our manual.

In a service of this nature, covering agricultural work, fluctuations are liable, due to various reasons man cannot control. Unexpectedly the premium income of the fund is seriously affected by drought, excessive rains, or by hurricanes so common in the geographical region where Puerto Rico is located.

Let us take as an example the coffee industry. In the year 1928-29 the pay roll reported by this industry amounted to \$2,049,141. A hurricane in September 1928 did serious damage to our coffee plantations and for the year 1929-30 the pay roll went down to \$1,814,436. Year by year the pay roll was lower, and in 1932 when another hurricane swept the island the pay roll reported was \$955,000. Competition with foreign coffee, the low price of the product due to such competition, and the loss of our foreign market have brought about such a disastrous situation in the coffee industry that for the year 1935-36 the pay roll reported amounted to \$527,899.

Considering our accident experience in farm work during our first year, it is found that in a total of 50,334 claims registered the following belong to agricultural labor:

		<i>Percent</i>
General farm work.....	3,020	6
Sugarcane cutting.....	25,167	50
Coffee growing.....	2,517	5
Sugar mills.....	5,033	10
	<hr/>	
Total.....	35,737	71

The influence of a single industry on the fund is clearly noted. In the sugarcane industry the number of accidents represents 50 percent of the total registered while the premium represents approximately 40 percent of the income.

Our statistics reveal that in 35,737 accidents belonging to farm work the following are the percentages of injuries to different parts of the body:

5,718, or 16 percent.....	head.
2,501, or 7 percent.....	trunk.
16,082, or 45 percent.....	arms and hands.
11,436, or 32 percent.....	legs and feet.

It is to be noted that approximately one-half were injuries of the arms and hands. This is due to the use of the "machete" in the har-

vesting of sugarcane and its general use in farm work. Seventy-seven percent of the claims were injuries of the lower and upper extremities.

Many of the injuries to the hands end as cases of permanent partial disability. In the harvesting of sugarcane we have many cases in which the tendons of the hand are cut by the "machete" or dagger used for harvesting. Although we have taken all kinds of precautions in the past and are taking even more strenuous ones at present to prevent infections, we still find that, due to the special conditions covering farm labor, this is to some extent unavoidable.

This brings us to our most serious and exacting problem in an agricultural country like Puerto Rico, the medical service.

You can imagine the task we face in attempting to provide medical service to injured men engaged in farm work scattered throughout the island, when you consider that out of 6,019 policies not more than 100 policies cover large employers. In order to handle this service in an efficient manner, we have physicians and surgeons rendering service on a contract basis in each of the towns of the island. For a specified monthly allowance they render service to injured workmen. Monthly allowances range from \$30 to \$150, in accordance with accident experience in the town.

Surgical and dressing material is furnished by the State fund. I have no information as to any other State fund service similar to this on the continent. We pay a per diem of \$2 in the hospitals. This fee includes regular services in addition to X-ray and laboratory services, medicines, surgical and dressing material, use of operating room, and so forth. If we consider that among farm laborers in Puerto Rico daily wages fluctuate between 50 cents and \$1, this hospitalization rate seems extravagant by comparison.

Frequently we are obliged to give hospital service in cases which, under different circumstances, could be handled in the dispensaries. This is true in the injuries to the feet. In the majority of these cases it is more economical for the fund to keep the injured workmen in the hospital for a few days rather than to let them go back and forth from their homes in the country to the towns for treatment. In many cases they live in the mountains and would have to cross rivers and walk many miles over practically impassable country roads in order to attend a dispensary.

Our medical problem is greatly accentuated by the deplorable physical conditions of injured workers many of whom are suffering from malaria, hookworm, syphilis, tuberculosis, and other diseases prevailing in the tropics.

The tendency of our workmen to report for medical treatment a week or more after the date of the accident constitutes another problem. It is very common, although lately a marked change has been noticed, for the laborer to use all kinds of home remedies such as plants and other things in order to heal the wound, stop the hemorrhage, or relieve his pain. Invariably these cases end in infections with the possibility of turning into permanent partial disability or death claims.

To eliminate the foregoing, the Workmen's Accident Compensation Act provides that in those cases where the workman fails to present himself to the physician for treatment within a period of not more than 5 days after the accident, the manager can deprive him of

his right to compensation if he fails to explain his delay satisfactorily. By strictly applying the law in this respect we are educating workers to report for treatment immediately after the accident.

As I have stated before, the workmen's compensation service in Puerto Rico has peculiarities that make it, I should say, unique among systems of this kind. It will take a long time to cover our whole field, but in conclusion I must say that it is my belief that our main problem on the island has been solved. The present organization under the exclusive State insurance fund will be a success. In its initial year it has given rapid and efficient service. Compensations were paid in time. No complaints were filed during the year. It will take a number of years to prove our assertion; but if we continue to receive the cooperation of employers as we have received it during this first year, the success of the fund is fully guaranteed.

The splendid attitude of the legislature, Governor Winship's personal interest in the success of this service, and the technical advice and cooperation of our actuaries, Emile E. Watson and Herbert D. Bangert, are a prognostication of our success.

Chairman DORSETT. Thank you, Mr. Montaner. We are fortunate in having with us today Mr. David Vaage, of the International Labor Office, who will discuss the function of that office in the promotion of industrial safety.

The International Labor Office and Industrial Safety

By DAVID VAAGE, *Chief, Safety Service, International Labor Office, Geneva, Switzerland*

It is not necessary, I am sure, to take time for introductory remarks concerning the International Labor Organization. This group has heard about it. The director of the Washington office has been a member of your association now since 1924, and 2 years ago the United States Government became a member of the International Labor Organization. The Department of Labor has taken an active and well-considered part in all the proceedings of the organization since that time. It is then only to refresh your memory that I remind you of some essential features of the organization which must be borne in mind for a better and fuller appreciation of what I may subsequently say regarding its activities in the sphere of accident prevention or safety promotion.

The framework of the International Labor Organization is in no wise different from that of any other body which must formulate policies and carry out a program of activity; that is, it has a purpose, it has a policy-making body, the basis of which is necessarily study and research; it possesses administrative organs to effectuate its policies continuously and wisely.

The aim is to improve the situation of the workers among the 62 member states. At the same time that the world is politically divided up into separate and distinct nations, economic life has led to increasingly complicated social groupings. We have in the world, therefore, today both political conflicts and social conflicts and consequently increasingly close relationship between industrial peace and peace in general. This is merely to say that the International Labor Organization rose from the natural complexities of the

industrial world which were brought into sharp outline after the war. For, as you know, the constitution of the International Labor Organization is part XIII of the treaty of peace following the war.

Structurally it is only necessary to know that the center of the organization is the general conference, a policy-making body, a new device for drafting labor treaties, called conventions; that is, the treaties are a part of the international labor law of the world as soon as they are ratified by member states. The conference is made up of delegations of four members each—two government, one employer and one worker. This means that there are between 300 and 400 individuals at each session, if 40 nations are represented, and, if as is customary the four chief delegates are accompanied by advisers. The next agency of the organization is the governing body or board of directors, of the permanent secretariat, the International Labor Office. The governing body consists of 32 members, the eight states of chief industrial importance having permanent seats—the United States as you know, holding one of those permanent seats. The International Labor Office is the permanent administrative agency and research bureau of the organization.

These three agencies, conference, governing body, and permanent bureau, have by no means sufficed to express the work and influence of the organization as a whole. Numerous international standing commissions and committees have been set up to assist the office in its work. It is this tendency of the organization to work itself widely and deeply into the economic and social life of its member states that in a sense has brought me to this conference, and has made me, I assure you, a keenly appreciative and deeply interested guest and participant in your proceedings. Among the numerous committees which have developed by a process of accretion upon the basic and original machinery of the organization, two are of special interest in connection with the subject of my paper. These are the correspondence committee on accident prevention and the tripartite committee on automatic couplings to which I shall refer in some detail further on.

First of all, however, a word of history. The safety work of the International Labor Office—and henceforth I shall use that much preferred designation for our longer and more Christian name—started first within the office toward the end of 1921 with the setting up of a special independent section—the safety service. It was in reality a part of the combined section of industrial hygiene and safety until two sections were created in 1923. The first head of that independent section was Dr. Fredrick Ritzmann, whom I had the privilege and honor of succeeding in 1934.

When the office began its work in the field of safety (just 15 years ago, incidentally) it had to take into account two essentially different views of the safety movement: The American safety movement with its basic idea of volunteerism, publicity, and engineering revision, and the traditional European view that accident prevention is mainly a technical problem and a problem of legislation. The first task of the International Labor Office, therefore, was the immediate one of studying these two systems in order to see how far they might be found to be in agreement and to what extent they could be combined for the purpose of promoting industrial safety on a broad international scale.

Like most problems of this sort, it led to the very simple conclusion that within its range of action the International Labor Office could and must further both systems. It must not only try to improve the existing safety regulations and the measures taken for their enforcement in the various countries, but it must also promote research into the causes of accidents, devise statistical procedures and methods, and suggest concrete methods of prevention of accidents, and at the same time carry on educational work and cooperation between the various interested groups, agencies, and authorities such as state or governmental bureaus, employers' committees, and workers' organizations. From the point of view of both voluntary and state action in the field of accident prevention, statistical information and methods are equally germane and necessary. The office had an immediate task, therefore, to collect and distribute material concerning the progress of accident prevention from day to day in the different countries. Nowhere else are discovery, invention, and dissemination of information more useful than in this field of accident prevention.

The work of the International Labor Office may then be classified under three heads; namely, (1) the preparation of draft texts of international treaties or conventions and recommendations for discussion by the annual International Labor Conference; (2) research work; and (3) the collection and distribution of material concerning the progress of safety work in the different countries.

Problems relating to safety have been dealt with by the International Labor Conference at five sessions. These have resulted in the adoption of certain draft treaties, recommendations and resolutions. Parenthetically, may I add that these are acts of the conference in varying degrees of definiteness. The treaty or convention is a carefully drawn body of general principles and policies, common to the practice of most countries; a treaty is similar to a law of a state or nation. A recommendation supplements a treaty or defines in more detail the standards which it is hoped may be promoted and ultimately secured. A resolution is a more vague expression of a hope with respect to what can be accomplished.

Without reading the list, I may note that it comprises two draft treaties dealing with safety of dock workers and marking the weight on heavy packages transported by ship; five recommendations supplementing these treaties and dealing with prevention of accidents in general and with certain safety problems; five resolutions, among which were two that have laid the foundation for interest in the introduction of automatic couplings in Europe. The treaties, recommendations, and resolutions are these:

1923. *Recommendation* concerning the general principles for the organization of systems of inspection to secure the enforcement of the laws and regulations for the protection of the workers. *Resolution* concerning automatic couplings. *Resolution* concerning the promotion of accident prevention.

1928. *Resolution* concerning the prevention of accidents. *Resolution* concerning the question of automatic coupling of railway vehicles.

1929. *Recommendation* concerning the prevention of industrial accidents. *Recommendation* concerning responsibility for the protection of power-driven machinery. *Draft convention* concerning the protection against accidents of workers employed in loading or unloading ships. *Draft convention* concerning the marking of the weight on heavy packages transported by vessels. *Recommendation* concerning reciprocity as regards the protection against accidents of workers employed in loading and unloading ships. *Recommendation* concerning the consultation of workers' and employers' associations in the drawing up

of regulations dealing with the safety of workers employed in loading and unloading ships. *Resolution* concerning the setting up of an international technical committee for the protection of dockers.

1932. Partial revision of the *convention* concerning the protection against accidents of workers employed in loading or unloading ships.

1936. First discussion concerning safety provisions for workers in the building industry, with reference to scaffolding and hoisting machinery.

It is not possible here nor would it, I am sure, be particularly interesting to examine in any detail the contents of these decisions or the discussions that took place in connection with them. I can best refer you on these points to the various publications of the International Labor Office.¹

A few words might be said, however, to show the general attitude of the organization respecting accident prevention and factory inspection. Here the views of the International Labor Office are contained more particularly in the recommendations of 1923 and 1929.

The first of these recommendations offers a sketchy outline of the work of factory-inspection services and deals in great detail with the necessity of accident prevention. It stresses the necessity of factory inspectors taking an active part in safety work and emphasizes the need for technical competence of the inspectors. The recommendation of 1923 was drafted and formulated from a distinctly European point of view.

The recommendation of 1929 showed the influence of the American safety-first movement and recognized the importance of every kind of private initiative in the field of accident prevention. This recommendation urges the states members of the organization to do everything in their power to further the safety movement, and stresses the vital importance of cooperation between all parties interested in the prevention of industrial accidents, particularly between employers and workers.

While the recommendation of 1923 suggested that the inspectorate confer from time to time with the representatives of the employers' and workers' organizations as to the best measure to be taken in promoting higher safety standards, the recommendation of 1929 recommended positively that the authorities in general should consult the workers' and employers' organizations when it came to drawing up new regulations; that is to say, the employers and workers were called upon to play a more effective and authoritative part in formulating safety measures. This, too, was in line with the policy expressed at that conference that "any effective system of accident prevention should rest on a basis of statutory requirements" and the statement in the recommendation that the members should "prescribe by law the measures required to insure an adequate standard of safety."

In general, the conference of 1929 recommended that the law should oblige the employer "to equip and manage his undertaking in such a way that the workers are adequately protected" and "to see that the workers in his employment are instructed as to the dangers, if any, of their occupation and in the measures to be observed by them in order to avoid accidents."

¹ See for instance: Draft conventions and recommendations adopted by the International Labor Conference at its 19 sessions held 1919-35. International Labor Office, 1936. Proceedings of the respective sessions of the International Labor Conference. Annual reports of the director of the International Labor Office. Industrial Safety Survey. These can be obtained from the I. L. O. Washington branch, 734 Jackson Place, Washington, D. C.

Further, in conformity with the recommendation of 1923, the conference in 1929 strongly advocated that officials of the inspection service or other body responsible for supervising the enforcement of the statutory requirements for the protection of workers against accidents should as far as possible be empowered to give orders in particular cases to the employer, subject to a right of appeal to a higher authority or to arbitration. It was also recommended that statutory or administrative provisions should be made, enabling the workers to collaborate in accident prevention for example, by appointing qualified workers to positions in the official inspection service, by inclusion of workers' representatives in safety committees, and so forth and so on.

The recommendation concludes with a special appeal to the states to see to it that accident insurance institutions take an active part in safety work, and it enumerates ways and means for that purpose.

Among the other decisions on safety problems taken by the conference, the convention for the protection against accidents of workers employed in loading and unloading ships, and the convention concerning the marking of the weight on heavy packages transported by vessels, must both be regarded as the most important. The first of these has so far been ratified by 7 countries² and the second by 33.³

Finally, mention must be made of the problem of safety provisions for workers in building construction which was up for a first discussion at the 1936 conference and will be on the agenda for a final decision by the conference in 1937.

As regards research work in the field of accident prevention, the most important has so far consisted in the preparation and publication of a number of monographs on various safety problems. These monographs are prepared with the assistance of an international committee of experts—the correspondence committee on accident prevention—set up by the governing body in 1925.

This committee now consists of about 30 members, among whom are these men from the United States: Cyril Ainsworth of the American Standards Association, Swen Kjaer, of the Department of Labor, and Henry A. Reninger of the Lehigh Cement Co. When it meets it appoints a reporting secretary or rapporteur for the various subjects, it decides to study and the various members supply all information available on the subject in their respective countries. The drafts prepared on that basis are then critically examined by the committee, in most cases at two subsequent meetings. When approved by the committee the monographs so prepared on international lines are published by the International Labor Office.

In this way the following monographs have so far appeared: Hydroextractors, Their Safe Construction and Equipment, prepared by the late Mr. Massarelli, Milan; Protection of Workers Operating Metal-Working Presses, prepared by the late Mr. Frois, Paris; Safety in the Use of Chains, prepared by Mr. Deladriere, Brussels; Safety in the Manufacture and Use of Acetylene, prepared by Mr. Sauerbrei, Berlin; Safety in the Manufacture and Use of Celluloid and Safety in Spray Painting, both prepared by Mr. Stiller, Berlin.

² Chile, China, Great Britain, Italy, Mexico, Spain, and Uruguay.

³ Australia, Austria, Belgium, Bulgaria, Chile, China, Czechoslovakia, Denmark, Estonia, Finland, France, Germany, Greece, India, Irish Free State, Italy, Japan, Lithuania, Luxembourg, Mexico, Netherlands, Nicaragua, Norway, Poland, Portugal, Rumania, South Africa, Spain, Sweden, Switzerland, Uruguay, Venezuela, and Yugoslavia.

Two further papers, one on the use of miniature voltages for portable electric equipment, and another on electric lamp caps and lamp holders, were prepared by Mr. Doppler, The Hague. Finally, two monographs were prepared directly by the International Labor Office, namely, Safety Devices for Wood-Working Machinery (Great Britain and Switzerland), and Automatic Coupling and the Safety of Railway Workers.

Mention must also be made in this connection of three longer reports prepared by the safety service as a basis for the discussions of the 1923, the 1928, and the 1936 sessions of the conference. These reports are the study on factory inspection, historical development, and present organization in certain countries, and the Gray reports on the prevention of industrial accidents, and on safety provisions for workers in the building industry.

The following studies are in course of preparation by the correspondence committee: Safety in the construction and use of lifts, prepared by the late Mr. Massarelli, Milan; safety in the use of abrasive wheels, prepared by Mr. Stevenson Taylor, London; safety in the use of ladders, prepared by Mr. Deladriere, Brussels; the safe handling of corrosive liquids, prepared by Mr. R. B. Morley, Toronto, and Mr. Swen Kjaer, Washington; the protection of hands and feet of foundry workers, prepared by Mr. Van de Weyer, Brussels; and masks for protection of the respiratory organs against gases, dust, and fumes, prepared by Dr. A. Tzaut, Luzerne.

Another problem to which the International Labor Office has devoted special attention is the problem of accident statistics. If the results obtained have so far been rather meager, this would seem to be due primarily to the absence of suitable methods of treatment. This, however, is not something fundamental and can no doubt be remedied to a certain extent by closer collaboration between statistical and safety experts. In saying this I do not wish to minimize the difficulties involved.⁴

The last but by no means the least important part of the safety activity of the organization is what was referred to above as the collection and distribution of material on the progress of safety work in the different countries.

This work includes the study of the legislation on industrial safety and on factory inspection and other services responsible for its enforcement. It further includes the study of the annual reports of the supervisory authorities and of the various voluntary safety institutions and associations in the different countries. The safety service is at present in close and regular touch with about 100 such voluntary bodies, four times as many as we had contacts with in 1925. This very considerable increase is certainly largely due to the impetus given by the International Labor Office.

⁴ See in this connection International Labor Office: *Methods of Statistics of Industrial Accidents*. Report prepared for the International Conference of Labor Statisticians. Studies and Reports, series N, no. 3, 1923. International Conference of Labor Statisticians. Report on the International Conference of Representatives of Labor Statistical Departments held at Geneva, 29 October to 2 November 1923. Studies and Reports, series N, no. 4, 1924. *Methods of compiling Statistics of Coal-Mining Accidents*. Studies and Reports, series N, no. 14, 1929. *Methods of Compiling Statistics of Railway Accidents*. Studies and Reports, series N, no. 15, 1929. The International Standardisation of Labor Statistics. Studies and Reports, series N, no. 19, 1934. "Accidents in Figures. Reflections on the Accident Statistics of the American Iron and Steel Industry", *Industrial Safety Survey*, vol. X, no. 2, p. 29.

The material so collected is either used for the preparation of special reports, such as those to be submitted to the conference, or published in the office's safety bulletin, the Industrial Safety Survey, which appears every 2 months in English, French, and German. The Survey contains besides "leading" articles on specific safety problems, standing columns on the development of safety legislation and safety codes, the activity of factory inspectorates and safety institutions in the different countries, and in addition, a review of recent books and other publications dealing with safety problems. The value of the Survey as a "connecting link" between safety people all over the world has been proved by many letters to the office and by numerous requests for exchanges from technical journals.

The material collected by the safety service is also widely used in replying to a steadily increasing number of requests for information received by the International Labor Office from all parts of the world. Governments, employers', and workers' organizations, safety institutions, scientists, students, etc., constantly refer to the office for information on safety matters, and in many cases these requests necessitate special inquiries leading to the preparation of detailed and voluminous reports. In this field the correspondence committee on accident prevention is also of very great assistance to the office, and in most cases its members are among those who are first asked to collaborate in such inquiries.

It is not too much to say that this side of the office's activity is very much appreciated in all quarters; the proof is the rapid growth of the number of such requests.

A special safety problem with which the International Labor Office has been concerned for several years past and with which it will probably still have to struggle for many years is the introduction of automatic couplings on railway vehicles. This problem has long ago been practically solved in the United States and other countries, but is still awaiting its solution on the European railways.

Here the activity of the International Labor Office and its tripartite committee has consisted chiefly in seeking ways and means for carrying out the necessary tests of coupling systems capable of automatically connecting not only the vehicles themselves but also the air and steam hose and electric conduits. This has proved to be a most difficult job and so far it has not been possible to proceed to the final tests.

Humorously enough, the office got some interesting publicity from its endeavors in introducing this contribution of America to the world safety movement. Following upon a notice, which itself was false, in an American technical newspaper saying that the International Labor Office offered a big prize for an effective system of automatic coupling, hundreds and hundreds of letters, plans, and even models poured in upon the office. The most absurd sort of proposals were received. Letters came from the Arctic regions, from the African jungle, from Central Australia, and even from Sing Sing prison, the safest of all places in a chaotic world!

Chairman DORSETT. I want to thank you for coming to us, and I hope your stay in the United States will be both pleasant and profitable.

DISCUSSION

Mr. McSHANE (Utah). It seems to me, repeating the slogan of Ohio, that safety is better than compensation. And the next step that we should take, if we do have an accident, is to prevent the development of infection. It seems to me that with the conditions as described by Mr. Montaner, there is a fertile field for infection there, and I am wondering if he has any statistics on the number of infections in the cases of the respective classes that he has enumerated. I am sure that if he has such information it would be something worth hearing.

Mr. MONTANER (Puerto Rico). I have no information with me in respect to the number of cases of infection, because we have been operating the fund only a year. But the experience for the first year has demonstrated that the number of infectious cases has gone down considerably.

Mr. McSHANE. I understood you to say that if one of these boys happened to get hurt in the fields and was far away from some center where he could get medical treatment and did not report his injury within 5 days, the manager could erase him from the list of eligibles for compensation. You made that statement, didn't you?

Mr. MONTANER. Yes.

Mr. McSHANE. Is that the manager of the fund or the manager of the farm?

Mr. MONTANER. The manager of the fund.

Dr. HAMILTON (Washington, D. C.). I wanted to ask Mr. Langley what happens in States that have no compensation law. Suppose the employee is injured in Arkansas or Mississippi? What happens if he is employed by the Government?

Mr. LANGLEY (Idaho). I may not be altogether correct as regards the Federal employees for compensation, but it is my understanding that there is a Federal employee's compensation law. I think there is. I have had nothing to do with it, but I understood there is.

Dr. HAMILTON (Washington, D. C.). Then I am confused. It may be a very stupid question, but I never can understand it at all, and I have been puzzling about the widow in his story. Her husband was working for the Federal Government.

Mr. LANGLEY (Idaho). No; her husband was working for a contractor who had a contract with the Federal Government for the erection of a steel tower in the navy yard. It was private employment, not Government employment.

Dr. HAMILTON. But if a person is injured in the States that have no State provision, and he is working for the Federal Government, is there a law covering those accidents?

Mr. LANGLEY. I believe so. That is my understanding. I am not certain, but I think there is a Federal employee's compensation act.

Chairman DORSETT. Is Mr. Sharkey in the room?

Mr. WENZEL (Washington, D. C.). There is a Federal employee's compensation act applying to civil employees.

Mr. H. A. NELSON (Wisconsin). Under the new act of Congress, what is the status of Indians on Indian reservations? Assuming an

Indian is working for a contractor, doing work for the Government, under State jurisdiction, would the State take jurisdiction.

Mr. LANGLEY. That is true in my State.

Mr. NELSON. How about the fact that the Indian is a ward of the Government?

Mr. LANGLEY. I think notwithstanding the fact that the Indian is a ward of the Government, if he is in the employ of a private employer, a contractor, and he is injured on the job, he will get compensation under the State workmen's compensation law. That question has never arisen in our State, and I have never had any doubt but what he would receive compensation.

Mr. ANDREWS (New York). May I ask if you think that the workmen's compensation act in the State has jurisdiction over the safety rules on Federal projects?

Mr. LANGLEY. I think it would.

Mr. ANDREWS. There may be safety sections of the compensation law, where the States enforce under the police power, but I am wondering if they would not have to have a similar act. I am interested in such an act, and I think other States are. I hope this association will help us out on that.

Mr. LANGLEY. In the State I represent, Idaho, the industrial accident board has jurisdiction over all safety work, and has the authority to require all employers to furnish safe conditions of employment.

Mr. ANDREWS. Do the Government officials allow the States to enforce the safety rules?

Mr. LANGLEY. About 2 months ago, a tunnel was being driven by a private contractor for the Federal Irrigation and Reclamation Service, and there were some serious accidents in the course of that work. Our board inspected the work and ordered certain changes to be made by the employer, and he made them.

Mr. McSHANE. I think that is a very pertinent question, but I believe there are no court decisions on it. That is, they have not come to my attention. But at the time the work on Boulder Dam was being initiated, with those great spillways being driven to take care of the water, I think some 50 feet in diameter, 6 of them, it was found that the contractor was going in there with gasoline trucks, and the State of Nevada made an investigation and ordered the trucks out. Immediately there was an appeal to the courts by the contractors, and the job was finished before the court gave us a decision. That is as near as we have got to a court decision. But I will say this: On all Federal projects in the State of Utah we have never had any objection on the part of any Federal officials in exercising what we deem a proper police power over the lives of our citizens, and we propose to go on until the court stops us.

Mr. LORENZ (New Jersey). What was the decision?

Mr. McSHANE. A decision was never rendered.

Mr. LORENZ. I was particularly interested in the paper read by Mr. Dukes. I thought he might tell us something about the general scheme of protection that South Carolina had adopted. Being one of the last States to extend protection, it had the general fund of experience and knowledge of all States to draw upon. I thought maybe

he would touch upon the type of protection that was adopted, the extent of the protection, the method of appeal, whether there is a State fund, and if there is, whether it is compulsory or elective, or whether there are self-insurers, and if so, whether they are required to furnish security, and so on.

Mr. DUKES (South Carolina). The set-up that was enacted and passed by the General Assembly last year limited them to take in only those with 15 employees or more. We hope this year to reduce it to probably 5 or 3. I should like you to ask the questions that you wanted me to answer.

Mr. LORENZ. Do you want specific questions?

Mr. DUKES. Yes.

Mr. LORENZ. What types of employees are exempted from coverage, if any?

Mr. DUKES. We have possibly 15 different industries, farmers, railroad employees, sawmills, cottonseed oil mills, laundries, and other industries of that type, and we can see no reason for their being exempted, and we feel that this year they will be included under the act. They were really exempted by reason of policy. We had possibly 650 elections to adopt the act and have only had 1 to reject it.

Mr. LORENZ. Is the act elective? That is; that a man may either come under the act or retain his common law?

Mr. DUKES. Yes, he may elect to come under the law.

Mr. LORENZ. Have you a State fund?

Mr. DUKES. No, we have self-insurers, and anybody may insure with a regular insurance carrier.

Mr. LORENZ. Are you required to carry bond or security?

Mr. DUKES. The insurance department requires it. We require a minimum of \$10,000 on deposit.

Mr. LORENZ. The insurance companies need only furnish the qualifying bond or security?

Mr. DUKES. That is all.

Mr. LORENZ. There is no specific provision for compensation liabilities as such?

Mr. DUKES. No.

Mr. JOY (Oregon). I should like to ask the gentleman from Puerto Rico a question. In Puerto Rico do you enter into a medical contract with the doctors?

Mr. MONTANER. Yes, sir.

Mr. JOY. What provisions have you for taking care of isolated groups? I refer specifically to your statement to the effect that some of your workers in isolated localities were injured and had to go a long way for aid. Do you have requirements that there be first-aid equipment up to a certain number of employees, and doctors in attendance?

Mr. MONTANER. Yes, sir; we have an act that provides that the employer employing 50 or more employees must have a first-aid station and physician or a male nurse.

Mr. JOY. You spoke of a particular case. I was wondering why he did not get first-aid treatment or some attention before he had to make that trip.

Mr. MONTANER. Yes, sir; but you have to remember that I said that among 6,019 policies that we had during the last fiscal year only about 100 belong to big employers.

Mr. LORENZ. I do not know how proper it is for me to raise a question about one of the reports that was read here this morning. Am I in order?

Chairman DORSETT. I take it that you are.

Mr. LORENZ. I think the report I am interested in is on legislation. Secretary ZIMMER (Washington, D. C.). I do not believe Mr. Craugh is here.

Mr. LORENZ. Even so, I should like to say something. That committee, as I recall it, recommended that States create special solvency funds by risk carriers operating in the State. That has been covered by specific action in several States within the last year and a half, and I think New Jersey takes the credit for being the first one, because Governor Hoffman signed the bill I think 2 or 3 weeks before Governor Lehman did in New York. That, however, is not the cure for the condition which developed as the result of the depression.

In New Jersey during the depression, 29 insurance companies failed. Practically all, with one or two exceptions, went into liquidation in foreign States. Under the New Jersey law the employer insuring his risk in an insurance company that we have in the State fund is not relieved of his primary obligation to make the compensation award in the event of failure of the risk carrier. The burden consequently fell either upon the employers who were unfortunate enough during the depression to have some money left, or upon the injured workmen who in many cases were taken to the poorhouse. I know that very well because several individuals called on me occasionally, and it always cost me a dollar or two to send them back. They came down to find when the liquidator in State X, 2,000 miles away, would be ready for a dividend. Some of these companies are still in liquidation. The set-up of the solvency funds leaves one class of employers still uncovered in my State, and that is the class of the so-called self-insurer. I understand that our sister State, New York, requires posting of securities from each self-insurer. That, however, does not give us much protection in New Jersey.

Chairman DORSETT. Do you not have the authority as the administrative body to say what the self-insurer shall do?

Mr. LORENZ. Under the law, the self-insurer, on proving his financial stability, may secure exemption. Under the recent amendment to the bankruptcy rule, 77 (b), a company may file a petition in Federal court for voluntary organization. That immediately stays all suits against the self-insurer, that is, the petitioner, including compensation suits, because most self-insurers, like public-utility companies, oil companies, large manufacturing companies, which I need not mention here, operate throughout the United States. A petition filed by such self-insurer in some out-of-the-way State will immediately create a situation, say, in New Jersey, that will stay all suits on compensation. We had a situation like that just about a year ago where a large employer went into reorganization, and all the injured employees, who were not only being paid through their current compensation but being paid medical attention as well, were cut off. It was necessary for me as a member of the department to

seek free medical attention from the city for these workmen who apparently were entitled to medical treatment.

Chairman DORSETT. They were cut off from what?

Mr. LORENZ. From receiving money.

Chairman DORSETT. Does not your department have the exclusive right to tell the self-insurer whether or not he may become such self-insurer?

Mr. LORENZ. Yes; but no one can tell just because of the size of the self-insurer whether his financial condition is good.

Chairman DORSETT. Does not the employee have his common-law rights to bring suit?

Mr. LORENZ. He does not. In a recent decision in New York State, in connection with liquidation of insurance companies, it was attempted to assert a prior right against assets and liquidation on compensation claims because under the State law in New York there is a preference for the full amount of compensation payments against the employer or his capital. I think the supreme court held that, although the man in New York State could claim a 100-percent preference against assets, a claim against the same company, where the employee had contributed to the profits, could not come in as a 100-percent preference claim. If you get that situation with reference to self-insurers, without these solvency funds being set up in each State, you may have the same situation, where some people from some States will come in and get 100 percent on their compensation payments and others will get something or nothing. I just raise this point, because the committee on legislation reported strictly on the insurance companies, and I thought this additional point would cover the field much more in full.

Chairman DORSETT. In my State if any self-insurer had failed to meet his obligation during the hard days we have been talking about, the industrial commission would have considered it a reflection on it. Because in my State, unless we are guilty of abuse or indiscretion, the self-insurers must meet our conditions. We say, "You must meet the requirements of the North Carolina Industrial Commission. You must plank down, as a guaranty of good faith, \$10,000 in perfectly good United States or North Carolina bonds, to be levied upon, in the hands of the State treasurer, if you fail to meet your obligations as a self-insurer."

Mr. H. A. NELSON (Wisconsin). Can you not require your self-insurers to file a bond or set up a trust fund?

Mr. LORENZ. That phase will be attacked during the coming legislative session. So far the self-insurers in New Jersey have been rather inaccessible in attempted attacks on their prerogatives through the legislature, and have been scot free with reference to the posting of securities, and so on. All they are required to do is to prove financial stability by filing the statement, and when these workmen appeared in my office asking how soon they could get paid by the self-insurer, I could not tell them as to the financial stability.

Mr. NELSON. Is that left to the discretion of the commissioner, as to the stability?

Mr. LORENZ. That is outside the field of the Department of Labor, as such.

Mr. NELSON. Have you refused anyone self-insurance on the grounds of instability?

Mr. LORENZ. I do not know. I assume that has been true.

Mr. COFFEY (Nebraska). I was interested in the discussion of the New Jersey law. I thought I knew something about the New Jersey law. In Nebraska we rather used it as a model to start with. We have self-insurers at present. We are permitted to require a financial statement. We can require a bond to be approved. We have followed the practice of requiring the assigning of cash funds of self-insurers. But here is the point I am vitally interested in. The gentleman suggested that where an insurance company failed under their statute, the employee was prohibited from taking any other steps against the insurers. I cannot comprehend that. Their liability under the general statutes is a joint liability.

Chairman DORSETT. I think you misunderstood the gentleman from New Jersey.

Mr. LORENZ. His common-law action is gone, but he can proceed on his action against the employer just the same.

Mr. COFFEY. It is a joint liability. As to the question of bonds in supporting insurance companies, we have had an experience there (and some of you have had the same) with a New Orleans company that failed. Under our statute we required a \$50,000 bond from that company, in order to get a license in Nebraska. The insurance company failed, and then the bonding company failed. Of course the funds of the insurance company and the bonding company were eaten up by the expenses of receivership. There is where it generally goes. I can speak with a little knowledge because I am an attorney myself. I had some cases against that company. I just got a notice the other day on a case which has been long drawn out, on an award of something like \$3,200. There was a \$16.20 payment, and they said that was final. But we do not grant a permit to a self-insurer without requiring a deposit, and we go farther than that under our statute. Our statute is an elective statute. We find whether the self-insurer will qualify, and then he will have his employee reject. We revoke that permit the moment a rejection comes in of that employer, in order to force them, if they are going to take the limitations of the act, as a choice against the common-law liability, as then they should be bound clear through.

I think our statute is something like New Jersey's. If the employer does not procure the approved insurance, then he gives to the employee the right to claim compensation or bring his action under the common law. Then on the other hand, if the employee rejects and the employer is clearly within the law, then the employee must look to the common law for his benefits.

Suppose the employer rejects the act and the employee rejects the act. What is the remedy?

Chairman DORSETT. It certainly is not before the compensation court, is it?

Mr. COFFEY. How could it be before the common-law court? The employer rejecting has given the employee the right to claim compensation. If the employee rejects, he has to look to the common law, with the defenses restored to the employer. There is not any answer about what court would have jurisdiction. But I am wondering about the remedy. I would be interested to know if anybody has a method.

Mr. LORENZ. I do not know whether I can answer the gentlemen who just spoke, specifically, but we have an elective act. Under section 1 and section 2, under the constitutional provisions, we have to give an election. If the man does not give notice, the employer to the employee, or vice versa, before the action, section 2 of the compensation act provision is rejected. Then there is a presumption that section 2 was intended to apply. If that is given, then section 1 applies. I do not know how many thousands of employers in New Jersey operate under section 1, but there are only several, I think less than five of the sizeable ones. I have not heard of any common-law action.

I have not heard of any action from section 1 for injury. In fact, I received a letter just about 3 weeks ago from a man who had sprained his back, who claimed that the employer, operating under section 1, offered him \$15 to get rid of the claim. He appealed to the compensation bureau to help him get his compensation. We could not do anything.

Mr. JOY (Oregon). I should like to hear from someone from some State that is operating under a State fund on this matter of the carrier. It is plain to me to see they are not having so much luck. I should like to hear from some of the other States that are operating similar to Oregon in that regard.

In Oregon any worker is covered automatically, whether he knows it or not. He cannot get away from compensation. There is no way that an injured worker can avoid receiving compensation. Briefly, without going into detail, that is the story.

Chairman DORSETT. I see a gentleman from Ohio who can probably answer that.

Mr. JOY. Have you any of the troubles that have been spoken of here, any of the ramifications that they seem to get into with the carrier situation? I mean the failure of the companies, and all of that, and these common-law items, and so forth.

Mr. GREGORY (Ohio). We have not been bothered with those problems. In Ohio, similar to Oregon, all workers who are engaged by employers having three or more in their service are entitled to compensation. In Ohio, when we grant the privilege to certain employers to carry insurance and pay compensation direct, we not only pass upon the financial stability of the employer, but we reserve the right to impose, and do impose, the obligation of supporting that application with a bond, the minimum being \$25,000, from that on up, depending upon the amount of premium that they would pay if they were contributors to the fund.

We have some problems in Ohio, but they do not appear to be any of these that have been raised here this afternoon. I assume most of these questions that have been raised here depend largely upon the laws of your respective States. Many of them are purely legislative matters, unless it be that your commissions are empowered with certain discretionary power as to what they can do under particular circumstances.

The right to be a self-insurer in Ohio is lodged primarily in the Commission of Ohio; and in the absence of a gross abuse of discretion, the commission controls the situation.

Any further questions?

Mr. JOY. Do you require your firms to either reject or accept your act?

Mr. GREGORY. No; the law imposes the duty on them that they must have compensation coverage, either by way of contributions to the State fund or be authorized to carry their own insurance.

Mr. JOY. Are there any placards on the jobs, visible to the workman, to show whether he is under the act or not, or under a common carrier?

Mr. GREGORY. The employer is required under the law to have sufficient coverage, if he is amenable to the law.

Mr. NELSON (Wisconsin). I wonder if we might bring down to date the discussion of the employees who receive subsidies from the Government. I think at the last session the question of Government workers in W. P. A., P. W. A., C. C. C., and so on, was discussed. I think there are two classes of workers as to which the status is still in doubt, the drought-relief workers and the students of the National Youth Administration, who receive a subsidy from the Government or work for the school or are farmed out to various employers. I wonder if Mr. Langley has investigated that at all.

Mr. LANGLEY (Idaho). I do not understand the question.

Mr. NELSON. Have you passed on the status of the students who obtain a subvention from the Government under the National Youth Administration?

Mr. LANGLEY. That question has never arisen in our State. I do not believe that such a person would be entitled to compensation in the event of accident.

Mr. NELSON. In Wisconsin we have held them to be employees, and the question is now before the court.

Mr. DUKES (South Carolina). We have held that in South Carolina.

Mr. COFFEY (Nebraska). We have passed on the question. I do not know where we are going to get. We have had W. P. A. and P. W. A. and all of the different initial classifications. The question hinges on your particular statute. Our statute provides that every employer of one or more in the State, except those excluded from the law, are under the law, and our courts have held that the compensation act is a contract with the employer. We are trying to hold that where the contract of employment is made in Nebraska, it is made subject to our statute; and while I have no Supreme Court decision that I have been able to find in which the question has been definitely passed on, my own humble opinion is that the Federal Government cannot come into a State as an employer and set aside the law of that State. We have held successfully this way: That where money grants were made to a community which went into a general fund, then the master and servant relation occurred in the community. In all of those cases we have so held and secured recovery. There has been no contested case on it. But it seems to me, out of reason in any logical construction of it, that we have certain limited State rights. The Government does not pass rules of civil conduct for a State, and so long as the laws of the State do not contravene the Federal law it would seem to me that the State law would apply; and when the Federal Government, through an association, voluntary or incorporated, comes into a State and makes a con-

tract with a citizen of that State, it has to make that contract subject to the laws of the State, and that is what we are holding and hope that it will stand up.

Mr. NELSON. You do not compensate W. P. A. workers, do you, because the Government compensates them.

Mr. COFFEY. I know you are making that statement with all sincerity, but they do not. That is one of the problems that takes a lot of our time: the W. P. A. worker who is injured and wants to know when he is going to get his compensation. We send him down, of course, to the department, and there they kid him along. Sometimes they pay him a week or two, and then tell him he has to fill out a lot of blanks and send them to Washington. We do not have anybody administering the Federal act in Washington, so we have asked the employee to file his petition with us to protect his rights under the State law, if he has any. In that way we have been able in some cases to secure compensation. We expect to make a test case, because, as I say, when an association, voluntary in its nature, comes into a State, or an incorporated body comes in, or an individual comes in, and makes a contract within that State, it makes that contract subject to the laws of the State, and we humbly believe that in the end the court will hold that the State law governs.

Mr. BROENING (Maryland). How would you hold, against the agency of the Government?

Mr. COFFEY. It would not be against the agency of the Federal Government, but against the State in which it was made.

Chairman DORSERT. Our supreme court in two decisions has attempted to meet the situation like this: In *Wood v. The City of Raleigh*, Wood was picked up off the relief rolls. He was put out on the city woodyard to chop wood, and carried part of it home. He was given a sack of flour, maybe 10 pounds of potatoes. He lost his foot. That was 3 years ago. The North Carolina Industrial Commission awarded him compensation for the loss of that foot. The city of Raleigh, operating the woodyard, appealed to our supreme court, and the court held that the man was not an employee as contemplated by the provisions of a workmen's compensation act.

In another case, in Asheville, N. C., the R. F. C. made a grant or loan of money to the city of Asheville to do some sewer work, and they had a case there of an injury. The man came before the industrial commission, and we awarded compensation in that case. The insurance carrier on this Asheville risk carried it to the supreme court, citing this other case as an authority, that the employee was not an employee, and the supreme court said, "No; in a situation like that, the permanent-improvements loans are a grant from the R. F. C. Although you went to the relief roll and got your man, he is an employee under the provisions of the workmen's compensation law."

So we have the two situations in the State of North Carolina.

Mr. COFFEY. We had the question of relief workers, and a very serious problem to us. Ohio was one of the first States that just dumped everything aside and said: "It does not make any difference whether a man is paid in potatoes, or prunes, or peas, he was an employee entitled to compensation." That followed the California decision, which said you could not compensate where it was created work. You know the theory of common law was that any statute

had to be strictly construed. They are getting away from that. I have examined all of the decisions of the different States in the Union and of the Federal Government in this matter, and while the majority of the cases hold that the relief or charity workers are not compensable, I had to adopt the decision of the minority States, which holds that charity workers are entitled to compensation.

Let me call your attention to the rule that decisions are changing. Under the old law, the charitable institution was not held responsible for damage to its employee. It is an old axiom of the common law that is being wiped out by the most recent decisions.

I succeeded in assembling a brief of 35 pages, taking all of the decisions that I found. While the majority of cases hold that those cases are not compensable, the minority opinions seemed to be reasonable, because 46 States have a statute of that kind. There has been a change from the old way of handling those things, and it seems to me that the logic of the minority is good logic, at least, and good law. Whenever the relation of master and servant is established, you have a compensable case under any statute.

Mr. COADY (Wyoming). Speaking of the W. P. A. employees, in Wyoming we have never had any trouble at all with that situation. Our own W. P. W. administration have their own set-up on that, and they get along very well. They compensate any of those men who are hurt; give them medical attention. They have their own fund and own arrangement with the Federal Government.

Chairman DORSETT. That is true in North Carolina, too.

Mr. McSHANE (Utah) Any of you who have read attorneys' briefs in cases know that if you have 35 or 40 cases cited, you probably will have one that is four-square with a point, because of the difference in the statutory provisions. In California, for example, it is not hard to understand why they would hold in a case that one of these charity workers was not a beneficiary of compensation under their act, because they are specifically excluded by a statutory provision, and there is no way of getting them in. It does not make any difference how charitable the administrators of the California fund or the California Accident Board are, there is a law that specifically says they are not to receive compensation benefits. So if you will go through the 46 different States that have compensation acts, you will find a great variety of statutory provisions, and they are not all construed in the same light, no matter how your sympathies may go. In our State we meet the situation so far as F. E. R. A. problems are concerned by bringing them all under, and we have had no trouble with that. But with the Works Progress Administration, now in operation, the Federal Government has its own set-up, and the people are being compensated in our State by the Federal Government. Of course, the compensation may not be as generous as it would be under our law, but nevertheless it is as far as they are required to go under the act that they are operating under. So far as the Public Works Administration is concerned, all contractors are required to take compensation insurance in our State, with an independent carrier, with a State insurance fund, and they are properly compensated, so we really are not having a great deal of trouble.

Mr. WALLING (Rhode Island). May I ask the gentleman from Nebraska if the test case to which he just referred involved the W. P. A.?

Mr. COFFEY. No; the test case that I mentioned from the original California decision was based on created work.

Mr. WALLING. I thought you said that you had a test case.

Mr. COFFEY. We have held that in certain cases they were compensable, and we saw that compensation was paid.

Mr. WALLING. Who would be the party respondent in such case?

Mr. COFFEY. If the political subdivision was granted the money, we would want to file under our authority.

Mr. WALLING. You would regard it as the municipality which was sponsoring the project.

Dr. PATTON (New York). I wish to ask a question of the gentleman from Puerto Rico, followed by a question of Mr. McSHANE.

For three consecutive years, the tabulation in New York State showed that 14 to 15 percent of our compensated cases had certain infection, but the lesson we drew from it was this: Not that the cost of infected cases was greater than the cost of noninfected cases, because it was not, but for the most part the bulk of infected cases are compensation cases that would not have been compensation cases if they had not been injured. The infection caused disability long enough so that compensation was due, and if they had had proper first-aid treatment there would not have been compensation, or infection either.

On this latter subject we were talking about, in New York State, the W. P. A. now does grant compensation. The maximum limit in the case of death is \$3,500. In New York State organizations are specifically exempted from liability under the compensation law where some person working in exchange for food and lodging, and so forth, is injured while chopping wood or doing any kind of task.

Mr. LORENZ. New Jersey had several forest fires recently, which proved fatal to some of the men. We have a special statute protecting volunteer firemen, but we have no statute for the protection of forest-fire fighters that may be pressed into service at a moment's notice. I should like to hear from gentlemen from States who extend that protection by way of compensation for forest-fire fighters. They are just private citizens that may be pressed into service.

Chairman DORSETT. In North Carolina they are deputized, and the commission has held, sustained by the courts, that when a forest-fire warden finds a fire raging and he deputizes the citizens in that community to help to put it out, they become employees of the State, and we pay them compensation under the provisions of the act when they are injured.

Mr. LORENZ. The difficulty there is that their income from that occupation is not the total income.

Chairman DORSETT. If he is a farmer, we try to figure his average income as a farmer. If he is a truck driver, we take that. We have the discretion of adopting one of three divisions with reference to figuring average weekly wage.

Mr. LORENZ. Is that a result of a particular statutory provision or because of the construction?

Chairman DORSETT. A statutory provision.

Mr. BROENING. Which do you pay?

Chairman DORSETT. The one that is appropriated by the legislature for that particular employment.

I think this afternoon's session has been a most profitable one.

September 22—Morning Session

A. G. Mathews, Commissioner, West Virginia Workmen's Compensation Department, presiding

President BAKER. I think we have a very fine program for you this morning. Although Peter Angsten, of Illinois, was unable to get here, I have asked Commissioner A. G. Mathews, of West Virginia, to substitute for him and to preside at this session.

I want to say before Commissioner Mathews takes charge here that I greatly appreciate your interest taken, your efforts to get here on time, and I appreciate the attendance of the doctors at these sessions. I hope you can all stay throughout the day, tomorrow, and Thursday.

Mr. A. G. Mathews took the chair.

Chairman MATHEWS. Gentlemen, I am very sure you will be interested in the program this morning. This discussion relative to injection method of treatment of hernia I am sure will interest everyone who has to deal with compensation cases. We have on this program Dr. Andrew J. Weber, of Milwaukee, Wis., and we will now hear him.

Injection Method of Treatment for Hernia

By DR. ANDREW J. WEBER, Milwaukee, Wisconsin

My experience in the ambulatory treatment of hernia dates back only 2 years to the time when I visited the clinic of Drs. Bratrud and Kinney at the University of Minnesota. These men had done considerable experimental work on dogs and rabbits with the various preparations that were on the market at that time, and by this experimental work gained sufficient information to convince themselves that hernia could be successfully treated by this method. At the time of my visit to their clinic, some 300 cases had been successfully treated. It was my pleasure to see cases that had been treated at some previous times and which were in for check up, as well as new cases, and others that were in the various stages of treatment. I wish to say that I owe a great deal to these men for the time and interest they gave me while I attended their clinic and studied the manner in which they handled their cases and the various preparations they used in the treatment. This information has been most valuable to me. My experience covers something like 100 cases from all walks of life, and the results I have obtained are sufficiently gratifying so that, in my opinion, this treatment is deserving of a place in the treatment of hernias.

Hernia is perhaps the most common of all defects found in otherwise healthy individuals. It is not a defect of the young, nor is it a defect of the old. It is found in all ages and all walks of life. Perhaps the most frequent during middle life. It is far more frequent in males than females; and that, I believe, is due to the structural mechanics of the individual rather than the occupation or vocation.

Since compensation has been established, a great deal more interest has been shown in hernia, by both the employer and the employee. In the earlier years trauma was considered a great factor and the only factor that made hernia compensable. In more recent years the type of occupation has been given considerable thought. Where continued intraabdominal pressure is being forced upon a potentially weak point, it is called an occupational hernia.

While my paper does not deal directly with the cause of hernia, I wish to make a few fitting remarks on the cause, possibly to show some of the advantages of this newer method of treatment over the older method of surgery in the handling of hernia, especially in contested cases before our courts and commissions. I will consider the anatomy of the inguinal region, as the greater number of hernias are inguinal in type. In the early fetal life the testicle is placed high up in the abdomen behind the peritoneum, in front of and a little below the kidney. The anterior surface and sides are covered by peritoneum. About the third month of intrauterine life a peculiar structure is found known as the gubernaculum testis. This structure is at first a slender band which extends from the internal ring to the body of the testicle and is there continued upward and in front of the kidney toward the diaphragm. As development advances, the peritoneum covering the testicle encloses this bandlike structure, which later develops into a thick cord carrying with it the vessels and nerves. About the sixth month, the testicle starts to descend through the internal ring, down the inguinal canal, which is between the internal and external oblique muscles and out through the external ring into the scrotum. By the eighth month this descent is complete. This now gives us the potential weakness of the abdominal wall in the inguinal region. First, at the internal ring, separation of the oblique muscles, allowing for the inguinal canal, and last the external ring. Most inguinal hernia are oblique and therefore start at the internal opening and follow down, as they advance along the spermatic cord, down the canal and out the external ring, later to become a scrotal hernia.

The indirect (oblique) inguinal hernia is the most common type of hernia and comprises 75 or 80 percent of all inguinal hernia. The direct inguinal hernia: This type of hernia protrudes through a defect in the transversalis fascia into the lower half of the inguinal canal, traversing Hesselbach's triangle. The floor of this space is formed by the transversalis fascia, while the anterior covering is composed of the external oblique. The hernia emerges through the external ring, passing above and anterior to Poupart's ligament.

The femoral hernia emerges through the femoral canal into the upper thigh, more frequent in females than males. The dilated femoral ring is bounded above and anteriorly by Poupart's ligament and laterally by the sheath of the femoral vein. The umbilical hernia emerges through an enlarged umbilical ring which is made up of dense fibrous tissue and is a defect in the linea alba.

A central hernia is usually the result of a defect in the linea alba and is often called epigastric type.

A postoperative hernia is a hernia that develops through the scar of an operation and may be located at any point of the abdominal wall. This type of hernia is usually very difficult to treat with this method because of adhesions of the abdominal viscera.

In reviewing the literature dealing with the subject of injection treatment of hernias, one might gain the impression that the method is without complication or hazard. Such an impression is erroneous and I am sure the unlimited use of injections in all types of cases must make an impression on anyone who feels the method is worth while. Hernias that are not completely reducible and contain abdominal viscera should not be injected. Neither should an incarcerated hernia be injected. It is not necessary, however, that the sac is reduced, but the contents of the sac must be emptied out and held out at all times. Pressure of the truss being worn in one position and pressing over one area constantly has produced sloughing of the skin. This is most likely to occur as the result of wearing a truss too tight, as during the warm season when perspiration gets between the skin and the truss. Cases must always be watched from time to time so this condition does not develop. There are cases of sloughing reported from the injections. I have not had this experience. If a hernia is properly reduced and a properly fitting truss applied that will hold the abdominal viscera in at all times, I cannot see any possible chance for sloughing.

Injection is carried out in the following manner: The patient is placed in the supine position, truss is removed, and the skin is prepared by washing with alcohol or any preoperative preparation. The syringe being sterilized, the proper amount of solution to be used is placed in the syringe. You are now ready to make the injection. In the case of an oblique inguinal hernia, you place your first injection into the internal ring. To locate the internal ring the following "landmarks" should be observed: The anterior superior spine and the pubic spine. Just above the midpoint of a line drawn between these two landmarks represents the internal ring. Injections should be made along the entire canal and including the external ring. In the case of a direct inguinal hernia, the first injection should be made through the area through which the hernia protrudes and followed by subsequent injections around the area of the opening and in the canal and external ring. A distinct "give" sensation is felt as the needle passes through the fascia or external oblique muscle. When injecting the inguinal canal or the external ring, it is obviously easier to do this under the guidance of the finger, which is inserted through the external opening into the canal. In the case of the internal ring, one is aware that the point of the needle has entered the area by the fact that following its introduction the body of the syringe may be moved freely in all directions. The syringe must be aspirated before its contents are emptied to make sure you have not entered a blood vessel.

Patients will complain of pain in the cord or testicle immediately following the injection if you inject into the cord and you will have some swelling following your injection. The patient may also complain of pain for a few days. Ordinarily, following the "Thuja" injection, there is a slight discomfort for a few moments, but this is of little consequence and after the first two or three injections they do not complain. With "Proliferol" the area is previously anesthetized and there is no pain.

In the case of a femoral hernia the finger is placed in the femoral canal and the injection is made mesial to the finger. This, obviously, is necessitated by the proximity of the femoral vessels and nerves.

In umbilical hernias, care must be used in depositing the solution well into the fascia with the hernia well reduced to prevent any injury to the viscus.

The number of injections necessary to completely close a hernia depend on a number of factors, some of which we cannot be responsible for. First, proliferation of new tissue varies in individuals, even with the same technique. I do believe, however, that the more successful we are in placing our injections, the better our result will be, and the fewer injections will be necessary to effect a closure. I have not completed a case in less than 6 injections and have used as many as 30 before a satisfactory closure was accomplished. The latter case, however, was a very large direct scrotal hernia. Perhaps 10 to 12 injections would be an average number in my personal experience.

In selecting cases to be treated by the injection method there are several things the surgeon must have in mind. The hernia must be a reducible hernia, one that can be held reduced by a properly fitted truss. Hernia associated with undescended testicles, sliding, and irreducible hernia should be ruled out so far as this treatment is concerned. Patients suffering from syphilis, toxic goiter, or hemophilia should not be treated because of complications. Patients suffering from a very severe neurosis should be very carefully watched if treatment is instituted. Neurotic patients are difficult to handle and will require very careful watching. The slightest discomfort they may have will be sufficient reason to remove the truss and destroy the repair that had been established.

There are many type of trusses on the market. I do not think that any one make will comfortably and satisfactorily fit all types of cases, therefore it is within the discretion of the surgeon to not only fit the patient with a truss that will hold the hernia reduced but also one that can be comfortably worn. The proper fitting of a truss and its adjustment from time to time is one of the most important prerequisites of this treatment. One man gets satisfactory results with a truss in a certain type of hernia, while another man does not find it easy to fit and finds an entirely different truss with equally good results. As long as the truss does what is expected of it and can be worn comfortably, it will be a satisfactory truss. The patient should be permitted to wear a truss for some little time before injections are instituted to enable him to become accustomed to wearing the truss and at the same time get the assurance of holding the hernia reduced. The patient should be instructed to wear the truss day and night for a month after treatment has commenced, and better, perhaps, longer, depending upon the size of the hernia one is dealing with. I believe that the length of time to wear the truss after injections have ceased has the same variance as the number of injections. If a case requires but a few injections, it will not be necessary to wear the truss more than 2 or 3 months, while one that requires a great many injections will have to wear a truss for a considerable period of time after treatment has been completed. It is reasonable to say that a period of at least 4 months following the completion of injections would be an average time to wear the truss.

As to the ambulant treatment of hernia, I believe, sufficient work has been done with this method of treatment to be convincing that it deserves a definite place in the care and treatment of hernia, and

that many cases that are not fit patients for surgery can safely be treated by this method. The expense of this method can be more readily borne by the poorer classes. Recurrence can be handled much more simply, easily, and with a great deal less expense to the patient. This method of treatment has placed the care and treatment of patients suffering of hernia into the hands of physicians who are competent and who understand the anatomy, pathology, and diagnosis of hernia.

Chairman MATHEWS. We thank you for that very wonderful paper, and now we will have a discussion by Dr. George J. Mehler, Medical Department, New York Department of Labor.

Discussion on the Injection Method of Treatment for Hernia

By Dr. GEORGE J. MEHLER, *Medical Department, New York Department of Labor*

I have listened attentively to Dr. Weber's very comprehensive, instructive, and interesting paper. I am sure that I am not in error when I state that we appreciate the concise, clear-cut, and easily understandable manner in which this important subject has been presented by him. We realize that the available literature on the subject of the injection treatment of hernia is rather scarce as a whole, somewhat indefinite as to comparative results with surgery and almost totally lacking in reports of cases of complications or any separate reference to them. Since this type of treatment is restricted to completely reducible hernia, no accurate comparison with the results of surgical repair of reducible hernia alone is yet available.

Prior to 1900 the injection treatment had fallen into the discard in this country since the time of Joseph H. Warren, who described in his book of 1881 his detailed modification of Heaton's method, as well as the original solution containing onercus alba as the active agent. Heaton's instrument was a syringe with a needle boring openings above the joint. Both Warren and Heaton injected within the canal but supposedly outside the sac, one drastic injection with this caustic irritant solution being considered sufficient for all cases.

This was followed by pain, local inflammation, and fever. The patient was kept in bed for 10 days to 2 weeks but no truss was worn until after this. The truss was then applied and kept on several months. Warren was the first to give a definite statement of the process of "seroplastic repair" on which modern treatment as described by Dr. Weber is based.

The present ambulatory treatment with modernization seems to have been introduced by Ignatz Mayer of Detroit about 1899. He published his technic, solution, and results in 1927, following with additional articles in 1930 and 1932 (*Medical Journal and Record*, April and May 1927 and 1928, and *Medical Journal and Record*, January 1930 and March 1932). He treated only reducible hernias and carefully selected his subjects. Claims 98 percent recovery in 2,100 cases.

It is my understanding that this gathering is interested principally in the treatment and cure of industrial, or compensable hernias. Most of the hernias we see occur in men doing laborious work, and in formulating our opinion we should, above all, take into consideration not only his occupation but also his physical and mental caliber.

The reason for this is obvious, for unless the person being treated by the injection method is willing to cooperate fully and sincerely until the termination of treatment and discharge there will be no success.

From the standpoint of the claimant, the treatment is ambulant, loss of time from work is rare. It is advisable in the aged and poor operable risks, for those who have a personal distaste for surgery, life is not endangered, no anaesthetic necessary, and recurrences are treated by another course of treatment. The disadvantages are the prolonged wearing of a truss night and day, long period of treatment and possibility of minor complications.

From the standpoint of the employer there are no hospital bills to pay, no operation fee, and no compensation payments. The average cost per case for treatment by injection method is from \$50 to \$75, and from a surgical standpoint \$285, which includes all medical and compensation payments.

The contra-indications for this treatment have been mentioned in detail by Dr. Weber. The advantages of surgery are a shorter period of time for recovery, no truss necessary, and no course of treatment.

During the past few months I visited many of the larger hospitals in New York, and I also consulted with some prominent surgeons relative to the injection treatment of hernia, and the reports I received are not very encouraging. It was the opinion of the majority of surgeons that at least 1½ years should elapse before a definite result could be announced. Several hospitals, including Roosevelt Hospital, never countenanced the treatment. About 2 weeks ago I visited Dr. Carl Burdick, senior surgeon of the Hospital for the Ruptured and Crippled, and he informed me that their statistics showed many recurrences following injection treatment, and that his hospital is discontinuing this practice. He also stated that in cases upon which he operated for recurrence after injection treatment that there was not much disturbance in the normal anatomical relations and that only few adhesions were found in the inguinal canal. This to my mind is very significant, as the treatment by injection is supposed to bring about extensive and firm adhesions. Dr. Burdick is to read a paper on this subject very shortly before the Academy of Medicine in New York and the paper will later be published in the American Journal of Surgery.

At the labor department in New York we examine many cases of hernia both pre- and post-operative. It has been only during the last 1½ years that cases treated by the injection method have been appearing. From my own statistics, plus others obtained, there is found a recurrence in 30 percent of cases. However, it is my personal opinion and conviction that potential or incipient inguinal hernias will be markedly benefited by the injection method, thereby bringing about a tremendous saving to the claimants and to industry.

Chairman MATHEWS. Does anyone desire to ask these distinguished doctors any questions relative to these papers? I think we might have a few minutes' discussion if it is your pleasure.

Dr. EDGERTON (Kansas). Mr. Chairman, I think we should feel grateful to Dr. Weber for presenting this subject before this meeting. I think there are perhaps numerous instances in which this particular method will find a use in our regular set-up for the treatment of hernia. I do not believe, however, that it should or ever will become

a method of choice in the treatment of the routine run of these particular cases.

The effort to seal up the sac in the inguinal canal may accomplish, temporarily perhaps, what it sets out to do. But I do not believe sufficient time has elapsed for us to tell whether or not there is going to be an extensive absorption of this fibroblastic tissue that we aim or that is attempted to be laid down at that site.

The tissues in the region of the inguinal canal lots of times are inherently weak, and I do not believe there is any way of increasing the inherent strength of those tissues by injecting this irritant fluid into the canal. I do not believe you can accomplish anything like you would accomplish by adequate surgical repair of these structures in the region of the abdominal wall. I think by the use of fascia transplant and sutures, you can surgically build up a very definite barrier there that will insure you a much greater chance of success than by the injection method.

With the direct types of hernia, especially of any appreciable size, I think there would be a tremendous hazard of setting up a rather severe localized, at least, peritonitis, by the injection of an adequate amount of this solution into Hesselbach's triangle. Of course there are recurrences following surgical repairs of hernia. Sometimes when you think of the attempts that are made to repair these cases you wonder that there are not more of them. But I believe a good injection is probably better than a poor surgical repair, but I am not willing to believe that the injection is as good a method as an adequate surgical procedure carried out carefully and adequately by a competent surgeon.

We talk about reducible hernias. I do not know for sure that they are reduced. I can conceive that a small sliding hernia, in which a loop of the hernia forms a wall in the gut, might be reduced. I do not know how to make a diagnosis of a sliding hernia. I do not believe anybody can do it until they cut down on it and find the situation there.

I think it is going to be a method that we can use in a lot of cases where there are contra-indications from surgery from other standpoints, where there are radical objections to surgery, but I think we have to recognize the economic side of this particular treatment.

Again I want to thank Dr. Weber for presenting the problem. It is one we ought to be able to carry out in cases that he describes that are necessary.

Chairman MATHEWS. I am assured that everybody is interested in this discussion. Are there any further remarks on this subject? If not, we will pass to the next subject, Tuberculosis and Its Relation to Trauma, by Dr. Jacob A. Goldberg, secretary, New York Tuberculosis and Health Association, Inc., of New York City.

Trauma and Tuberculosis

By Dr. J. A. GOLDBERG, Ph. D., *Secretary, New York Tuberculosis and Health Association, Inc.*

About 3 years ago the speaker undertook to obtain data relating to the handling of compensation cases involving trauma and tuberculosis. He was able to find a considerable number of cases in the

records of courts throughout the country, the striking mark being the large divergence of legal and even medical opinion as to various problems involved in the determination of causal relationship and aggravation of a preexisting condition of tuberculosis.

In the spring of 1934 Dr. James Alexander Miller, a distinguished tuberculosis specialist, and for many years president of the New York Tuberculosis and Health Association, suggested that, after long experience with tuberculosis cases, he thought it most important that a study should be set up as a result of which it might be possible to prepare standards for the determination of causal relationship and tuberculosis. Dr. Miller indicated that, among other things, great doubt existed as to the effect of accidents on the aggravation of an old tuberculous lesion; and also as to the time element involved in any such aggravation. In other words, he raised the question as to whether it was necessary for active symptoms to develop a day, a week, a month, or 6 months after the accident to give it the color of causal relationship and aggravation of a pre-existing condition. It is quite evident that these are extremely important matters from a medicolegal point of view, and it was Dr. Miller's thought that a properly organized study might lead to the formulation of definite standards in the determination of causal relationship so far as tuberculosis is concerned.

Following this suggestion, a small committee was organized to arrange for a preliminary investigation, on the basis of which a larger study could be undertaken. The speaker was asked to serve as secretary of this committee. An active participant in the work of the committee from the very outset was our friend, Verne A. Zimmer, who continued his affiliations with the committee as a whole until he severed his connections with the New York State Department of Labor. A careful analysis was made over a period of months of a fairly large number of closed cases in the death files of the New York State Department of Labor. All of these cases involved claims for compensation on the basis of a presumed condition of preexisting tuberculosis.

As a result of this preliminary investigation of closed files, the full committee on the study of tuberculosis and workmen's compensation was organized under the chairmanship of Dr. James Alexander Miller. It included, in addition, other tuberculosis specialists, the medical director of the New York State Department of Labor, the medical director of the New York State Insurance Fund, the surgical director of the Aetna Life Insurance Co., Mr. Zimmer representing the Division of Workmen's Compensation of the New York State Department of Labor, and the speaker as secretary. Full cooperation was pledged to the study by the New York Tuberculosis and Health Association, National Bureau of Casualty and Surety Underwriters, National Council on Compensation Insurance, and, above all, by the New York State Department of Labor. The committee, after a few meetings, wrote out the objectives of the study which were: (a) To determine criteria of causal relationship between industrial accidents and conditions due to pulmonary tuberculosis; (b) to determine criteria of disability from such tuberculosis, including criteria of total and partial disability and the duration of the disability; (c) to determine criteria of activity of the disease; and (d) to determine criteria for the diagnosis of the presence of pulmonary tuberculosis.

After the organization of the committee and the determination of the objectives, the machinery was set going. Arrangements were made, through the New York State Department of Labor, to have all referred cases examined in one of the health centers located in the midtown area of New York City, and easily accessible from all parts of the city. The Honorable Elmer F. Andrews, industrial commissioner, upon the recommendation of Dr. Miller, appointed six recognized specialists in tuberculosis, Dr. Miller among them, as impartial medical examiners in that field, for the Department of Labor. The procedures thereafter worked out and followed in the examinations are herewith detailed:

Cases from the department of labor, in which there is a question of causal relationship and tuberculosis, are sent to the secretary. He then has the files carefully studied, pertinent data copied out, all medical records completely transcribed, medical testimony and other pertinent testimony likewise transcribed, and prepared for the permanent files of the committee. The claimant is then requested to come for preliminary examination. This includes the taking of two chest X-rays, the collection of sputum for concentrated analysis, the taking of a complete industrial history, a history of previous illnesses, history of present complaints, history of accident and injury in detail; temperature, pulse, respiration, and weight are also recorded; and certain other data are set down in an especially prepared form. The applicant is then told to return within a few days when the results of the X-rays are available and the sputum has been examined. At this second appointment a committee of three impartial tuberculosis specialists, who serve as the experts, are prepared to examine the applicant.

The patient goes to the first specialist to whom is given the completely transcribed file, the X-rays taken at the previous appointment, all X-rays which have been obtained through cooperation of the department of labor or the carrier, and all data obtained from the patient. A careful examination is then made of the claimant, and the information is recorded by the examiner. He is then examined a second time and independently by another member of the panel who goes through the same procedure, without having available the report of the first examiner; thereafter he goes to the third medical examiner, who goes through the same process. After the claimant is independently and completely examined by the three medical experts, the physicians discuss the case among themselves and decide on the opinion and answers posed to them by the director of the Division of Workmen's Compensation of the New York State Department of Labor. In order to facilitate matters, one member of the committee serves as chairman and signs, in affidavit form, the final report that goes to the department of labor in triplicate; the names of the other two physicians are entered on the record as concurring in the report.

The question has arisen as to what is done in case one of the committee does not agree with the other two. This has happened in only one case so far. In such a case, a second panel of three impartial experts, also appointed by the industrial commissioner, is called in and the claimant is completely reexamined on the basis as outlined. In the one case noted the second panel agreed unanimously with the majority opinion of the first panel. This is the current procedure.

The plan pursued in financing this study was agreed upon after consultation with the industrial commissioner and with representatives of both mutual- and stock-insurance companies. It was suggested to the carriers particularly that it would be necessary to have a minimum fee of \$50 per case in order to cover the cost of the work of the committee. This fee is in effect at the present time.

Arrangements are made for the examination of three claimants at each clinic session. The fee received covers compensation to each of the three examining physicians, who received \$25 for serving as examiners of three claimants in an afternoon, the cost of X-ray service, laboratory service, secretarial, stenographic, messenger service, supplies and equipment, transportation, printing, postage, and other incidentals. The treasurer of the New York Tuberculosis and Health Association serves as treasurer of the committee, and all checks received from the carriers are turned over to the treasurer of the association, who keeps a separate account for the purpose of the study.

The standard fee paid to the medical examiner for testifying at a hearing in the department of labor was fixed by agreement at \$25. Bills for such amounts are forwarded to the carriers or claimants' representatives through the division of workmen's compensation, department of labor.

Since the inception of the committee's work, the impartial medical experts have been called upon to testify in a relatively few cases.

It was originally intended that a total of 500 cases would be examined within a period of 1 year or thereabouts, and that these cases would be studied and followed up within the second year. Due primarily to the lack of employment in the heavy industries in New York City and State, a comparatively small number of cases have been referred to the committee. To date a total of 130 claimants have thus far been referred for examination. It is too early to speak of results except to indicate that the work of the committee has elicited the interest and hearty cooperation of the carriers, the claimants, and the representatives of the New York State Department of Labor.

The results of the first year's study are now being analyzed from the standpoint of the four primary objects of the study, but the data available are still insufficient on which to base any conclusions. These will not be reported upon until the study as a whole has been concluded.

In the discussions preliminary to the formal undertaking of the study the committee was led to believe that a total of 500 cases would probably be referred for study within 1 year after examinations were started. The committee thereupon assumed that the medical examinations would be completed within 1 year and that phase of the study terminated at that time. However, as already indicated, the marked and continued depression in the building and other heavy trades and industries naturally brought with it a marked decrease in the number of industrial accidents, particularly those in which the committee was interested.

The committee has decided that a special study of this kind by a small group should be definitely limited in time, and consequently it is planned to discontinue medical examinations after December 31, 1936, and to base the formulation of standards and the final report

on the total number of cases already examined and those to be referred and examined during the year 1936.

When the final report of the committee is presented, it is hoped that we may have agreed upon other definite standards upon which to base the criteria originally determined as the main objects of this study. In addition to this it is hoped that the type of organization which has been in operation in making this study may assist in the more successful operation of a special panel of specialists to be selected and operated under the provisions of the revised Workmen's Compensation Act, and that consequently it may be of definite assistance to the industrial commissioner and also to the representatives of the county medical societies who are charged with the responsibility of selecting those specialists.

In working out the program for the study of trauma and tuberculosis the committee, under the chairmanship of Dr. James Alexander Miller, had certain major objectives in mind which may bear repetition. These were, as will be recalled: (a) To determine criteria of causal relationship between accidents and conditions due to pulmonary tuberculosis; (b) to determine criteria of disability from such tuberculosis, including criteria of total and partial disability and the duration of the disability; (c) to determine criteria of activity of the disease; and (d) to determine criteria for the diagnosis of the presence of pulmonary tuberculosis.

Fortunately or otherwise, there has developed about this particular study an important question dealing primarily with the problem of administration of workmen's compensation from the point of view of impartial medical experts. Those interested in the study, including particularly representatives of carriers, have seen in this experiment not only an attempt to set up standards of criteria in the matter of trauma and tuberculosis but likewise possibilities of reorganizing the current procedures in the matter of impartial medical experts. If, in the field of trauma and tuberculosis, the plan of impartial medical experts can work well, it is therefore conceivable that a similar plan or plans may be set afoot to include other categories of compensation problems such as heart disease, nervous diseases, occupational diseases, and similar classifications of disability that have caused much trouble heretofore. This has thrown out the suggestion of possible utility not only in New York State but in other States as well.

The final report on the study as a whole will be available some time after the new year, and, it is hoped, will be printed in such form so that all members of the conference will have access of the report.

Chairman MATHEWS. Is there any discussion? Are there any questions anyone wants to ask Dr. Goldberg? It seems to me that you have had three very interesting papers on two very important subjects. If there is no further discussion, we will have the next topic, Measurement of Disabilities Under Schedules of Various Acts, by the distinguished vice president of this association, Donald D. Garcelon, chairman of the Maine Industrial Accident Commission.

Mr. GARCELON (Maine). The subject of my paper is the Rating of Permanent Partial Disabilities, which is slightly different from that in the printed program.

The Rating of Permanent Partial Disabilities

By DONALD D. GARCELON, *Chairman, Maine Industrial Accident Commission*

Those of you who attended the Buffalo convention in 1929 or the Asheville convention last year will remember that one of the high spots of each meeting was a paper on percentage rating of permanent impairment to members of the body, illustrated by a clinic at which various physicians present gave their estimates of the percentage in each case as a number of injured employees appeared one by one before them. These estimates, ranging in some cases from 30 to 70 percent and 25 to 90 percent—even from zero to 80 percent—caused considerable merriment among those in the audience who were under the impression that a fracture of an arm is a fracture of an arm, whether it is in New Hampshire, New Jersey, or New Mexico. But it is assuredly not a humorous matter to an injured employee, the amount of whose compensation depends so largely upon what particular physician estimates his case.

Only less surprising are the variations in the different State laws covering the compensation to be paid for the loss by severance or the total loss of use of these members. They range all the way from New Hampshire, which pays only for actual incapacity for a limited period and does not take into consideration the fact that such partial disabilities are permanent, to the many States that have fixed schedules of some sort under which they pay for predetermined periods regardless of the actual incapacity involved, with all combinations and modifications in between.

The subject is of such difficulty and importance that it may be of interest, if not of value, to consider for a few minutes the different methods of rating permanent partial disabilities; limiting at first such disabilities to the total loss or loss of use of arms, hands, fingers, legs, feet, and toes, as well as loss of sight and hearing.

When workmen's compensation acts were being adopted 20 to 25 years ago, the framers of the acts in each State, evidently on the assumption that for identical losses there should be paid equal compensation, grouped together losses of members, since they occur frequently and are so easily classified. Lacking any data based upon experience, the first State, New Jersey, to include such provisions is understood to have taken as its standards for the various losses the ratings of personal accident insurance companies, together with jury awards in accident cases. The resulting schedule was apparently copied more or less by other States, modified in various degrees by medical ratings and by legislative compromises. These, however, vary so widely in results that we have, for instance, Wisconsin paying for the loss of an arm a maximum of \$10,500 besides compensation for the healing period and Wyoming paying only a lump sum altogether of \$2,000.

Not only do the individual States vary greatly in the amount of benefits paid for similar losses, but their entire systems of such compensation, including other factors, in many cases differ widely. In fact, the amounts paid for the losses of certain members in each State often bear no consistent relationship at all to the amounts paid for the losses of other members, nor are they in proportion to the value of the body as a whole. The various systems of such

compensation in the United States, or lack of system, have been characterized as a veritable crazy quilt. The schedules themselves have been declared over and over again, by commissioners and other competent authorities, as haphazard, unscientific—even as absurdities.

The unsatisfactoriness of the existing plans was recognized by the association from almost its first meeting. After consideration of the subject year after year a committee of some of its ablest members was asked to present its recommendation for some uniform basis for satisfactorily dealing with the problem. In 1922 the committee submitted a tentative report; and after considerable discussion and some modification a final report was adopted the following year. Although it was sharply criticized by some who objected to various features of it, it still stands as the association-endorsed system for compensating loss of members, and as such we should all be at least familiar with it. The two committee reports, together with the spirited and enlightening discussions accompanying them, are to be found in the bulletin of the United States Bureau of Labor Statistics No. 333, pages 70-149; and in Bulletin No. 359, pages 16-49 and 132-138.

The report as finally adopted consists of six resolutions or principles, so-called, together with a standard permanent partial disability schedule embodying them. The first principle is as follows:

1. *The schedule of permanent partial disability compensation shall be for compensation to be paid after compensation has been paid for temporary disability, either total or partial.*

This principle as to temporary disability, recognized by more than half of the States, is undeniably sound. After the loss of a member by accident there are virtually two disabilities to be compensated for, differing in kind. The first is the trauma, the shock to the system, which is totally disabling. After recovery comes the partial disability, if any, resulting from the loss of the member itself. As we all know, healing periods differ greatly in different cases—as in infection cases, for example. A healing period may equal or even exceed the period allowed by a schedule for the entire loss. To have a fixed payment cover both periods, or even to pay for the full period of disability provided it overlaps, is often to deprive an employee who has suffered most, of any compensation at all for the permanence of his injury.

Logically, compensation for ensuing temporary partial, whenever it exists, should likewise precede payment for permanent partial. In practice, however, its application would not always be so easy, due to the difficulty sometimes in being able to ascertain the exact line of demarcation between the two periods—as difficult, as one commissioner so graphically put it, as to tell just when a pig becomes a hog.

Principle no. 2, also, is thoroughly sound, although adopted by only 5 States. It is this.

2. *Compensation for permanent total disability shall be valued on the basis of total disability for life.*

To limit compensation in such cases is to compel helpless persons, after the expiration of the compensation period, to look for subsistence to public or private charity. The only possible objection to the continuance of compensation for life is that of cost. When

it is considered, however, that in the comparatively very few cases of permanent total disability the unfortunate employees are often so badly injured that they do not live beyond the 10 years or so generally allowed by the different States for such compensation, the element of cost seems small indeed.

The two principles just stated, as to which there can be no real dispute, are after all only preliminary ones—clearing the way and laying a foundation for the subsequent ones and the standard schedule. We are now come to principle no. 3, which is the cornerstone of that schedule.

3. Compensation for permanent partial disability shall be valued as percentage of permanent total disability.

The logic of this is clear. Just as compensation for permanent total disability should continue through life itself, so compensation for permanent partial disability, which likewise lasts through life, should continue equally as long. By proportioning partial disabilities to total disability we not only have a common denominator for measuring them in ratio to total, but also for determining their proper values relative to one another.

Taking as a starting point and as a standard the loss of an arm at the shoulder and calling it 100 percent, the relative percentages ascribed by the committee to losses of the other members, together with sight and hearing, is shown in the following table:

	<i>Percent</i>
Arm at shoulder.....	100
Arm at or above elbow.....	85
Hand at or above wrist.....	66½
Thumb.....	20
Index finger.....	10
Middle finger.....	8
Ring finger.....	6
Little finger.....	6
Leg at hip.....	100
Leg at or above knee.....	85
Foot at or above ankle.....	50
Great toe.....	8
Other toe.....	2
Eye.....	40
Hearing, 1 ear.....	10
Hearing, both ears.....	66½

This table shows only the estimated relative values of the different losses compared with that of an arm. The evaluation of the loss of the arm itself as a percentage of total disability is equally a problem in view of the fact that similar injuries often result in quite different wage losses. Our schedule should therefore be not merely a flat schedule like those in most of the States, but should be more in conformity with the actual losses in all cases. At this point let us state principle no. 4:

4. The permanent-disability schedule shall be one designed to measure loss of earning capacity.

This principle, which is the very basis of compensation acts, is so exceedingly important in this connection that it should be printed in red ink, capitalized, and underscored. Such measurement is clearly desirable; but how may this be accomplished?

We all know that the age of any employee when injured plays a very important part in the effects of his injury. Not only is the

older man usually slower in recovering from the trauma, but he is less adaptable than a younger man in adjusting himself to his maimed condition. It is more difficult for him to continue at his old employment or to learn a new one. Should he lose his job, it is harder for him to obtain new employment, increasingly difficult as a man grows older. A young man on the other hand, with his industrial life before him, is almost completely adaptable.

Age then is a factor in the different effects of similar injuries—without any doubt the most important one. We therefore state as principle no. 5:

5. *The permanent disability schedule shall be based upon the principle of variable, rather than fixed factors. The variable factors to be taken into account shall be (1) nature of injury, and (2) age of injured employee*

In preparing its schedule in conformity with this principle the committee considered that the loss of an arm by a common laborer at the age of 30 would be expected to result in a 50 percent loss of earning capacity. Taking into account the varying degrees of adaptability, at age 20 and under, the loss would be only 40 percent; at 70 and over it would be 85 percent. With this as a basis a sliding scale was constructed for the ages between. By using the table of relative values for the losses of the other members, one can readily compute their percentages likewise in terms of total disability.

But the problem does not end here. We must not overlook the fact that wage ordinarily varies with age: A young man earns more and more each year until he reaches his peak, when his wages begin to decline, and they so continue with advancing years. The amounts of compensation of employees injured at different ages, being payable for wage losses, should differ accordingly. The committee has, therefore, prepared another table of index numbers showing the relative wages expected to be received at different ages.

In this table the committee assumed the year of highest wages to be at age 40, increasing up to that point and decreasing thereafter. By using a table of life expectancy we can readily ascertain the number of years an employee's wage loss for injury at each age would be expected to continue in the future; and by averaging the amounts for those years we can determine the percentages to be applied to the average wages received at time of injury in order to allow for the wage variations due to age.

Age, however, and the wage variations due to age, are not the only variable factors to be taken into consideration in the endeavor to formulate a scientific schedule of permanent partial values. There is also the factor of occupation. That, likewise, may make a great difference in the effect of an injury. One employee who loses an arm may still be able to continue at his occupation; another, in a different occupation, who loses a thumb may have to lose his job entirely. The committee has, therefore, made this sixth and last recommendation.

6. *When the permanent disability is of a character that peculiarly and exceptionally unfits the employee for the performance of the occupation in which he was injured or of any other occupation in which he was experienced, the benefits shall be increased to compensate for the excessive handicap to such a degree as may be determined by the commission, but not more than 25 percent of the schedule allowances.*

An amendment offered to this principle which would have permitted a corresponding decrease in benefits in cases where the permanent disability did not so unfit an injured employee for the performance of the duties of his occupation was opposed by the committee and rejected by the association. This seems a little surprising in view of the painstaking efforts to perfect a schedule that would be equitable for all cases. It was doubtless felt, however, that such a provision would result in cases being determined too much by the varying discretion of individual commissioners in relation to the particular facts in each rather than by uniform, dependable rules, which is, of course, the very purpose of schedules. But if schedule rates, based upon averages, may be increased to fit individual cases on one side of the line, logic as well as equity would seem to dictate that they should be decreased, on the same principle, to fit individual cases upon the other side.

This, then, is the compensation plan approved by the association for rating permanent partial disabilities, embodied in a standard permanent partial disability schedule. Under it, as already seen, compensation in each case, following that paid for temporary disability, should be payable for life, based upon the estimated percentage of partial disability, in proportion to total disability, of the average employee at the age of the injured employee, and upon his expected future wage loss at that age; increased, however, in exceptional cases (but never decreased) by the particular occupation, taken in connection with the member lost, in which the employee was engaged when injured.

For the preparation of this schedule great credit is due to the committee, and also to California, whose pioneer work in taking age and occupation into account as compensation factors, as well as in proportioning partial disability to total, furnished the inspiration and the framework for the committee's report. The schedule is doubtless as scientific a one as could be devised with the data available. Nevertheless, so far as legislation is concerned, its results have been almost negligible.

No State, for instance, has adopted the principle of permanent partial disability compensation for life. West Virginia, to be sure, pays for life in cases where the disability exceeds 85 percent, a presumed permanent total disability; and California in cases of 70 percent disability or over, on a reduced compensation basis. Were that principle, however, to be applied generally it is obvious that in a great majority of cases—minor injuries to fingers and toes especially—the weekly compensation would be very small, often but a few cents a week. These cases, as a practical matter, would have to be lump-summed, probably on a basis of life expectancy. Equitably, however, the basis should be working expectancy; although just what that period would be would in most cases be pretty uncertain.

Even though the schedule were divided into two parts, one for major injuries and one for minor, as is done in Wisconsin, and the minor ones were compensated for by a limited number of weeks, there would still remain, as perhaps the chief objection to this plan, the high cost, especially as substantial sums would have to be paid weekly for life in all cases even though there were little or no actual loss of earning capacity.

Whether the relative values assigned by the committee to the various losses of members are correct or not, is open to question. A sub-

sequent survey of Ohio cases¹ for several years indicates a somewhat different scale of values. The committee's scale was frankly based upon various tables here and abroad, not upon a study of actual cases. Until enough experience in the various States has been collected to afford a more accurate measurement, no State probably would feel warranted in exchanging the schedule it now operates under and is accustomed to for one that, after all, may be no better.

The principle, however, of proportioning losses of members to total disability, just as the percentage of partial loss or partial loss of use of a member is proportioned to its total loss, is both sound and practical. In fact it is not only sound: it is the only sensible method. Whether the law states that each unit of percentage shall be equivalent to compensation for a definite number of weeks, 4 in California and West Virginia, 5 in North Dakota; or that each degree of disability, as in Oregon, shall entitle one to so many dollars; or whether the number of weeks or dollars for each injury, arrived at on the same basis, is stated directly, the result, of course, is precisely the same. This is well illustrated in the case of Wisconsin, which, following the association's recommendation, expressed its major permanent partial disability ratings as percentages of total disability, and now in simpler form awards for equivalent periods as specific numbers of weeks.

When we come to the variable factors of age and occupation we encounter a most difficult subject, as to which there is much controversy. We have seen that under the association plan the older man, with lessened adaptability, is on that account to be given a higher rate of compensation than the younger. The younger man, on the other hand, although having a presumed greater adaptability and a consequently lower compensation rate, must carry his disability longer. If compensation payments are for life, the total amounts received by each will tend to become equalized. If, on the other hand, compensation is paid only for limited periods, the older man will receive much more than the younger.

The association schedule, you will recall, on the assumption that compensation is to continue through life, would take into account the expected gradual decrease in wages after 40. Wisconsin recognizes the age factor in producing disparity in lengths of what is called "permanency" by decreasing, according to age at time of injury, the compensation periods in major cases for employees over 50; and the compensation in minor cases for those over 55.

The principle of a graduated scale in which adaptability is rated in accordance with age was copied by the committee from California, although its own percentages are different. The association, however, did not follow California in its provisions in regard to occupation but adopted the compromise—principle no. 6—already referred to, by which in certain cases schedule ratings may be increased up to 25 percent.

The California occupational schedule is unique. Classifying over 1,300 different occupations into 52 groups according to the physical functions required, and listing 300 possible permanent partial injuries, a schedule was prepared by which, with the other factors incorporated, anyone of average intelligence—proudly asserted one of the first commissioners at a former convention—could rate his dis-

¹ Bowers: *Is It Safe to Work?* Pp. 37-50.

ability "as easily as to find in a railroad timetable when a train leaves." Unless California's timetables are different from some I have seen, that is not so great a compliment after all. It is perhaps significant that all ratings are now made by the commission's rating department.

A long list of occupations does not make so neat a schedule as do ages, nor are they nearly so reliable in determining adaptability. The occupation in which an employee is engaged when injured is by no means always his regular one. It may be seasonal or, in any event, only temporary. Furthermore, in order to prognosticate what jobs an injured employee may or may not have even next year or the year after, one would need not only the wisdom of a Solomon but the gift of prophecy as well.

The fact is that adaptability depends very much more upon other factors, which, however, cannot be tabulated at all. A person's intelligence, experience, health, sex, nationality, initiative, temperament, stamina—all those things that go to make up what is called the personal equation—the characteristics that distinguish one man from his fellows; together with general industrial conditions at the time, the favor or otherwise of the boss or the employer, even the season of the year, bringing with it different opportunities for particular kinds of work. All these in varying degrees help very largely to determine whether a crippled employee will continue at his work or be able to obtain work elsewhere.

British Columbia ignores occupation but regards wage as a reliable indicator of adaptability, on the theory that high wages indicate superior skill, which in turn denotes intelligence and consequent adaptability. But high wages so often do not indicate superior skill at all. They may merely indicate physical strength or endurance, willingness to work under disagreeable, dangerous, or injurious conditions, or even membership in a labor union. Moreover, if a high-wage man with specialized training has to seek another job, he may easily lose as great a percentage of his preaccident wage as a low-wage man with more avenues of employment open to him. Ontario, which originally held to the wage theory, finally abandoned it.

Certain other features found in the provisions of some of the acts are of more than passing interest. These include the rating of dexterous members higher than the nondexterous; that is, the right arm, for instance, higher than the left; compensation payments, as in Washington and Wyoming, at fixed rates and not based upon wages at all; and in a number of States the varying of amounts in accordance with the marital status of a disabled workman or the number of his dependents.

Without analyzing these schedules further, for time is limited, enough has been said, I think, to indicate some of the problems involved in attempting to formulate a proper schedule for rating permanent partial disabilities, and some of the efforts made to solve them. Schedules, however, are not the only methods for appraising such disabilities. Just what are the losses to be covered, in some partial degree, by compensation? And what part do the various methods play in the different States in such compensation payments?

When an employee has lost an arm, for instance, there are three disabilities to be compensated for: Total for a time; ensuing partial, if any, for the period allowed by the State for such compensation;

and permanent. Compensation for permanent disability is for the maimed condition that the employee will have to carry with him for the rest of his life, with its physical discomfort, often its additional expense, and its handicap always in holding onto the job he has or in securing a new one; and it should be paid even though at present he is fortunate enough to continue at his old employment, which for him may terminate at any time. By whatever method the amount of compensation is arrived at, and whatever form it may take, these are the three factors, I take it, that should be compensated for.

Massachusetts pays for these three items independently. My own State of Maine combines total and permanent. In cases where the total equals or exceeds the permanent, the employee, as has been already pointed out, even though paid total in full, gets nothing whatever for the permanent. Half of the States, by schedule, combine permanent and partial; giving the employee nothing after the expiration of the permanent, regardless of continuing partial disability. And over a third of the States, also by schedule, combine all three. In these States, in addition, compensation may end even while the employee is still totally disabled and unable to return to work.

In this paper, following the language of the committee report which we have been considering, I have been using the word "disability" in all cases in denoting an employee's loss, in order not to cause confusion. "Disability" is, of course, physical disability; "incapacity" means loss of earning capacity. But the choice of words upon the part of the committee was intentional. Disability is precisely what it was endeavoring to measure; disability, to be sure, in its relation to incapacity, expected or average, but still not the incapacity itself, depending upon the actual facts in each particular case that is to be compensated for. At the San Francisco convention in 1920 Carl Hookstadt, an expert in the United States Bureau of Labor Statistics, who in the next few years had perhaps the chief part in formulating the committee report and schedule, said very frankly, in outlining an ideal system for compensating permanent partial disabilities: "The amount of compensation should be certain, definite, determinable in advance, and should not depend upon loss of earnings in individual cases."

Thus we have squarely the issue whether schedules are the best method by which permanent partial disabilities are solely to be compensated. For, however, scientifically perfect they may be—and they are now far from that—they, after all, represent merely the compensation properly payable to the average man, even though we take the average man of a certain age, in a certain occupation, and earning a certain wage. But the average man—the standard man—does not exist; the employees appearing before us asking for compensation are individuals, each with his own equities; and the average schedule may not fit even a single one of them. Under it they are pretty much in the situation of the travelers in the ancient legend, staying overnight at the house of Procrustes. He had for them all, you will remember, but a single bed; if a sleeper were too short, he was stretched to fit; if too long, the superfluous length was simply eliminated.

Yet there is something to be said for schedules. To quote an advertising slogan, "Such popularity must be deserved." They are in truth "certain, definite, determinable in advance", making it easy for the commission to dispose expeditiously of a case according to rule

and then forget it, and also for the injured employee to know just what he can count on in the future. But with a definite amount payable in any event, there is no financial incentive for an employer or insurance carrier to endeavor to continue him at his employment or to aid in rehabilitating him for something else. To make such compensation always dependent upon the particular facts in each case, on the other hand, while it would undoubtedly encourage efforts at rehabilitation, it might also encourage employees to look for continued compensation rather than work, if not actually to malingering.

No compensation system for permanent partial disabilities is or can be perfect; each has virtues, each has defects. Compensation, we know, does not really compensate; it does not even begin to compensate; at best, as has been well said, it can be only rough justice. The question here is: Which system is the rougher?

In this situation, with valid arguments either way, why not do as we often have to do in compensation cases; why not compromise? Impracticable as it is, if not impossible, to follow an employee through life in order to do exact justice, and unsatisfactory as are the elaborate and artificial attempts by schedule to forecast, even before an accident happens, just what the probable resulting losses will be, why not pay during the usual period total and partial, if any, for the actual losses that can be seen and demonstrated; and permanent by schedule for the losses that are still in the future and cannot during that period be measured? In other words, why not adopt the Massachusetts system, although doubtless with a revision of its schedule?—a system that is in use in Rhode Island and also in Maine, except that we do not, as we should, separate total from permanent.

Under this system the compensation for permanent would be paid in conjunction with the partial, giving the employee extra money for rehabilitation or for business investment just when he needs it most. Moreover, it would not be necessary to ascertain the exact line of demarcation between temporary partial and permanent partial, the difficulty of which has been already referred to. As for malingering, the commission with a constantly increasing background of experience as to what work employees can do even though crippled is not easily to be imposed upon.

This plan is not revolutionary or artificial; it would seem rather a natural, if not the obvious one. It does not abolish schedules, which are often necessary and valuable in their place; it merely provides for the lessening of their importance in the scheme of compensation—during a part of the compensation period, the important first part—substituting for predetermined, estimated averages the real facts of a case instead of utterly ignoring them.

I realize that in making this suggestion I am in a decided minority; but I make it with greater confidence because of the fact that in all other cases of permanent partial disability—those involving the head and body—we have to consider the facts of each particular case. Those cases have no schedules, not being numerous enough or typical enough to lend themselves to convenient classification. There seems to be no very good reason, in principle, to treat arm and leg injuries by so radically different a method, except that in administration it is much easier for the commissioners. But at last accounts the compensation acts in all the States were still called workmen's compensation acts, and not commissioners' compensation acts.

I should not presume to take up the time of the association by obtruding my personal views on this subject, which are of little or no consequence, or by reviewing a topic that has already, in previous conventions, been discussed and rediscussed, were it not for a fact that I think really is important. Of the 15 members of the committee that reported the standard schedule 13 and 14 years ago, and of the 24 other members who participated in the discussions concerning it, 39 in all, only 4 are still engaged in compensation work; and of these survivors there is left only a single commissioner. So brief is official tenure; so swiftly do commissioners pass from the compensation stage. New commissioners, taking their own compensation acts as they find them, and having no particular occasion to compare them with others, naturally feel that their own provisions are entirely proper, if not the best that can be devised.

The chief merit of this paper—and perhaps its only one—is its suggestion to such commissioners that their laws can undoubtedly be improved, together with the information, which may be news to them, that the association has gone to much trouble to suggest improvements in the hope that by comparisons we may be able to see and help remedy defects in our own laws here and there. By compiling and collating data in all the States based upon the post-accident histories in such cases, a schedule of proper values, whether to be used for the entire losses resulting from such injuries or only for the part of the losses suggested, could be formulated that would surely be immeasurably superior to many of those, at least, which we daily administer and which we call good.

Despite the already excessive length of this paper, I cannot close without supplementing the remarks I made at the beginning about certain estimates of permanent impairment. I wish to do this not only in justice to the particular physicians involved in those estimates but also to physicians in general. So wide a range in the estimates of some of them must surely have been due not to a wide variation in their abilities to judge but to different standards in their judgments. It, of course, makes a great difference in results whether a permanent impairment percentage is based upon structural loss, functional loss, cosmetic defect, the ability to continue at the same employment or to engage in some other. Physicians who are not medical examiners on the staff of a commission should be given to understand clearly, before estimating, just what the compensation standard is—preferably functional loss.

The estimating of percentages, however, is for the commission, with its background of experience, rather than for physicians with limited practice in estimating, who do their part in describing the condition of the injured member. In fact, even the best of surgeons, who have operated upon a member and so understand its condition minutely, often estimate percentages the most inaccurately, having in mind, as they do, the condition of the member as they first saw it and being naturally proud of the improvement which they have effected.

No permanent-impairment case is exactly like another; and no schedule, therefore, can be made that will obviate the necessity of careful personal judgment. I have known, to be sure, a new commissioner to prepare a series of algebraic formulas by which to evaluate properly the relative factors of lack of motion in all directions or lack of control, poor alinement, numbness, weakness, sensi-

tiveness to cold, and so forth, that might enter into an impairment, only to discard them after a few days' experience and rely upon his own best judgment, all things being considered.

Yet the adoption of some certain standards to be used as yardsticks, so to speak, in determining values are often of considerable assistance; and they gradually come to be adopted with experience, either intentionally or unconsciously. Without any at all, different examiners will naturally vary; and even the same examiner will estimate values differently at different times, depending perhaps upon fatigue, the press of other cases—even upon digestion and the weather. It might be helpful for the commissioners in any State to ascertain what is their combined judgment in a few typical cases, such as an ankylosed knee, an arm that can be raised only shoulder-high, or the loss of all four fingers and most of the palm. With these as standards, relative values in proportion can be attached to other impairments.

Nothing has been said about the fact that a few States, although compensating specifically for total loss or loss of use of a member, still have no provisions as to partial loss or partial loss of use; which certainly seems surprising and inconsistent. Nor has attention been given to loss or partial loss of vision, which, of course, can be measured most accurately.

Eye schedules, however, can produce very different results if not interpreted uniformly. Only last week I had a case where vision was admittedly 20/40 in the Snellen notation—that is, seeing objects at 20 feet that should be seen at 40—and in which three careful oculists, each with different systems of interpretation, estimated 6, 11, and 16.4 percent impairment, respectively; whereas the fourth, although prominent in his profession, treating the figures as a fraction, gave his estimate as one-half or 50 percent.

I am very glad that in the paper to follow this the proper method of rating eye disabilities will be considered. If a satisfactory plan can be agreed upon and followed by the various States, this convention will not have been in vain.

DISCUSSION

Chairman MATHEWS. We have a few minutes left for discussion. We will be glad to hear your views on any of these subjects.

Dr. PATRON (New York). There are so many people here who know so much more about these subjects than I do, but, like the California man who attended the funeral and nobody had anything to say for the corpse, and who said, "I will make a speech for California," I can make a few remarks about each of these topics.

The first one, on hernia, illustrated clearly to me the conservatism of the medical profession, which is often condemned on the one hand and praised on the other. More than 2 years ago a man came into my office intensely interested in this hernia problem, and I gave him all the help I could in the way of facts about the New York situation, and he was absolutely 100 percent convinced that the injection method of treating hernia was the answer. "Well," I said, "when was the injection method discovered?"

He gave me the name of the Spaniard who discovered it some thirty-odd years ago.

I said, "How does it happen that in thirty-odd years it has made no development?"

"Well, it is because of the conservatism of the medical profession," he said.

He reprinted several documents which were widely distributed, and that set of circumstances aroused my interest; and I have been inquiring here and there a great many places since and have found, despite the overwhelming arguments which this man brought, which he claimed were based upon elaborate statistics of cures, that it is very little used. He told me that out of 17,000, as I recall it, registered cases, cases which had been followed up, of this injection method, 98½ percent have been found entirely successful, with no after effects.

It just sounded too good to be true, and I am glad that I am here this morning and find some contrary opinion expressed by some members of the medical profession. I am also glad to have heard Dr. Weber's paper in which he expresses such hearty approval of the method in general. In other words, I do think that, hernia being such an insistent problem in every compensation State, this discussion we have had here this morning ought to be intensely interesting to all of us.

Coming to Dr. Goldberg's paper, trauma in relation to tuberculosis has interested me not one whit more than trauma in relation to a great many other things. In a study which we made, which has not been published and most probably will not be published, we took all compensated death cases in New York State for a period of 7 consecutive years and assembled the facts. One was a group of tuberculous cases. What was the age of the man? What was his occupation? Precisely what was he doing when he received an accident? That information was given, together with the resulting death certificate, with the opinion rendered by the physician, saying he died of tuberculosis. I did that for tuberculosis, cancer, neuritis, for the whole list of diseases. To my mind it is related to the further question that it is sometimes said that workmen's compensation laws are being administered not alone for workmen's compensation but health insurance and social insurance in general. I should like very much for Dr. Goldberg's committee to see the results of this 7-year study of deaths due to tuberculosis, considered in relation to the previous trauma.

Mr. Garcelon's paper is interesting from this point of view. He has merely opened up or recounted—repeated—the problems which have been with this association since the first compensation law was enacted, and perhaps little progress has been made in all of this period of years. Some 4 years ago a representative of the Commonwealth Fund came in to see me and wanted a suggestion as to a study, some bit of research or investigation which might be carried on in connection with workmen's compensation. I made this statement to that representative: That, so far as I was aware, there never had been, in any State in the United States or any country in the world, any scientific study made, nor was there any scientific basis for the schedules in use. I said, "Suppose I were to do this: Give you the name and address of every person in New York State who had been compensated for some permanent injury of a leg, arm,

hand, foot, eye, for example, who had gotten his or her compensation. Suppose I would give you those who had been compensated from the beginning of the law down to within 10 years. Then will you go and interview that person and try to discover what has happened to his or her earning capacity since that time?"

We give so many weeks for the loss of an arm. That is only an assumption. Arbitrarily and I will say unscientifically, we give so many weeks for that loss, but nobody knows whether that compensates a man for the loss of his arm.

As a good illustration, for many years we compensated for 60 weeks for the loss of a thumb. One year there was a bill to increase that to 90 weeks, and there was a tremendous hearing on it, with standing room only, and one of the members of the legislative committee conducting the hearing was a physician. He got up and said this: "As a physician, I know this, that the thumb is worth more than any of the fingers, but whether 60 weeks or 90 weeks is the proper compensation to compensate that injured person for the loss of earning capacity for the rest of his life, I haven't any idea." After a battle back and forth, they split the difference and changed it to 75 weeks, and that is what we now pay, and nobody knows whether 75 weeks' compensation for the loss of a thumb overcompensates or undercompensates for that person's loss of earning power.

Mr. KOSSORIS (Washington, D. C.). It may be that before very long someone will take up Dr. Patton's offer, providing it still holds good. The Bureau has contacted eight different universities for the purpose of working out some cooperative studies in which various students of the universities, primarily those in the economics departments, will cooperate with the Bureau of Labor Statistics and the State industrial commissions in various studies, and one of those we are interested in primarily is this one.

I am very glad to hear Mr. Garcelon outline the problem at such great length and to hear Dr. Patton's offer to the research organization that he mentioned.

I should like to know whether any of the commissioners present have now available any data that would have any bearing on that particular point of permanent partial disabilities, and, following through, the actual wage loss due to change of occupation, or any of the other factors enumerated in connection with such disabilities.

Mr. GREGORY (Ohio). I should like to ask one question in regard to the paper by Mr. Garcelon. I wonder whether the committee at the time it made its study took into consideration the making up of these schedules, the preexisting conditions that obtained prior to the time of the accident.

Mr. GARCELON. So far as I know, they did not. They were simply giving a schedule for the end results. It was simply cases where the total impairment was due to the injury.

Mr. THARP (Kansas). I should like to ask if in making up that schedule and considering the age of an employee, they took into consideration the employer at all. He is going to have to figure his cost. If that is put into effect, is he going to have to require a birth certificate from every employee and go out and get acquainted with his dependents before he hires him? If so, is the industry going to require a birth certificate, or is the doctor going to prove it, or who is going to prove how old the employee is?

Mr. GARCELON. And what about the women employees? Can you always rely upon the ages they give?

Mr. THARP. There would be a lot of baldheaded underwriters and adjusters when they go to rate it.

Mr. DAWSON (Washington, D. C.). It seems to me if there has been any new factor injected into the possibility of making a scientific rating system since the work done 15 or 20 years ago, that factor would be the progress in rehabilitation, the organization of rehabilitation service. Many years ago, Carl Hookstadt asked the question in this connection: What becomes of the injured workman? He said to the commissioners: You do not know, and I suppose we shall not know until a very exhaustive and expensive case study is made. But rehabilitation as it is developing in the United States can act as a very valuable equalizing factor. Take, for instance, loss in relation to function. It would be difficult to imagine more severe loss in relation to function than the loss of the right arm of a right-handed baseball pitcher. But take one case of that type, handled by rehabilitation. A baseball pitcher lost his arm; according to a functional rating his compensation was apt to be jumped sky high. But he studied law and wound up as a judge.

Another case you will find in California, I believe, of a man who lost both arms and both legs, a total disability. If I am correctly informed, that man was outfitted with a wheel chair and became a vendor of magazines, newspapers, and insurance in San Francisco, and is now making \$300 a month, probably more than he made before he lost his arms and legs.

Of course, those will seem like fabulous cases, but it seems to me that there is great possibility of progress in providing an equalizing factor in rating schemes, if we use more intelligently and more intensively the possibilities that lie in rehabilitation.

Mr. H. F. MARTIN (Texas). I should like to ask to what extent the injection method of treating industrial hernias has been a success. Some of these commissioners should be able to state how many cases have been treated by that method in their particular jurisdiction.

Chairman MATHEWS. Is there any commissioner or anyone else here interested who has had any experience in the treatment of hernia by injection method?

Dr. WEBER (Wisconsin). Mr. Chairman, in my paper I particularly kept away from statistics, as I think this method is entirely too new to evaluate what percentage of recoveries or failures we have. I do not believe that it has been in vogue long enough for us to give statistics that are worth anything. That is why I did not quote any statistics.

I hope that I have not shown any overenthusiasm for this treatment, but I do believe it has a place in the treatment and care of hernia, in many instances with great advantages, perhaps some with disadvantages.

Chairman MATHEWS. I want to say to you, doctor, that I think your paper is very conservative.

Dr. PATTON. I have heard it said that there have been cases where the injection method was used and the substance injected had a tendency to migrate, move around, get down to the wrong place. Have you ever heard of such a case?

Dr. WEBER. No; I have not heard of such a case, and I do not believe that is possible except under one condition, that it got into a vessel. If injected into the tissue, it will not migrate. I think it will not be absorbed.

Dr. PATTON. To the man I spoke of who was so enthusiastic in talking to me 2 years ago about it, I put this question:

If what you say about the relief of existing hernias is true, why would it not be tremendously more worth while for people who upon examination were found to have weak abdominal walls, incipient hernias, so to speak, likely to have it? Why could not this injection method be used and their walls strengthened in advance to prevent a hernia?

He thought it was perfectly possible. I should like to hear about that.

Dr. WEBER. I think it is possible. If it is going to be satisfactory when you have a hernia, it certainly ought to be satisfactory in a potential hernia. It is going to build up scar tissue in an already existing hernia, so there is no reason it would not do as much with a potential hernia.

Mr. NELSON (Wisconsin). If it is successful, does it impair resort to an ordinary operative procedure?

Dr. WEBER. Possibly not impair so much. You are dealing with scar tissue, and the anatomical structures are somewhat different than they were. We have treated several by this method where recurrence followed several operations, and whether it is going to last with this, we have to wait and see.

Mr. MURPHY (New York). Have you operated on any of these men for recurrences?

Dr. WEBER. That have been treated by the injection?

Mr. MURPHY. Yes.

Dr. WEBER. No; I have not. I did in the old times, when various methods were used, but not with this recent development.

Mr. MURPHY. Dr. Mehler mentioned the fact that upon recurrences little adhesion was found.

Dr. WEBER. I said there was a factor there we could not control. Some individuals do not build up scar tissue as others do; and I am sure, while I have seen some clear up or close up much faster than others, that that is true. In some individuals the injections probably will have little or no effect, while in others they will build up an enormous amount of scar tissue. That is true in injuries to joints in the same way.

Mr. PLUMMER (Missouri): In these various cases you have treated with this injection method, have they lost any time from work, or have any showed up as permanent partial disabilities?

Dr. WEBER. No; I have not had a case that had to lose time. I say that a little qualifiedly, though. I have had cases where I had them rest after the two injections, where they had bad hernias, to give them a respectable start, but ordinarily not. They can work right along. I think the method has its greatest advantages in the newly developed hernia or small hernia. A large hernia is very difficult to treat by the injection method, and I think, as has been brought out, maybe it would not be lasting. I do not know.

Mr. JOY (Oregon). Dr. Edgerton has just confided to me a most interesting case that came to his attention recently, wherein the claimant who had lost a thumb applied to the commission before

whom he appeared for the allowance of total disability, and upon being questioned as to why he figured he was entitled to total disability, he stated that his occupation was a hitchhiker. I thought it was quite interesting.

I want to say, Mr. Chairman, that all of these papers have been most interesting to me this morning, and a very interesting thing to me would be to have these doctors get together in one room and settle, if they could, these questions among themselves, and then come before us and give us the result of their united opinion. In other words, the discussions here this morning have been a duplication of so many, I believe, that we have all heard, that it leaves the ordinary layman very much out on the same limb as he was when he came here. Not that I am not appreciative of the things that have been said; and those papers have certainly been interesting. In the matter of the schedules, I think my friend from Maine was most interesting, also. My impression, however, is that those schedules and the things that go with them will be altered and changed as public opinion changes. I believe our schedules are automatically based upon public opinion, just as our laws are so based. The law becomes effective when it becomes public opinion of the community in which an attempt is made to enforce the law. Things that are good today may appear bad tomorrow.

We will proceed, perhaps, and build up a schedule of hazards, and other effective agencies will so affect those schedules that they may appear ridiculous after a while. In other words, while the work we are doing here is most meritorious, without doubt, and of great value, still this thing is progressive, as I see it, there being no finality. Therefore, it is doubtful if we will master once and for all any particular subject that we discuss here before this convention.

I only hope and trust that the papers in the future that will be presented before this convention, will be as interesting and enlightening as the ones we have listened to this morning. This is my first offense in attending one of these conventions, that is, officially, although I have dropped in on one or two previous occasions at your conventions, but it is certainly most interesting, and I am very appreciative.

Mr. LORENZ (New Jersey). I was certainly interested in Mr. Garcelon's reference to the eye case, in which he states that three doctors respectively gave 6 percent, 11 percent, and 16.4 percent impairment of vision. This opens a great field, in my mind, as to the problem confronting all compensation commissions, and that is the apparent lack of any uniform basic standards of estimating disability on the part of the medical profession.

I have heard of any number of cases where doctors appearing before me on one side would judge or estimate the disability for the petitioner anywhere from 70 to 95 percent of total. There would be two, three, and sometimes four doctors on one side. Against them would come doctors of the respondent, equally prominent in their profession, equally well known, giving the disability at anywhere from zero to 2 or 5 percent. It is customary, therefore, if the judgment of the petitioner's doctors appears exaggerated, to judge the disability more or less somewhere in between that of the doctors for the respondent. The courts, however, take a different view, and they say, "You have no business getting any intermediate figure which was not testified to by the doctors." The man either had 5 percent or he had, say, 70 per-

cent. The commissioner sitting at the hearing is compelled, in view of these decisions, to strike these extremes which he feels are perhaps excessive.

The doctors taking the stand for either side are frequently asked by their counsel, "Now, how many times have you estimated disability in case of, say, sacro-iliac strain?" and the doctor will answer, blandly, "50 times." He may have testified 50 times to such injury, but the next question, and the most pertinent question, is, "How accurate was his estimate in these previous cases?" He may have given zero, whereas he should have given 50 percent. He may have testified to 95 percent, whereas he should have stated 25 percent.

The State I come from, New Jersey, has this schedule of rates for compensation, on the basis of the human body as a carcass, so much for an arm, so much for a leg, and so forth. Those problems are not difficult. We do not even have formal hearings on the loss of an arm or leg or eye. These matters are settled informally, by way of agreement. But when we come to cases where the X-rays do not show the cause of disability, the commissioner must of necessity depend upon the testimony of the doctor, and when the disparity between the two sides is so great he has to use his good judgment, and the courts say, "You cannot use your good judgment. You must go by the evidence." The result is that some people, perhaps, will not get any compensation at all and others will get much more than they are entitled to.

I should like to hear from some members of the medical profession as to whether that subject has ever been touched upon in their group. It is all right to have a schedule, and it is most commendable to raise the subject that Mr. Garcelon has treated so exhaustively, but the medical profession, in the last analysis, is the judge of the extent of disabilities which otherwise cannot be tangibly estimated.

I should like to know from Mr. Garcelon just what the decision in the case of the eye was.

Mr. GARCELON. The case is still open. I was hoping to get light at this convention.

Mr. WILKIE (Ontario). I have been interested in events that happened just a few days ago. A man came to me, claiming a damage suit for an injury to his left hand. He had lost his thumb, and I asked if he was claiming damage for the loss of that. He said, "No; that was off years ago." He had never claimed damage for that.

Our courts in Ontario would not raise any objection whatever to our striking an average between two estimates as to the extent of the damage.

The point I really want to make is this: In actual practice, we do not accept the doctor's opinion as the measure of the industrial disability. Our claims go to the doctors, and the doctors give us their estimate of the clinical disability, and after that they go to our industrial man who translates that into industrial disability, and it is on the industrial disability as being found by him and agreed upon by the three who pass upon the claim, that our estimate of the actual disability is based. As far as we are concerned, the doctors are not the final court for the determination of the extent of the disability of the claimant.

Chairman MATHEWS. The commission determines the extent of the disability on the testimony of the physician?

Mr. WILKIE. Yes. The cases are decided according to the seriousness of the injury to the claimant. A man loses an eye. He may be a trainman. The loss of an eye means that he loses his job. Railway companies will not employ as a train operator a man with only one eye. To that man the loss of the eye is very serious. But to a carpenter, a bricklayer, a stonemason, it results in practically no diminution of his earnings.

Mr. LORENZ. To follow up what I said before, I do not know the procedure in Canada, in the Province from which Mr. Wilkie comes. My problem is this: If, in the case of the loss of an eye, cited by Mr. Garcelon, Mr. Wilkie's doctor rated 6 percent, and the commission adopted that as the standard and granted compensation, that would be the end of it. I question, however, the infallibility of the estimate of the doctor at 6 percent, when some other doctor may say 50 percent. If, when these contrary opinions are expressed, there is immediately a question in the mind of the commissioner whether one side has not perhaps exaggerated and the other underestimated the disability, after all, we must assume the sincerity and the intellectual integrity of the doctors appearing. Of course, if the State has medical experts whose opinion binds the commission, that is all right. It so happens in my State we have excellent doctors, but they are not the final board of judgment. The commissioner of compensation of New Jersey is the final judge of the extent of the disability testified to by both sides. But what I am interested in is the conflict of opinion that is presented to this commissioner sitting as the judge in the case where these doctors are so far apart.

Chairman MATHEWS. That would be true in any court. I have this little incident that I am compelled to tell you about. In my State of West Virginia the statute fixes the award for the loss of an eye at 33 $\frac{1}{3}$ percent. A foreigner who worked in a coal mine lost an eye. Under our procedure we get a final report on that after the expiration of 6 or 12 months to see whether any complications arise, and we make a final settlement with him. The commissioner directed the medical director to have this man come in to get a final adjustment, and he wrote him to please come into the commissioner's office on a certain date for final adjustment, but in the meantime he had been furnished with a glass eye. He received a letter from the medical director and he answered it as follows: "Dear Doctor: You asked me to come in to settle. I make no settlement now. I must first find whether I can see through this glass eye before I come in."

Mr. MURPHY (New York). In answer to the problem of Mr. Lorenz and Mr. Garcelon, it seems to me the commissioner, or the department, must adopt the principle to determine which method they are going to use for determining the loss of vision. I think, perhaps, that will be given by Dr. Mehl and the other physicians this afternoon. There are several methods for the measuring of loss of the use of direct vision, and including in that the fields of vision. I think that is the problem for each individual to face, to decide which method they are going to follow, to determine in their own minds which is more equitable, fair to the injured worker, and then follow it. If they do, I do not think they will have the problem of these varied percentage losses to the extent that Mr. Garcelon finds it now.

I think the other problem, the measuring of schedules for disability in the back, head, and the schedules for other parts of the body, points out the need for a physical or medical department attached to the compensation division. There they develop specialists, and I think as a whole justice will be done. There will be variations, of course, particularly where the parties will have physicians of their own choice, each taking their own view, but as a general proposition I think the physicians attached to the compensation division will be of material assistance to the commissioner.

Dr. Anson (Minnesota). I think probably one physician should be heard in defense of the criticism that has been rendered against us. It is rather amusing to listen to a discussion of this sort, how people become agitated over various points of the argument. I think the address that was presented by Mr. Garcelon was an excellent one. He showed how variable factors control compensation.

It is true that the doctors, perhaps, are no different than you gentlemen sitting here as commissioners. It is true that the average doctor is honest in attempting to evaluate a physical disability, and I think that is as far as we should be asked to evaluate any illness. In the first place, if we were all of one accord, the same rules should apply to lawyers, and if that were true we could do away with all the lawyers and have just one judge. If the same thing were true, then you could do away with all your commissioners and have one commissioner, because the law and stipulations and regulations have all been laid down. Unfortunately, that is the weakness of human nature. Three of us, or 10 of us, may look at the same thing, whether it be an object or a disability, and, unfortunately, our own opinions and judgments will probably be different. Still, each one of us would be conscientious in attempting to evaluate some particular disability.

A suggestion was made that it might be well to have a group of impartial, high-class physicians to evaluate these physical disabilities, so that the personal influence that might come by the fact that this particular patient was a friend of this doctor or that doctor, would be overcome. I am sure that the medical profession as a whole is only too glad to attempt to bring about a restoration or a rehabilitation of the individual who has been injured. And, I think, with a few possible exceptions the average physician or surgeon will conscientiously give you his opinion as to the physical disability. It so happens that I belong to none of your commissions, but I am called upon occasionally to settle arguments with reference to injuries to the brain, spinal cord, and nerve. And what I attempt to do is not to give an estimate, as I am frequently asked, except to say that this man's function of that arm has been handicapped. Mr. Garcelon reported in his review that it is obvious that in one instance the loss of some member may mean the loss of his occupation. Therefore it is the duty of an impartial group of commissioners to evaluate his impairment as far as his earning power is concerned, rather than disability, because a doctor looks upon it purely as a physical ailment or a physical disability, and, therefore, as was said a while ago, you must take into consideration his vocation, his earning power, as well as the disability.

Chairman MATHEWS. Thank you, Doctor. Is there anything further, gentlemen? If not, the meeting is adjourned.

September 22—Afternoon Session

William H. Wise, Compensation Commissioner, Michigan, Presiding

The meeting was called to order at 2:15 p. m. by President Baker, who made several announcements.

President BAKER. I am happy to call upon William H. Wise, commissioner from Michigan, who will preside at this afternoon session.

Mr. William H. Wise assumed the chair.

Chairman WISE. I am extremely flattered personally at having a small part in this fine program, and I believe that it is one of the best that could have been, one of the best that has been presented, and one of the most timely. There have been a number of questions presented here for discussion, and I want you to feel free, this afternoon, to present your questions from the floor, and I know that on these eye questions there will be plenty of questions. If you have the same problems in your commissions as Michigan's commission has, you are going to find some solutions for some of your problems.

The advantage of a meeting like this, I feel, is not alone in the discussion, not alone in the information that is received, but in getting together and swapping information, swapping with each other the problems that we have and understanding the way they are treated in other places. It is all too easy for compensation to be denominated as a racket, both among the doctors and among the lawyers. Of course, they never accuse the commissioners of having any part in those rackets, but a meeting such as this does more to establish compensation upon a plane that is above reproach than anything else that I believe we can find.

I am glad that this afternoon's program includes several papers that are well worth attentive listening. As our vice president, this morning, concluded his paper he stated that he hoped through this organization we could work out some rules or regulations or criteria in the matter of visual defects and the measurement of vision. That is an aim to which we may well progress.

At this time, perhaps in order that we may secure some of the background in the matter of eye questions—the measurement of vision—I am going to ask, though he is not on the program, a man to give you some of that background. He is well acquainted with it, and I know that it will make your interest and your attention all the more intense because of his explanation. Mr. Zimmer.

Secretary ZIMMER. In talking this over with Mr. Baker we agreed that maybe a word or two of explanation of this afternoon's program might lend added interest to a subject that actually should be of primary interest.

Last summer, at the executive committee meeting in Washington, Mr. Baker suggested that it had been some years since this organization had discussed eye disabilities, and particularly methods of

measurement of eye disabilities. Everyone on the committee agreed that his thought was most timely. I had almost forgotten that there are still conflicting systems among the States as to this particular problem. I had forgotten entirely that up in New York, where I had my own experience in administration, something over 10 years ago we had a hullabaloo that shook the State in compensation circles, over the methods of measuring visual acuity. And at that time a case arose which brought the thing to an issue.

As at least some of you know, New York had been following for some 10 years the literal interpretation, if that is a proper lay term, of the Snellen chart, to this effect, that 20/40 vision equalled 50 percent. And we were translating that into terms of weeks under our compensation schedules. As I said, we had been doing that for 10 years, and there arose a case that brought the matter into the courts, and it hung in the courts, finally going to the court of appeals, over a period of 2 years.

We had at that time on our staff a regular ophthalmologist, as we always had, but when this case got into the court there was so much discussion of so many technicalities; so much, let us say, mathematics, that it was necessary, in the opinion of the commissioner, to get someone from outside our own staff to present the matter to the higher court. The then commissioner, Mr. Hamilton, reached out and got a man who subsequently became chairman of the State blind commission in New York, who was then and had been for many years a leading ophthalmologist, and moreover, had for years done a great deal of work for insurance companies in connection with these injuries. That is the gentleman who will speak to you this afternoon through regular introduction by the chairman. But I want to say this: I feel that in spite of the importance of many of these other topics, there is not one of them that perhaps quite equals in importance to the injured worker, in all the jurisdictions, this particular subject that is about to be discussed this afternoon. I know that it is a hard one for the doctors to make us understand. I always have difficulty in even understanding the bare fundamentals of the thing. But I am sure they are going to try hard to do it.

Dr. Mehl wants me to state to you that he is no lecturer. He is stepping out from a busy practice at my insistence—and perhaps a little selfish insistence—to come here and present the ideas that he has now and that he has had for 15 years. A few years ago I looked up to see what proportion of our awards in New York State went for loss of vision, mostly partial loss of vision, and I found that in 1 year, though we had awarded a total of 30 millions of dollars, a million and a half were for eye injuries. Now that is a pretty substantial proportion. I have no doubt but that the proportion runs much the same in any State having a fairly large amount of industry. Anyway, as we all know, eye injuries are very frequent on your calendars, and there usually is considerable controversy as to the measurement. And, strangely enough, as perhaps will be brought out in the paper, of all the schedules that we have in connection with workmen's compensation I have always thought that eye injuries were capable of being measured more exactly than any other type, and yet we have more argument about it.

I just wanted to give you a little picture of why we have put this thing on the program this afternoon, and why we feel it of such great importance.

Chairman WISE. Thank you, Mr. Zimmer. After the introduction by Mr. Zimmer, I do not believe that I need to do more than to call to your attention the subject of the first paper "Methods and Principles of Rating Eye Disabilities" by Dr. William H. Mehl, chairman of the New York State Commission for the Blind.

Methods and Principles of Rating Eye Disabilities

By DR. WILLIAM H. MEHL, *Chairman, New York State Commission for the Blind*

Visual acuity (S) is expressed by the relation of the distance at which the letter is discerned (d) to the distance at which it shows itself at an angle of 5 minutes (D).

$$S = \frac{d}{D}$$

When (or if) we find d and D alike, then $S = \frac{20}{20} = 1$: that is, the visual acuity is normal. If, on the other hand, d is smaller than D , so that no. XX can be seen only at 10 feet, no. X only at 2 feet, no. VI only at 1-foot distance, then in these cases, respectively:

$$S = \frac{10}{20} = \frac{1}{2}$$

$$S = \frac{2}{10} = \frac{1}{5}$$

$$S = \frac{1}{6} = \frac{1}{6}$$

From *Probuchstaben, Zur Bestimmung Der Sehschärfe*, Herausgegeben von Dr. H. Snellen. Verlag and Eigentum H. Peters, Berlin. Gedruckt bei P. W. Van de Weijer, Utrecht, 1862.

There is in this country marked confusion and lack of accord as regards compensation for losses of vision. The difficulty is to be found in the varying methods of determining percentages of sustained losses of vision. This deplorable situation is accounted for by two outstanding reasons:

First. The various States in the Union operating under a compensation law make use of medical tables which differ widely as regards percentage loss of vision for the same or identical eye involvement, in the making of awards. There are States which permit oculists to modify the *legalized* schedule value of an eye by introducing *economic* factors. Other States take the position of accepting only reports on the individual physical losses sustained, leaving the translation of the reports entirely to the State.

Second. A number of States ascribe different values to an eye and its function. Some attach no great worth to the loss of an eye, while others regard it as a most prized, indispensable part of man, and appraise its value liberally. The greater the value placed upon the eye, the higher the rate of the compensation paid.

I believe the confusion regarding percentage losses of vision is due in large part, if not altogether, to the fact that carriers and certain State commissions are laboring under the impression that the monetary allowance for the various *percentage* losses of vision is too great and more than industry can stand. Yet they do not want to cut down the schedule value of an eye, as complete losses of eyesight are comparatively rare. They realize that if this most precious organ were undervalued, in comparison with the other organs of the

body, a storm of objection would result. To the working men and women, and those interested in their welfare, such attempts to minimize serious losses no doubt would be resented. So the next convenient method of attaining their end appears to have been to minimize percentage losses.

If we ever are to have anything like unanimity regarding a standard of visual rating that will apply to the country as a whole, the various States must first agree upon two things. They must declare if awards for losses, due either to accident or occupational disease are to be—

(a) For loss of physical use of an eye, based on established schedules,

(b) Specifically for loss of earning power.

The decision between the two propositions will have to be left to the people to determine through their elected representatives. In other words, establishment of the *monetary* value of an eye is something that must be determined by the State legislature. The sole concern of the ophthalmologist is to supply a scientific accounting of the individual visual loss. That covers the full extent of his qualifications in the matter. Translating the actual physical loss into terms of *economic* loss is entirely outside his competency.

Roughly speaking, permanent loss of vision may be rated in two ways:

First. There is a specifically *economic* principle by which it naturally is rated according to the economic depreciation and reduction of earning ability which the individual has suffered in consequence thereof in the pursuit of his chosen vocation.

Second. There is the general *industrial* principle which fixes the monetary value of normally functioning members and organs of the body as a general industrial asset and, after having ascertained the percentage of physical loss, determines what compensation shall be paid for the sustained loss according to schedules adopted for that purpose.

Each of these two methods is deserving of consideration. But the underlying principles differ greatly, the use of either one depending entirely upon the point of view the legislature takes. Lack of consideration of the difference between the two methods has caused and is continuing to cause considerable confusion, particularly in tables fixing percentage losses for the various physical degrees of lowered vision.

Where the *specifically economic* principle obtains, the injured individual is compensated for the reduction of what is considered his earning ability. Under the *general industrial* method, as practiced in the State of New York, he is paid for physical loss sustained, according to established schedules of percentages.

As matters now stand, most States make awards on the basis of physical loss of use of an organ, or member of the body; while a few take into consideration, in their compensation laws, more specifically the earning ability of the individual. Such being the case, there will need to be two tables: One for those compensating only for individual loss of vision according to schedule, and another for those taking into consideration the decreased competing and earning ability.

For those who take loss of earning power into consideration, the table of the American Medical Association would be quite service-

able, I believe. For the States making awards for actual physical loss of vision, the present American Medical Association table, in my opinion, is of no help whatever. The only table applying here would be one setting forth percentages of physical visual loss and not one which arrives at percentage losses through the introduction of *economic* factors. Despite this obvious fact, there are States making awards for visual losses based on the American Medical Association table. Indeed, a few of these States include in the body of their schedules the almost complete American Medical Association findings and govern themselves thereby. I cannot help but believe they feel assured those tables represent the *physical*, or *actual*, loss of vision. If I am right that the authorities were misled in this matter, then, of course, the use of their tables should be discontinued in the operation of the compensation law.

On the other hand, if the States using the American Medical Association tables acted with full knowledge that the tables *do* take into consideration economics, and so *do not* denote actual loss of vision, then, of course, it cannot be claimed that these States are not fully informed, and the natural conclusion would be that they are preparing the way for compensation based on a *strictly economic* principle. The only criticism to be applied to such procedure is that, since the percentages of visual losses in this table are so woefully cut down, immediate provision should be made to care for, during the life of the injured workingman, his loss of earning power resulting from the sustained accident or disease. He should not be awarded a meager sum to dispose of the case and then be left to drift with his competitive ability so lowered that he can never hope for employment in a job where examination of the visual acuity of applicants for work is routine.

The acceptance of the economic principle of compensation inevitably must lead to a State monopoly of insurance. Unless ready to accept such condition—and it will come suddenly—we should be cautious in making awards for percentage loss of vision on the basis of tables such as that submitted by the American Medical Association.

When and if the various States shall give consideration to the specifically economic principle of compensation, and with it the American Medical Association table for computing visual losses, committees of oculists, employees, employers, industrial experts, insurance carriers, and those entrusted with the operation of the law, should be called in to consider and advise in the matter. The legislative committee charged with the proposed revision of the law would then be in a position to enact fixed standards for determining the percentages of permanent disability, taking into account the nature of the physical injury or disfigurement, the occupation of the injured employee, and his age at the time of such injury. Consideration also would be given to the loss of competing ability of such employee in the labor market. The percentages of visual loss would then represent, among other things, what is deemed, so far as central vision is concerned, a just interpretation of the Snellen symbols when applied to industrial loss of vision.

The change from the present basis of insurance to one wholly different in principle demands serious consideration. The logic of

economic interpretation with continued compensation for loss of earning ability leads, of necessity, to keeping cases of permanent partial impairment of vision open during the lifetime of the injured employee—correcting glasses must be supplied whenever needed, there must be periodical reexamination of the eye, and so forth. The logic of a condition of this kind is plain; nothing short of exclusive State insurance can meet the situation ultimately if the economic loss principle is to be applied with all its consequences.

In other words, if, instead of the principle of insurance of physical impairment applied to schedules, as now used in most of our States, there is to be substituted the principle of specifically economic loss, then the legislatures will have to make the first move and determine a new governing basis for compensation awards.

Now as to the method in the State of New York. Here the principle which governs permanent disabilities bears no *direct* relation to the damage done to the earning ability of the injured person in his particular vocation. The monetary value of normally functioning members and organs of the body, as a general industrial asset, is fixed, and the sustained physical impairment is rated according to an established schedule on the basis of physical loss.

A watchmaker is paid compensation for exactly the same number of weeks as an unskilled laborer, when both have suffered an equal reduction of vision. A violinist and a maker of fine instruments are paid for no longer period than a truck driver for the loss of an index finger. A man in a sedentary occupation gets pay for the same number of weeks, for the loss of use of a leg, as the man who has to climb telegraph poles or walk on elevated steel girders. The compensation is fixed for the limb and the organ which has been damaged permanently regardless of the resulting occupational handicap the injured person has sustained.

It is acknowledged that by this method exact justice on economic grounds cannot be assured to each individual. The method provides only what usually is referred to as *average industrial justice*.

The occupations covered by the law in New York State include many in which a high degree of skill and corresponding physical efficiency are required, as well as those which make comparatively small demands upon either skill or physical soundness. The schedules incorporated in the law for the compensation of permanent impairments were calculated to represent the losses of earnings experienced by the industrial workers, taking a general average, so far as the State of New York is concerned. In a State where skilled labor predominates to a larger extent than in New York the schedules would have to be correspondingly more generous, if the same principle were applied; and, on the other hand, in a State where the proportion of unskilled labor is greater, the schedules would be correspondingly less generous.

I have already referred to the general industrial principle as applied in New York and other States, by way of distinguishing it from the more specifically economic principle which governs the compensation laws in most European countries, and to some extent Canada and the State of California. Since the State of New York and most other States take no account of the actual economic loss, the injured individual must face in consequence of the physical damage, we have

to do only with the determination of the actual physical impairment which must be established by the medical examiner, and, on the other hand, with the schedule rating of such physical impairment which is primarily the responsibility of the referees of the State industrial board.

Unless physicians keep in mind these few simple practical facts when discussing particular phases of the law and their proper interpretation, they are sure to become entangled in irritating, wasteful, and fruitless controversies.

Medical men cannot be expected to be conversant with the compensation law, the various changes it has undergone, the court decisions regarding it, nor even the principles upon which it is established. Our particular care is to examine and diagnose occupational disease, accidental injuries, and whatever consequences may have resulted from these, and then to report our findings and opinions to the officers charged by the State with the making of awards under the compensation law.

If physicians could be permitted to adhere strictly to the indicated lines, and take no account of the legal aspects of the determination of compensation cases, we should be able to confine ourselves to giving straightforward statements of purely scientific findings and then leave the legal interpretation of these findings to the officer or officers whose business it is to administer the law.

The question of what percentage of sight an eye has lost as a result, direct or indirect, of an accidental injury or occupational disease is a case in point. All that is expected of the oculist, as such, is to determine technically the degree of purely physical impairment sustained, using the peculiar means at his command, and then report. Special training, professional practice, and keeping step with new discoveries and developments in his particular field should attach to his findings a corresponding degree of authoritativeness.

The surgeon who reports on the impairment of an organ or member of the body is not required to translate his medical findings into terms of economic loss. He tells what percentage of use has been lost wholly or in part. The referee, on the basis of the surgeon's report and according to schedule, makes the award. A similar procedure ought to be possible as regards the determining of the percentage of vision lost by an injured eye. It is possible.

Let us take the determination of the purely physical loss of vision experienced by a previously normal eye as a result of accidental injury. As a matter of fact, the eye is the only important bodily organ the function of which can be measured accurately by instruments and tests of precision.

There are three essential factors or elements concerned in vision; (a) *Visual acuity* or central vision, (b) *peripheral* or field vision, (c) *single binocular vision*; that is, the ability to use the two eyes as one. The complete loss of any one of these three functions nullifies completely the efficiency of the eye. When any one essential factor is not functioning in any degree at all, we have zero efficiency or loss of use of the eye. When each factor is functioning perfectly we have 100 percent vision or visual efficiency. By the same token, loss of a defi-

nite percentage of either one of the three essential factors is equivalent to the same percentage loss of vision of the eye.

Since these three functions are essential factors, the only mathematical formula accurately exhibiting the vision or efficiency of an eye is the product of the scientifically measured efficiency of each essential, indispensable factor. This is expressed by the formula $a \times b \times c$: (*a*) standing for central vision, (*b*) for peripheral, and (*c*) for single binocular vision. When each essential factor functions normally the product will be 1 or 100 percent. $1 \times 1 \times 1 = 1$ or 100 percent. When any one of the three essential factors is lost the product will be zero or 100 percent loss of vision and is recorded by the formula $0 \times 1 \times 1 = 0$.

Two of these factors, namely field vision and single binocular vision, are only rarely affected in an appreciable degree as result of accident. Therefore, although as factors they share equal importance with central vision, in order to save time I shall refer to them here only to the extent of stressing the point that as in the case of central visual acuity they should be measured according to approved methods, and note made of the percentage of actual or physical loss. The interpretation of such physical losses in terms of economic loss is something outside the field of the ophthalmologist and should be handled accordingly.

CENTRAL VISION AND THE SNELLEN TEST

Central vision is the factor involved in the great preponderance of eye injuries, and the varied opinions regarding the scientific measurement of this function is the underlying cause accounting for most of the present confusion in rendering decisions. My contention is that the Snellen test is the only known scientific means of measuring central visual acuity and that the Snellen formula expresses fractional percentages of vision. The numerator in the symbol refers to the distance at which the test is conducted, and the denominator the designated line of type on the chart, and 20/40 means the visual acuity is but one-half of normal.

What is the Snellen test? Before proceeding I desire to state that, on request by your committee and at the risk of proving tiresome, especially to those of you who are fully conversant with the subject, I intend to go into it more or less in detail.

The Snellen test is the acknowledged standard scientific method for the measurement of central vision or visual acuity, based on visual angles.

Snellen, by experimentation, determined that the normal eye should read a letter or distinguish an object of a size subtending an angle of 5'. He says the acuity of vision is dependent upon the size of the retinal image and its accompanying visual angle. The larger the object at a given distance the larger the retinal image and visual angle. When it becomes necessary, in order to distinguish a letter, to increase its size at a given distance or move it closer to the eye so that it will subtend an angle of more than 5', it indicates a corresponding lowering of vision by inverse ratio.

The basic principle involved is that a letter or object of the size subtending an angle of 5', stimulates an area of the retina sufficient in size to result in normal vision. An object subtending an angle of less than 5', on the average stimulates an area in the retina too small

for clear or normal vision. In other words, since the size of the retinal image is dependent on the size of the visual angle, the object will need to be near enough and sufficiently large to subtend an angle of 5' if we are to stimulate a sufficient area of the retina to result in normal visual acuity.

The test usually and preferably is made at 20 feet, at which distance the rays of light coming from the object to the eye can be assumed to be parallel. The parallel rays impinging upon the cornea, if there is no refractive error or pathology sufficient to account for lowered vision, become united and form a sharp image on the retina, and clear vision results.

In conducting the test, use is made of a chart with a series of lines of letters, the size of the letters diminishing from above downward. The line marked 20 is made up of letters of a size to subtend an angle of 5' when placed 20 feet from the eye. Likewise the lines of progressively larger letters—marked 30, 40, 80, 100, etc.—subtend the same 5' angle at the indicated distance from the eye. If vision is normal the various lines of letters will be read at the indicated distances, denoting normal vision.

If the letters on the 20 line are read by the patient at 20 feet, his vision is 20/20, or normal. When letters of a smaller size can be read, the vision is better than normal. If, on the other hand, the patient cannot read the letters marked 20 at a distance of 20 feet, a row of larger letters is selected. If, for example, at 20 feet the smallest letters he can read are those marked 40, which are twice the size of the ones marked 20, we record it as 20/40. This indicates that the patient requires a visual angle of 10', or twice the normal, in order to see; in other words, vision is reduced one-half, or 50 percent. If the patient's vision is still poorer, and at 20 feet he can only read the line of letters marked 80, it is recorded as 20/80. This indicates that the patient requires a visual angle of four times the normal size in order to see, and vision accordingly is reduced to one-fourth of normal. This can be extended ad infinitum.

A reduction of vision from 20/20 to 20/40, in other words represents a loss of 50-percent vision. A further reduction of vision from 20/40 to 20/80 presents an added loss of one-half of the remaining 50-percent vision, or 25 percent, making a total loss of 75 percent. If the loss is extended beyond 20/80 to 20/160, there is again added to the previous loss of 75 percent one-half of the remaining 25 percent, or 12½ percent, making a total loss of central vision of 87½ percent. Visual acuity and visual angles go hand in hand. As the size of the object—in this case the letter—and the visual angle increase, visual acuity is diminished in inverse ratio.

Let us keep in mind that vision always is lowered by one-half, when it is necessary to double the visual angle. From this it will be seen that the percentage physical loss of vision between 20/20 and 20/40 is greater than that between 20/40 and 20/160. There is a 50-percent loss between 20/20 and 20/40, and a loss of only 37½ percent between 20/40 and 20/160.

A study of the Snellen test constantly reminds us that the percentage loss between 20/20 and 20/30 is not the same as that between other symbols as 20/100 and 20/110, and so forth. Yet groups of oculists have set up and advocated, at various times, tables ascribing equal value to each 10 feet.

By going from 20 to 40 we lose one-half, which is distributed over 20 feet. In going from 40 to 80 we lose a smaller amount, namely, one-fourth, which is distributed over 40 feet. In going from 80 to 160 we lose one-eighth, which now is distributed over 80 feet.

As the distances become larger the losses distributed over that distance get smaller and smaller. As a result we cannot use the same value of footage for each 10 feet. It can be seen quite easily, therefore, that each foot has a constantly changing value. The further we go from normal the smaller is the value and change in value per foot.

The important fact to remember is that the Snellen formula represents 20/20 as normal central vision or visual acuity, and all departures from normal are rated from that point and not from any point that may be regarded as blindness.

The Snellen test is based on visual angles, and any table for which the claim of scientific accuracy is made, on ophthalmological grounds, regarding central vision must of necessity accept the percentages of vision as expressed in the Snellen symbols. Especially is this true when the sponsors of the various tables accept the principle of visual angles and Snellen's dictum that 20/20 means normal central visual acuity.

Until the advent of the compensation law, or a time when partial permanent losses of vision were to be paid for, the Snellen test always was regarded as setting forth scientifically the percentage loss of central vision or visual acuity—the vision that is involved in the vast preponderance of compensation cases. It was never questioned, and the symbols were accepted as representing the percentage or fractional loss of vision.

We are told repeatedly and with much insistence that Snellen himself never qualified 20/40 as representing one-half of vision remaining. If there is any doubt in the matter as to what Snellen said on this point, I shall quote from his own explanation the following:

Visual acuity (S) is expressed by the relation of the distance at which the letter is discerned (d) to the distance at which it shows itself at an angle of 5' (D).

$$S = \frac{d}{D}$$

When (or if) we find d and D alike, then $S = \frac{20}{20} = 1$: that is, the visual acuity is normal. If, on the other hand, d is smaller than D , so that no. XX can be seen only at 10 feet, no. X only at 2 feet, no. VI only at 1 foot distance, then, in these cases, respectively:

$$S = \frac{10}{20} = \frac{1}{2}$$

$$S = \frac{2}{10} = \frac{1}{5}$$

$$S = \frac{1}{6} = \frac{1}{6}$$

In order to emphasize still further that the Snellen symbols mean just what they represent, I shall add quotations relating to the matter from leading authorities succeeding Snellen, unadulterated by any thought of sums of money to be paid for the various percentages of loss of vision.

Thus, E. Landholt, in his *Refraction and Accommodation of the Eye*, Paris, 1886, page 229, says, referring to test types and visual acuteness:

If they [the test types] be left at a given distance, 5 meters for instance, it is the number 5 that gives the normal acuteness of vision. An eye that distinguishes only the type no. 10, which it ought to see at 10 meters, has only $5/10 = \frac{1}{2}$ of normal vision. One that sees only the no. 50 at 5 meters possesses $5/50 = \frac{1}{10}$ of normal visual acuteness.

Another, on the contrary, that distinguishes the number 4, which the average eye is expected to see at 4 meters, has evidently an acuteness equal to $5/4$, that is, above the average.

Noyes, in *Diseases of the Eye*, 1881, p. 8, referring to the Snellen formula, says:

The fraction indicates the required expression. A person who reads print no. XX at 20 feet has $V=20/XX$, which is 1; one who reads XL at 20 feet has $V=20/XL$, which is $\frac{1}{2}$; one who reads CO at 20 feet has $V=20/CO$, which is $\frac{1}{10}$; one who reads XII at 20 feet has $V=20/XII$, which is $5/3$ and is better than 1.

William Campbell Posey, *Hygiene of the Eye*, 1918, p. 19:

In general, the visual acuity is expressed by a fraction, the numerator of which is the distance at which the test is conducted, the denominator, the line of type designated; that is, vision 6/12 means that the acuity is but one-half of normal, the line marked no. 12 on the card being seen at a distance of 6 meters.

Juler, in his *Ophthalmic Science and Practice*, 2d ed., 1893, says definitely:

The visual acuteness may be conveniently expressed by a fraction, the numerator of which is the distance in meters at which the letters are situated, and the denominator the distance at which the smallest letters which can be read would make a visual angle of 5'.

St. John Roosa, in his *Treatise on Diseases of the Eye*, 1894, says:

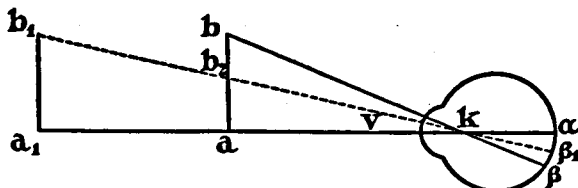
If he [the patient] sees letters that should be seen at 40 feet at 20 feet only, his vision is expressed by the fraction 20/40, and so forth.

L. Webster Fox, 1910, p. 616, says:

The degree of acuteness of vision is then expressed by a fraction in which the numerator is the distance from the patient to the test card and the denominator is the number of the lowest line on the card read by the patient.

Prof. Ernest Fuchs, in his text book on ophthalmology, 5th ed., p. 841-842, says:

The smaller the object that an eye can distinguish or the greater the distance at which it can distinguish an object of given size, the greater is the acuity of vision that it possesses. Suppose, for instance, that the eye is able just to distinguish the object ab [fig. 1] at the distance $\alpha \kappa$. Another better eye still distinguishes the object when it is carried twice as far off, to the distance $\alpha_1 \kappa$. The size of the retinal image $\alpha \beta_1$ is in this case reduced to half of that in the former $\alpha \beta$; that is, the visual acuity of the second eye is twice as great as that of the first. Instead of carrying the object (ab) twice as far off, we may leave it at the same spot, but make it half as small ab_1 . In this case, too, the size of the retinal image would be reduced one-half.



The smaller the area of the retina stimulated to result in clear vision, the greater the acuity of vision.

From all the foregoing it would seem that the Snellen formula and the fractions therein contained set forth correctly the percentage of central visual acuity.

There are several tables alleged to cover percentage loss of vision, now in use by various State industrial commissions. The percentages vary according to the table consulted, yet there is the claim for each that it is authoritative and scientific. The table most strongly urged upon State commissions and individual oculists, and for which much propaganda is being made, is that of the American Medical Association. For this reason I have chosen to concentrate my discussion upon that table.

THE AMERICAN MEDICAL ASSOCIATION SCHEDULES

I am persuaded that the American Medical Association table represents a great deal of thought, and there can be no question but what it might be of much service when and if the States accept the principle of compensation for loss of earning ability on a strictly economic basis. Until such time, however, the table should not be considered in the making of awards for visual losses. Why not? Largely because it is based practically altogether on economics and does not represent at all the *actual*, or physical, loss of vision.

Why do I say it is based on economics?

1. It starts off with the assertion that its aim is to establish a method of determining the loss of visual efficiency of a *person* who has suffered any degree of visual impairment. This can only mean that it is taking into consideration loss of ability to work and not strictly loss of ability to see. My contention is that any table constructed on the basis of compensation for loss of visual efficiency of an *individual* in place of visual efficiency of an *eye* cannot be used with any degree of fairness or accuracy in any State where compensation is paid for loss of use or vision of an eye, and not for the economic loss of vision applied to the body as a whole.

As an ophthalmologist I am not competent to say if in the table the eye is given a proper percentage value with reference to the body as a whole. Of one thing I am certain: The tables do not present proper percentages of *actual* vision of the eye.

2. The American Medical Association tells how "the industrial visual efficiency of one eye is determined" and how the "industrial visual efficiency" of the individual is computed. It also refers to Snellen test letters as "industrial vision test charts."

The terms "industrial visual efficiency" and "visual efficiency" then are used as if they were interchangeable, while as a matter of general knowledge, these two terms have distinct meanings and are not in the least interchangeable. Visual efficiency, or vision per se, refers to actual or physical vision not depreciated to meet the ideas of anyone regarding its economic value. It is something definite and fixed. It can be measured scientifically and the percentages arrived at are not variable.

On the other hand, industrial vision is something changeable. It varies according to the predilections of those fixing an arbitrary

point of blindness and the percentages between that point and normal vision. The liberal-minded would allow a greater percentage for losses than one inclined to be less liberal.

3. The American Medical Association accepts 20/20 as normal vision according to Snellen. Later on, the claim is made that 20/40 means 16.4 percent loss of efficiency of the eye and not 50 percent as per Snellen. It seems inconsistent to accept Snellen visual angles, and 20/20 as representing normal vision, and then discard the balance of the formula, unless there goes with the revised percentages the information that economic matters enter into consideration and account for the change in percentages. It is something like admitting 1 inch to be 1 inch, but denying that 12 inches makes one foot.

4. The American Medical Association report mentions that test letters, as published by the committee, are designated "industrial test vision charts." This indicates quite clearly that industrial considerations enter into the tables and that the percentages arrived at do not reflect the actual physical loss of vision or visual efficiency.

5. The American Medical Association assigns weighted values to near and distant vision, discriminating against distant vision by allowing twofold value for close range vision and onefold for distance. This has very serious objections. It must be acknowledged by everyone having practical ophthalmological experience that near tests disclose an apparently greater degree of central visual acuity than that uncovered by the distance test. As a result, if any weighting were to be done and if the injured workman were to be given a "break" so to speak, distant vision in place of near vision should be weighted. As a matter of fact it is impossible to measure close range reading with anything like the accuracy possible in the distance tests, and except for minimizing purposes I can see no reason for the weighting.

A few outstanding reasons why close-range reading tests of the ordinary type are of small value for the determination of degrees of existing visual acuity are these:

(a) The eye of the reading person is sure of most of the letters, because only certain definite letters would give sense to the matter placed before it. We should have to make use of letters which bear no relation to one another. This would increase the difficulty of discernment. But it would furnish no adequately reliable test.

(b) As Juler has shown in his *Ophthalmic Science and Practice*—speaking of tests with reading types—"they are not so well adapted for testing the visual acuteness as the distance types; as for near objects the accommodation must be used, and a defect due to weakness of the latter might be mistaken for diminished acuteness of vision." Juler calls it "a very convenient rough test", but also a "source of error" for the reason that the amount of light entering the eye at close range is proportionately greater than for distance; while the size of the retinal image varies directly as the distance, the amount of illumination varies as the square of the distance.

(c) Nagle has shown what an astonishing "discerning power" is to be found sometimes in persons who have slight opacities of the cornea, incipient cataract, astigmatism, and so forth.

(d) Noyes, in commenting on this matter, says that although the retinal image is very badly outlined, such persons "are able to draw

inferences as to form and features which persons who rely chiefly on the accuracy of retinal images cannot in any degree compete with." Noyes then adds these conclusions: "Such persons show relatively much better vision for near than for distant objects. Hence the little value which attaches to examinations by reading fine print. Power of accommodation, size of the pupil, and skill in deciphering obscure characters make such examinations untrustworthy as measures of visual acuity, although for the patient they have great practical importance and consolation."

Mental consolation certainly is not to be a compensation to be deducted from the amount of money, due under the law, for impaired working vision. The fact remains that tests of "visual acuity for near" are of little value and untrustworthy. Reason enough why they should not be permitted to diminish compensation in dollars and cents.

Now a word further regarding near tests: As previously noted, with vision reduced to 20/40, or an actual 50 percent loss, according to the American Medical Association table there is only an allowance of 16.4 percent loss for the distant vision. If the individual happens to have good discernment and is able to read type at 14 inches, which would seem to indicate 100 percent vision for near, the loss with this table would be further minimized by the process of weighting to probably not much more than 5 percent loss of vision for the eye. When it is taken into consideration that this man, as result of his vision being reduced to 20/40, or an actual 50 percent loss, is excluded from many occupations, the seriousness of the loss cannot be overlooked. The allowance of something slightly more than 5 percent, or even the 16 percent noted before weighting, must be acknowledged as most inadequate for the actual 50 percent loss, unless the injured should be compensated throughout his lifetime for loss of earning ability.

INDUSTRIAL VISION

The fact is that many corporations examine the eyes of applicants for employment and will not engage the services of one whose vision is reduced to 20/50. Many draw the line at 20/40 and a few at 20/30.

In certain occupations an employee loses his job when vision is reduced to 20/40. It would appear that in such occupations 20/40 must be regarded as the point of loss of "visual efficiency" for this man. This is an important point to keep in mind.

There are quite a few occupations in which 20/40 is accepted as a disqualifying point, but in which the employer will retain the services of thus afflicted employees, after injury, in less exacting lines of work. This does not change the fact that 20/40 marks the line of "industrial blindness" here. The employee, thereafter, is dependent entirely on the good will of his employer. He may not be able to find employment elsewhere in his particular specialty.

Experience has persuaded me that when vision with correcting lenses is reduced to 20/100, or 80 percent loss of central visual acuity, it should be regarded as loss of industrial vision, as now is done under the law in the State of New York.

Should the States finally decide that 20/100 represents loss of industrial vision, and provide that all lesser impairments of sight up to 20/20, or normal, be rated proportionately, then a table having regard for vision only between these two points undoubtedly would prove most serviceable. Again, this is not wholly an ophthalmological problem and would require legislative enactment.

As opposed to my contention that 20/100, or an actual 80 percent loss of vision represents, on the average, loss of industrial vision, the American Medical Association table sets forth that industrial vision on the basis of distance testing is reduced to 51.1 percent at that point. This percentage most probably would be further minimized to 40 percent or less, by the introduction of the suggested weighting values, where a twofold value is allowed for close range and onefold for distance vision. In other words the American Medical Association would allow about 40 percent loss of visual efficiency for 20/100, while the State of New York allows 100 percent for the same 20/100.

A serious objection to the tables submitted for the guidance of those entrusted with the operation of the law is the distant point selected as representing industrial blindness. The American Medical Association places industrial blindness at 20/800, and rates percentage losses between that point and 20/20, or normal. Of course such a table cannot possibly serve the purpose claimed for it, unless legislation be enacted to the effect that 20/800 shall be rated as industrial loss of vision.

The various State commissions and official bodies, caring for the blind in this country, quite uniformly regard an individual as blind when the vision in the better eye is reduced to 20/200 or less. Such person is given all the advantages usually accorded the blind, including training and relief.

If 20/200, or anything beyond that point, is regarded as blindness by official bodies caring for the blind, then surely it would seem that 20/100 should be regarded as loss of industrial vision. Personally I am not in sympathy with any other idea except that when vision is reduced to 20/100 it should be rated as loss of industrial use of the eye. This is nothing more than my individual opinion, based on experience. Therefore it cannot be submitted as scientific or final and applied in the construction of tables for rating visual losses, under the law, no more than can the various tables to which reference has been made. The suggestion, however, might be put into action through legislative enactment.

In closing I desire to reiterate that the American Medical Association table does *not* set forth *actual* or *physical* loss of vision, but what the makers of it agreed to regard as *economic* loss. Hence it could serve only in States where compensation has been placed on a strictly economic basis, with assured payments for later loss of competing and earning ability. In other words, each of such cases would have to remain open through the lifetime of the injured workman, to assure compensation whenever economic loss on his part is shown to be due to the depreciation of his earning ability by the sustained reduction of vision.

Instead of of supplying actual percentages of visual loss to be used in connection with established schedules of compensation, the American Medical Association goes a step further and submits the

schedules to a second "economic" treatment whereby is destroyed in effect the very intention of the schedules established by legal enactment in the various States. The makers of the tables seem to have forgotten that economics *had* been given consideration in the establishing of the schedules setting forth what the State regards as the value of an eye.

However, should any State determine finally to adopt a purely economic principle of compensation, and with it make necessary eventually a State monopoly of insurance, the American Medical Association table possibly may be found quite adequate.

On the other hand, if the desire of the States is to compensate for loss of *use of an organ*, as now is quite generally the practice, and *not* for a specific reduction or loss of *earning ability*, I am persuaded that the American Medical Association table has no place in the making of percentage awards for losses of vision.

Chairman WISE. Thank you, Dr. Mehl. Dr. Walter L. Small, of Kansas City, will now present a paper on the appraisal of the official methods of computing permanent partial visual loss.

An Appraisal of the Permanent Partial Visual Loss Computation Methods in Official Use in the United States

By DR. WALTER L. SMALL, *Kansas City, Missouri*

With the complete cooperation of the Missouri Workmen's Compensation Commission and with the liberal assistance of several other industrial accident boards and commissions, I have assembled all partial visual efficiency loss computation methods which are in official use in the United States. I have abstracted and tabulated the conspicuous predications and the cardinal factors therein for ready reference, comparison, and appraisal.

By means of tabulated data sheets (see pages 129-133, inclusive), I have endeavored to reveal the exceptionally variable, officially accepted values of the several visual efficiency factors, along with their legalized uses, in the computation of partial visual efficiency loss by the 47 industrial accident boards and commissions that have been lawfully created in the United States.

The information which I have acquired through my investigative endeavors that I might obtain an accurate knowledge of the precedents that have been established by each of the industrial accident boards and commissions, relative to the computation of permanent partial industrially sustained visual efficiency loss, revealed many most interesting and several remarkably surprising facts.

One of the most amazing situations disclosed is that there are in the United States 23 industrial accident boards and commissions that have adopted neither any percentage schedule of partial visual acuity losses corresponding to the various Snellen notations of visual acuity nor any method whereby permanent partial visual efficiency loss shall be computed.

Those 23 industrial accident boards and commissions that have no officially adopted method whereby partial visual efficiency loss shall be evaluated usually select examiners who are delegated to determine, by any expedient or agency of the examiners' choice, the per-

centage values of permanent partial visual efficiency losses sustained by employees who may file claims alleging traumatically impaired vision. The expressed opinions of those examiners ordinarily are accepted and utilized in computing the amounts of awards which are made in permanent partial industrially sustained visual efficiency loss cases.

Although there are 24 industrial accident boards and commissions in the United States that have adopted some officially specified method whereby permanent partial visual efficiency loss shall be computed, there are only 23 of those industrial accident boards and commissions that have adopted any percentage schedule of partial visual acuity losses.

The partial visual efficiency loss computation method which has been adopted by one industrial commission arbitrarily rejects all percentage schedules of partial visual acuity losses, and requires the acceptance and use of Snellen notations of retained visual acuity, as if those Snellen notations were common fractions and as if Snellen notations express numerical fractional parts of visual acuity.

It has required 7 entirely different percentage schedules of partial visual acuity losses corresponding to the various Snellen notations and 18 dissimilar partial visual efficiency loss computation methods to satisfy the diverse opinions of the 24 industrial accident boards and commissions that have adopted any method whereby the evaluation of permanent partial visual efficiency loss is even attempted.

More than 50 percent of the 18 different partial visual efficiency loss computation methods which have been officially adopted in the United States are based on one or more erroneous assumptions, on incomplete visual efficiency data, or on faulty conclusions. Few of those officially adopted methods are based on the results of thorough investigations, comprehensive examinations, rational analyses, or scientific deductions applied in a practicable manner.

I have been requested to read a paper before this convention concerning the relative merits of the various methods which are in official use in the United States whereby the percentage value of permanent partial industrially sustained visual efficiency loss is computed.

For this paper to accomplish any useful purpose, I must make discerning, accurate, and impartial appraisals of those 18 variant methods. I must not only recognize but I must comprehend, disclose, and interpret all details incident thereto. I must also reveal and exemplify my utilized processes of deduction. I must then communicate my conclusions to you without evasion or perversion.

In my painstaking attempt to be candid and explicit I may at times appear to be unnecessarily frank, but I assure you whatever adverse criticism that I may make, either by apparent inference or by direct statement, concerning any industrial commission's officially adopted computation method, will be made with the most respectful and amiable regard for the commissioners whose officially adopted computation procedures I shall appraise unfavorably.

Since there are seven different percentage schedules of partial visual acuity losses which have been officially adopted by 23 of the

24 industrial accident boards and commissions that have adopted some method of computing partial visual efficiency loss, I have chosen to separate my appraisals into seven different sections.

Each industrial accident board and commission's partial visual efficiency loss computation method will be discussed and appraised, along with the remainder, whenever there are others in that section that have concurred in the adoption of the identical percentage schedule of partial visual acuity losses. The one dissenting computation method, wherein there is provided no percentage schedule, will be treated separately but not indifferently.

The industrial accident boards of Illinois, Minnesota, Tennessee, and Virginia have adopted a percentage schedule of partial visual acuity losses which is known as the "Wisconsin schedule", although the Industrial Commission of Wisconsin neither accepts nor recognizes the use of that schedule.

The four industrial commissions that have adopted the so-called Wisconsin schedule of partial visual acuity losses have officially concurred in the erroneous presumption of 11 other industrial accident boards and commissions. That indefensible decree, to which 15 industrial commissions have officially subscribed, is that the percentage value of retained central visual acuity which has been elicited at a distance of 20 feet shall be accepted as if it were the percentage value of retained visual efficiency. That is a most unfortunate, as well as a wholly unjustifiable, official affirmation.

The Tennessee Workmen's Compensation Commission's method of computing partial visual efficiency loss digresses in one particular from the otherwise complete uniformity in the officially adopted methods of computing partial visual efficiency loss by the industrial commissions that have adopted the Wisconsin schedule.

Wherein the Industrial Commission of Tennessee has registered emphatically and unmistakably a dissenting opinion and thereby made its notable digression, is that it requires that all visual acuity determinations shall be made with the aid of correcting lenses, while the remainder of the group that has adopted the Wisconsin schedule requires that all visual acuity elicitation shall be made without the aid of correcting lenses.

Wherein the industrial commissions of Illinois, Minnesota, Tennessee, and Virginia are also in complete accord is evidenced by their identical official proclamations that a subnormal visual acuity of 20/200 Snellen or less is equivalent to industrial blindness. That official precept probably expresses a justifiable conclusion, if the minimal limit of useful industrial vision thus officially established represents the best obtainable visual acuity with the aid of a correction lens.

Since the industrial commissions of Illinois, Minnesota, and Virginia utilize, in the evaluation of permanent partial visual efficiency loss, only visual acuity findings which have been elicited without the aid of correction lenses, there can be no justification whatsoever in the official ultimatum of those three industrial commissions that a visual acuity of 20/200 Snellen or less is equivalent to industrial blindness.

The industrial accident commissions of Idaho, Kentucky, Nevada, and Florida have adopted the Allport percentage schedule of partial

visual acuity losses. This schedule, evolved by Dr. Frank Allport, can be found either on page 49, Bulletin No. 281 of the Bureau of Labor Statistics, or in the hereto appended tabularized data sheets, percentage table no. 2.

The industrial commissions of Idaho, Kentucky, and Nevada have emulated the grievously and conspicuously faulty precedent which has been wrongfully but officially approved by more than half of all industrial accident boards and commissions that have adopted any procedure, whereby permanent partial visual efficiency loss is computed. That frequently imitated faulty precedent to which I have disparagingly referred is the obviously popular fallacy that an adequate and accurate evaluation of permanent partial industrially sustained visual efficiency loss can be made on the basis of the percentage value alone of lost central visual acuity.

The industrial commission of Florida has manifested an exemplary quality of judgment by its adoption, in its entirety with the exception of the partial visual loss percentage schedule, the American Medical Association's commendable, accurately evolved method of computing permanent partial visual efficiency loss.

Of the four industrial commissions that have adopted the Allport percentage schedule of partial visual acuity losses, the industrial commissions of Idaho, Kentucky, and Nevada have decreed that a subnormal central visual acuity status of 20/200 Snellen or less is equivalent to industrial blindness, while the industrial commission of Florida has officially established the limit of useful industrial vision at 20/170 Snellen or less.

For the industrial commissions of Idaho and Kentucky to establish the limit of useful vision at 20/200 Snellen, when they require that visual acuity determinations shall be made without the aid of correction lenses, is an exceedingly faulty decree. There are many thousands of employees in the United States whose visual acuity, without the aid of correction lenses, is 20/200 Snellen or less, yet it is true that those employees, with the aid of correction lenses, enjoy perfection of vision.

Although the industrial commissions of Idaho, Kentucky, Nevada, and Florida have adopted the Allport percentage schedule of partial visual acuity losses, those four industrial commissions have manifested the usually displayed diversity of opinion by the inconsistent exactions of the industrial commissions of Idaho and Kentucky, that all visual acuity determinations shall be made without the aid of correction lenses. The industrial commissions of Nevada and Florida rationally require that all visual acuity elicitation shall be made with the aid of correction lenses.

There can be offered no justifiable excuse for the imposing of the arbitrary mandate by any industrial commission that visual acuity determinations which are to be utilized in evaluating industrially sustained permanent partial visual efficiency loss shall be determined only without the aid of correction lenses, unless that requisition has been prescribed by law.

The industrial accident commissions of Colorado, Utah, California, and Missouri have manifested a definitely unconformable attitude wherein each has adopted for its own individual use a heterodox percentage schedule of partial visual acuity losses. The iconoclastic

attitude which is displayed by the division of workmen's compensation of New York concerning all percentage schedules of partial visual acuity losses precludes the possibility of an allocation of that industrial commission's adopted method of computing partial visual efficiency loss in any one of the seven sections which comprise *all* of the other partial visual efficiency loss computation methods which are in official use in the United States. For that reason the method of computing partial visual efficiency loss which has been adopted by the industrial commission of the Empire State will be appropriately placed in the unorthodox section for any attempted appraisalment of that anomalous method.

The industrial commission of Colorado has adopted a very unique percentage schedule of partial visual acuity losses. That percentage schedule is captioned "Chapman's Percentage Vision Tables", as it has been modified by Dr. W. H. Crisp, the officially designated examiner for the industrial commission of Colorado.

The Chapman table is a worthy, meticulously prepared percentage schedule of partial visual acuity losses corresponding to the various Snellen notations of central visual acuity.

The Chapman table is the personal achievement of Dr. V. A. Chapman, until recently of Milwaukee, now of Hollywood, Calif. The Chapman table was originally presented before the American Academy of Ophthalmology and Oto-Laryngology in a paper which Dr. Chapman read at Pittsburgh, October 30, 1917.

A review of the Colorado industrial commission's adopted percentage schedule and a comparison of that schedule with the original Chapman table reveals that Dr. Crisp has not only modified the Chapman table but that he has revolutionized it.

The percentage values of many of the Snellen notations of visual acuity losses which are recorded in Dr. Crisp's revision of the Chapman table are much in excess of the percentage values which are shown in the original Chapman table for the corresponding Snellen notations.

The aggregate amount of the percentage values, as they are shown in the revised Chapman table for the visual acuity losses corresponding to 20/30, 20/40, 20/50, and 20/60 Snellen, is 100. The aggregate amount of those percentage values, as they are shown in the original Chapman table, corresponding to those same Snellen notations, is only one-half of that amount or 50.

The revised Chapman table exhibits a novel and perplexing mathematical problem. It is shown in the revised Chapman table that while the sum of the percentage values of lost and retained visual acuity, either for 20/20 Snellen or for 20/200 Snellen, is 100 percent; it is also shown that the sums of the percentage values of lost and retained visual acuity for 20/30 Snellen, and for each of the other Snellen notations to 20/190 Snellen, inclusive, are, without exception, in excess of 100 percent.

A solution of that problem and an explanation of it was offered by Feay B. Smith, referee of the industrial commission of Colorado. I shall quote from Referee Smith's letter of explanation: "At a first glance, this table seems inconsistent, as the rating below 20/90 gives more for loss of vision than appears consistent with the vision obtainable. For instance, 20/90 yields vision in ordinary terms of

65 percent, but it is our opinion for industrial purposes, that this is equivalent to 55-percent loss of vision, and rating is made upon that basis." It may be the Colorado climate, not Dr. Crisp's calculations, that is responsible for that mathematical obliquity.

An inspection of the Chapman table, as it has been changed by the Industrial Commission of Colorado, reveals that the retained percentage values of the various Snellen notations of visual acuity remain as they were originally recorded by Dr. Chapman. The percentage value, however, of visual acuity loss shown, corresponding to each Snellen notation from 20/30 to 20/190, has been increased from a minimum of 5 percent to a maximum of 20 percent, and thereby a mathematical paradox is revealed.

The Colorado Industrial Commission has officially established the limit of useful industrial vision at a subnormal visual acuity, without the aid of a correcting lens, at 20/190 Snellen. That, too, is an unjustifiable decree.

In Colorado any myopic employee whose central visual acuity at a distance of 20 feet, without the use of lenses, is 20/190 Snellen or less is industrially blind, although that near-sighted employee may be an expert linotypist, engraver, watchmaker, or master mechanic, who possesses perfection of vision with the use of simple lenses.

A legalized requirement in the State of Colorado which is contrary to all authoritative opinion, that only visual acuity determinations, which have been made without the aid of correcting lenses, shall be used in the computation of the percentage values of industrially sustained permanent partial visual efficiency losses is a rank absurdity, regardless of the contingency that the requirement thus made may be a legislative enactment, a judicial dictum, or the result of the industrial commission's exercise of its lawfully conferred discretionary privileges.

The Industrial Commission of Utah erroneously accepts as synonymous central visual acuity and central visual efficiency. On that basis and by utilizing only visual acuity elicitation that have been determined without the aid of correcting lenses, the Utah Industrial Commission proceeds most illogically in its futile attempt to compute partial visual efficiency loss.

From the standpoint of voluminosity and other colossal proportions, the Industrial Accident Commission of California can lay justifiable claim to the possession and use of the most comprehensive assemblage of percentage schedules and rating tables, as well as the most complex method of rating permanent partial disabilities, to be found within the boundary lines of any other State.

The California Industrial Accident Commission has evolved and adopted 12 separate rating tables; and that industrial commission's adopted schedules of industrial disabilities comprise a book of 70 pages.

In California, three standard basic factors are employed in computing compensation awards. The standard man is an unskilled laborer. The standard age is 39. The standard disability is the loss of the major arm at the shoulder, which is accepted as a loss that is equivalent to 60 percent of total permanency.

In California, all visual loss values, either permanent total or permanent partial, are based on the statutory percentage value of

permanent total disability. Four weeks of compensation are awarded for each 1 percent of total permanency.

In California, compensation is paid principally for the purpose of accomplishing rehabilitation; not primarily for indemnification. A standard man (an unskilled laborer), who is of the standard age (39), who has sustained the industrial visual loss of one eye, is awarded 20 percent of the amount of an award for total permanency if there exists no obvious blemish; 25 percent of the amount of an award for total permanency is awarded if there exists a conspicuous disfigurement; 30 percent of the amount of an award for total permanency is awarded if the eyeball has been enucleated.

In California, the higher the workman is skilled, the higher is the percentage rating, and the older the workman, the higher is the percentage rating. If a workman loses an only remaining eye, he is compensated as if the previously lost eye were a normal eye. 20/200 Snellen equals a visual loss of 87.5 percent. Industrial blindness is visual acuity reduced to light perception.

In California, for the entire loss of sight of one eye, without obvious blemish, three common laborers whose ages are 24, 39, and 54 years would be awarded, respectively, 17.5, 20, and 22.75 percent of an award for total permanency. If those three workmen were skilled mechanics, they would be awarded, respectively, 18.25, 22, and 26 percent of an award for total permanency.

Since the Industrial Accident Commission of California has employed itself for many years in systematically planned investigations of the complex field of visual economics, and since, too, that industrial commission has always shown a compliant regard for authoritative opinion, the inevitable result is that the California commission bases its method of computing industrially sustained permanent partial visual efficiency loss on visual acuity determinations which have been made with the aid of correcting lenses, and on a comprehending recognition and the scientific application of the three primary and coordinate visual efficiency factors, along with a due consideration of any disabilities which may have been sustained, to any one or more of the several subordinate or secondary visual efficiency factors.

It is now my duty rather than my privilege to attempt an appraisal of the method that has been adopted by the Missouri Workmen's Compensation Commission, whereby partial visual efficiency loss shall be computed.

There are a few laudatory remarks which I can make concerning our officially adopted partial visual efficiency loss computation method. That is my duty, since I am a Missourian, and I intend to satisfy that moral obligation, although it is a fact that I can function more effectively and display more sincerity as an oppositionist.

For many years I have attempted to conduct my examinations, to record my findings, and to make my evaluations in exact compliance with the Missouri Workmen's Compensation Commission's required procedure, although there have been many times when my unyielding conformity has been accomplished only at the expense of a painfully lacerated conscience.

The Missouri Workmen's Compensation Commission in the early days of its existence was beguiled into the official adoption of our percentage schedule of partial visual acuity losses. That percentage

schedule has but a single virtue; it is a paragon of mathematical perfection. That percentage schedule, in my opinion, was conceived, compiled, and its official adoption secured to accomplish a purpose which should be and can be effected, with probity, only by legislative enactment.

The Missouri Workmen's Compensation Commission, as did 12 other industrial accident boards and commissions, accepted the false hypothesis that the percentage value of partial visual acuity losses, determined without the aid of correcting lenses, supplies an adequate and justifiable basis for the evaluation of central visual acuity efficiency.

I have mentioned and discussed adversely the two aspects of the Missouri Workmen's Compensation Commission's method of computing partial visual efficiency loss, wherein that method is not in exact conformity with the well-known and commendable American Medical Association's method.

The partial visual efficiency loss computation method which has been adopted by the division of workmen's compensation of the Department of Labor of New York (for the sake of brevity hereinafter referred to as the Industrial Commission of New York) is original, unique, and exclusive.

The Industrial Commission of New York has officially approved and adopted a commendable procedure whereby extra-ocular muscle function efficiency is determined. It is a certainty that the New York Industrial Commission's adopted method of evaluating the status of the field of binocular fixation does bear a striking resemblance to the American Medical Association's proposed procedure for the determination of the percentage value of retained binocular fixation ability.

Since the votaries of the New York Industrial Commission's adopted method of computing partial visual efficiency loss have, consistently and repeatedly, for several years denounced the entire American Medical Association's method of evaluating partial visual efficiency loss, I am unwilling to concede that any part of the American Medical Association's method has been spirited away, slightly camouflaged and paraded, as the "brain child" of a Knickerbocker.

The unconventional method of computing partial visual efficiency loss, which has been adopted by the Industrial Commission of New York, exhibits a most peculiar sense of proportion. The reasonably harmonic and interdependent relation, necessarily prevalent among the several primary and coordinate visual efficiency factors, some of which are occasionally utilized by the Industrial Commission of New York, is conspicuously inconsistent. Apparently that essential visual efficiency factor attribute is contraband in New York.

In computing the percentage value of retained central visual acuity efficiency the Industrial Commission of New York accepts and utilizes central visual acuity elicitation which have been made *only* with the aid of correction lenses and *only* at a distance of 20 feet.

Emphatically, I approve the New York Industrial Commission's mandate, wherein the official injunction is explicitly stated that *only* visual acuity findings, which are eligible for use in computing partial visual efficiency loss, must have been determined *only* with the aid of correction lenses.

It is generally conceded by competent observers to be a fact that approximately in 10 percent of all cases of traumatically impaired, central visual acuity ability, the reduction in central visual acuity at 20 feet and at 14 inches is not alike. It is also an authoritatively recognized actuality that a workman's central visual acuity ability manifested at 14 inches has a worth which is, at least, twice the amount of the value of his central visual competency demonstrable at 20 feet.

Several years ago Dr. Albert C. Snell, of Rochester, N. Y., made a consecutive series of visual acuity tests of 850 subnormal visual acuity cases, wherein he meticulously determined, with the aid of correction lenses, the best obtainable central visual acuity at 20 feet and at 14 inches. Dr. Snell found in 8 percent of those 850 permanent partial visual acuity loss cases that there prevailed a discrepancy, ranging from a slight to a marked degree, in the percentage values of central visual acuity which he elicited at 20 feet and at 14 inches.

The New York Industrial Commission has ignored completely in its adopted computation procedure, whereby partial visual efficiency loss is evaluated, the obvious fact that the percentage values of distance and near vision are not always alike and, with an equal disregard both for convention and for accuracy, it has refused to recognize the relative values of distances and near vision.

I shall now unveil and deposit squarely in the lap of the Industrial Commission of New York, where it belongs for an acknowledgement of paternity, the conspiracy of all but the most profound silence concerning the extraordinarily important prime visual efficiency factor, which is known among ophthalmologists as *visual field efficiency*.

The Industrial Commission of New York has, I admit, timorously conceded that only in the exceptionally rare cases of occipital lobe injuries, whereby there may have been caused a hemianopsia, the visual field efficiency is given whatever consideration that, in the opinion of the commission, that traumatically impaired prime visual efficiency factor may merit.

In the very courteous letter which was written to me recently by Dr. M. Davidson, by direction of Dr. Raphael Lewy, chief medical examiner of the division of workmen's compensation of the Department of Labor of New York, and wherein there is set out specifically the partial visual efficiency loss computation method which has been adopted by the Industrial Commission of New York, it is not stated, relative to hemianopsia (the one and only traumatic ocular result wherein any consideration is ever given to the visual field status) whether that marked visual disability must be complete or if it may be incomplete; whether it must be absolute or if it may be relative to justify its recognition and consideration by the Industrial Commission of New York.

The Industrial Commission of New York arbitrarily exacts the recognition, acceptance, and use of Snellen notations, as if Snellen notations were common fractions. That is a most thoroughly unjust requirement. There can be supplied neither a justifiable reason nor even a plausible excuse for that insidious, officially imposed demand, the inception of which is readily traced to a fallacious conclusion based on a wholly untenable premise, which is completely at variance with the frequently expressed opinions and the final judgments of all reputable visual economists.

The Snellen system is universally accepted and recognized as being both a scientific and practicable method of designating retained visual acuity, but Snellen notations do not express fractional parts of visual acuity, although each Snellen notation does have a mathematical significance. Snellen notations, only for the sake of convenience, are exhibited in the semblance of common fractions. Snellen notations were never intended by Professor Snellen to indicate aliquot parts of unity or fractional parts of retained central visual acuity.

The scientific and practical Snellen method is one whereby visual angles can be and are measured and expressed by accurate formulas. The visual angle is measured by comparing tangents of arc, and the 5' angle is accepted as the standard unit of visual acuity measurements, which scale is accurately graduated and extends to infinity.

The dimensions of all Snellen test letters are determined by the use of that standard scale. The various Snellen notations indicate only the comparative relation of one measurement of visual acuity with another. There is, however, no mathematical proportion existing between those several Snellen notations of visual acuity which can be expressed by common fractions.

If the conception of the New York Industrial Commission concerning the significance of Snellen notations is correct, it must necessarily follow, that in some obscure, enigmatical manner there has been transmitted to the Industrial Commission of New York a preferential knowledge of superior excellence concerning Snellen notations which transcends the comprehension of the remainder of humanity, including that of Professor Snellen himself. The Industrial Commission of New York has deliberately and pragmatically rejected every percentage schedule of partial visual acuity losses corresponding to the various Snellen notations of retained visual acuity which has ever been evolved.

By the opinionated and reactionary attitude persistently maintained by the Industrial Commission of New York, and by its arbitrary repudiation of the authoritative opinions of the world's most renowned visual economists, either living or dead, the method of computing partial visual efficiency loss, which has been officially adopted by the Industrial Commission of New York, on the whole and for reasons expressed, richly deserves my most emphatic and unconditional disapproval. In an ineffectual attempt to eliminate complexity and to substitute simplicity therefor, in my opinion, the Industrial Commission of New York has deleted, distorted, and perverted its partial visual efficiency loss computation method to the degree of gross inaccuracy.

There are 11 industrial commissions that presume to have adopted the American Medical Association's percentage schedule of partial visual acuity losses. They are the industrial commissions of Kansas, Maine, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, United States Government, Washington, Wisconsin, and West Virginia.

Considering the fact that only 24 industrial commissions in the entire United States have officially adopted any method whereby partial visual efficiency loss shall be computed, and considering the additional fact that 11 industrial commissions presume to have adopted

the identical percentage schedule of visual acuity losses which is the American Medical Association's percentage schedule, it appears upon casual recognition of those two factual statements that some definite, effective action, has been taken, which is indicative of an approach toward a practicable uniformity in the accepted and legalized methods throughout the United States, whereby partial visual efficiency loss shall be computed. However, that is only apparently not actually true.

Noncompliance with a fundamentally essential requirement of the American Medical Association's method of computing partial visual efficiency loss by 7 of those 11 industrial commissions that presume to have adopted the American Medical Association's percentage schedule, of partial visual acuity losses, has resulted in a complete distortion and perversion of the percentage values of central visual acuity losses which correspond to the various Snellen notations, as they are intended and as they are shown to be in the American Medical Association's percentage schedule of partial visual acuity losses.

The methods prescribed by the industrial commissions of Kansas, North Carolina, North Dakota, Oregon, United States Government, Washington, and Wisconsin, whereby central visual acuity elicitation shall be made, are not in conformity with the method of determining central visual acuity which is explicitly designated, and which is an imposed exaction made incident to the use of the American Medical Association's percentage schedule.

To comply with the requirements specifically set out in the American Medical Association's adopted method of procedure for the evaluation of visual efficiency loss, all visual acuity elicitation at 20 feet and at 14 inches must be made only *with the aid of correction lenses*, and the percentage values of all visual acuity determinations thus made must be accepted at the percentage values which are shown in the American Medical Association's percentage schedule.

Of the 11 industrial commissions that presume to have adopted the American Medical Association's percentage schedule of partial visual acuity losses, only the industrial commissions of Maine, Ohio, Oklahoma, and West Virginia require that visual acuity determinations shall be made only *with the aid of correction lenses*. The compensation boards and commissions of Kansas, North Carolina, and Washington require that visual acuity findings shall be made only *without the aid of correction lenses*. The compensation boards and commissions of North Dakota, Oregon, United States Government, and Wisconsin require that visual acuity elicitation shall be determined *both with and without the aid of correction lenses*. It is, therefore, obvious that only the industrial commissions of Maine, Ohio, Oklahoma, and West Virginia have, in fact, adopted the American Medical Association's percentage schedule of visual acuity losses.

The industrial commissions of Ohio and Oklahoma are the only official bodies in the United States that have adopted a partial visual efficiency loss computation method which complies, without deletion or amendment and in all details, with the adopted partial visual efficiency loss computation method, of the American Medical Association.

Dr. J. B. Banks, medical director of the State Compensation Commission of West Virginia, has reported that the Compensation Com-

mission of West Virginia approves, but has not adopted, the American Medical Association's method of computing partial visual loss. Dr. Banks has further stated that, since the American Medical Association's method is somewhat too complicated for the use of examiners throughout the State, the West Virginia Commission has adopted for general use *only* the American Medical Association's percentage schedule of partial visual losses and upon the basis of the authoritative significance of that percentage schedule, visual disability ratings are made in the State of West Virginia.

In the State of Washington awards for industrially sustained disabilities are made, not primarily, for the accomplishment of rehabilitation; neither are they based on a predetermined percentage of impairment, either to physical function or to earning ability. In the State of Washington the award prescribed by law for the permanent and total industrially sustained visual loss of an eye is a lump sum of \$1,080.

The Industrial Commission of the State of Washington has officially declared, if the central visual acuity of an employee's eye has been traumatically reduced to 20/200, Snellen, determined without the aid of a correction lens, that injured eye is industrially blind. That faulty dictum is qualified slightly in one particular. In the State of Washington whenever an oculist is called upon to examine an employee's eye which has sustained a puncture wound, if the eye thus injured retains any visual ability at all, the examining oculist is graciously permitted to report his visual acuity findings which he has been able to elicit with the aid of a correction lens.

That I may further reveal the inadequacy of the method of computing the percentage value of permanent partial visual efficiency loss which has been adopted by the Industrial Commission of the State of Washington, I shall mention the disparaging observation that the Industrial Commission of the State of Washington has legalized its aberrant opinion that central visual acuity and visual efficiency have the identical significance.

I could appraise, with enthusiastic approval, the method of computing partial visual efficiency loss which has been adopted by the Industrial Commission of North Carolina, and will do so if that industrial commission will substitute in its official computation method the single word *with*, for the single word *without*.

Chairman Harry McMullen, of the North Carolina Industrial Commission sent in a complete and accurately descriptive explanation of the North Carolina adopted method, including the American Medical Association's percentage schedule of visual acuity losses. That method is an exact replica of the American Medical Association's method. Suggestive of the obtrusive and imprudent "fly in the ointment", there is appended to the North Carolina percentage schedule the following dissenting note: "Loss of vision must be based upon the reading, *without* the use of a corrective lens." By that brief, appended, erroneously conceived, negatory note the Industrial Commission of North Carolina repudiates the entire method of the American Medical Association. Thereby, the purpose of that otherwise laudable method is effectively intercepted.

The North Dakota Workmen's Compensation Bureau's adopted method of computing partial visual efficiency loss requires compli-

ance with the American Medical Association's percentage schedule, which is, by a later paradoxical stipulation, completely repudiated. The North Dakota Industrial Bureau also requires acceptance of the traditional dim-sighted, notorious delusion that the expressions "visual acuity" and "visual efficiency" provide a perfect example of synonymy. Accordingly the North Dakota Industrial Bureau, with a provincial but reckless disregard for accuracy, equity, and authoritative opinion, blithely ignores all visual efficiency factors except central visual acuity, the determination of which is required both with and without the aid of correction lenses.

The Kansas Industrial Commission has, perceptibly and repeatedly, erred, and in the manner in which so many other industrial commissions have been deluded, misguided, and, blunderingly, plunged into bewildering error.

I shall mention, only to condemn, the two most conspicuously evident errors among the Kansas Industrial Commission's official requirements relative to the computation of partial visual efficiency loss: The former is the unjustifiable demand that visual acuity determinations which shall be used in computing partial visual efficiency loss must have been made only without the aid of correction lenses. The latter exaction is that the inexcusable misconception must be accepted, as if that impossible contingency were a fact, that the percentage value of lost central visual acuity efficiency alone supplies an entirely adequate basis for the computation of partial visual efficiency loss.

That latter, official but irrational, demand is all the more absurd when it is realized that, although the American Medical Association's percentage schedule of partial visual acuity losses is officially accepted without reservation, and its exclusive use required by the Kansas Industrial Commission, as if that percentage schedule were a perfection of mathematical achievement, yet absolute noncompliance is officially and arbitrarily demanded, with the American Medical Association's specific injunction that all visual acuity determinations must be made *with* the aid of correction lenses.

The methods of computing permanent partial visual efficiency loss which have been officially adopted by the industrial commissions of Oregon, the United States Government, and Wisconsin, are modified compilations of the American Medical Association's method.

Each of these three methods is exceptionally commendable, yet each one of them is unlike, in one or more details, any other method in official use in the United States.

That I may retain and manifest a due regard for the totality of the various factors which comprise the partial visual efficiency loss methods of Oregon, the United States Government, and Wisconsin, and also to facilitate and to expedite my submitted appraisals, I shall discuss briefly only the phases wherein the adopted methods of those three industrial commissions digress from the reputable and master method of the American Medical Association.

The Oregon Industrial Commission's adopted method of computing partial visual efficiency loss is in complete accord with the American Medical Association's method, except that the commission utilizes visual acuity factors, which have been determined both with and without the aid of correction lenses, and disregards secondary visual efficiency factors.

For a definite and complete explanation of the procedure whereby visual acuity efficiency is determined, by utilizing visual acuity factors determined both with and without the aid of correction lenses, I refer you to Mrs. Jewell W. Swofford, chairman of the United States Employees' Compensation Commission, Washington, D. C.

The partial visual loss computation method that has been adopted by the United States Employees' Compensation Commission is in exact compliance with the American Medical Association's method, except that the United States Government utilizes visual efficiency factors which have been elicited both with and without the aid of correction lenses.

The Wisconsin method of evaluating industrial visual efficiency loss complies in all details with the scientific and comprehensive method that has been adopted by the American Medical Association, except in two particulars. Those digressive exceptions are major ones. They are: Visual acuity determinations, elicited both with and without the aid of correction lenses, are utilized in computing visual acuity efficiency. The Industrial Commission of Wisconsin assumes, when diplopia exists throughout the entire motor field of binocular fixation and is so registered on a motor field chart, that the loss in coordinate visual efficiency functions amounts to 50 percent of the visual efficiency of an eye thus affected. The American Medical Association method assumes that an eye, in that manner and to that extent affected, has sustained a 100 percent efficiency loss.

It is probably true that the officially adopted methods whereby permanent partial visual efficiency loss is computed by the American Medical Association, by the United States Employees' Compensation Commission, and by the industrial commissions of California, Florida, Ohio, Oklahoma, and Wisconsin comprise the most uniformly accurate procedures available for use, in the determination of the percentage value of losses, in the multiplicity of permanent partial industrially sustained physical disabilities which are submitted to industrial commissions for adjudication, yet that observation does not necessarily imply that any one of those adopted methods of computing partial visual efficiency loss is entirely correct, or that there is any adopted method which cannot be improved.

The feigned adequacy of several industrial commissions to improve or even to criticize intelligently the American Medical Association's adopted partial visual efficiency loss computation method, which is the synthesized product of the Nation's most capable visual economists, is suggestive of the artist's conceited apprentice who vain-gloriously displayed to his preceptor what had recently been a most beautiful lily which he had bedaubed with gaudy pigments. The apprentice honestly believed that he had additionally adorned that lovely flower.

I have mentioned the fact previously, but I shall repeat it, that I may emphasize it, 13 of the 23 industrial commissions in the United States have officially required that visual acuity determinations, which are to be utilized in the computation of visual efficiency loss, must be elicited without the aid of correction lenses.

One of the specific instructions given by the committee on compensation for eye injuries of the American Medical Association is as follows: "The best central visual acuity obtainable, *with* correct-

ing lenses, shall be used in determining the degree of retained visual efficiency." That is authoritative advice. That advice should not be ignored. It is the instruction of America's foremost visual economists.

The committee on compensation for eye injuries was appointed in 1919. It was May 26, 1925, when that committee's scientifically evolved and meticulously prepared method of evaluation of partial visual efficiency loss was approved and adopted by the American Medical Association. The evolution of that method by the committee on compensation for eye injuries required 6 consecutive years of discerning, exhaustive, comprehensive, specialized endeavors in clinical and in experimental research. All mathematical relations and computations therein, as well as all principles, conclusions, and the applications thereof, are based, both practically and scientifically, on visual acuity values which have been determined only *with* the aid of correction lenses.

Each member of the committee, at the time of his appointment, was thoroughly familiar with the abundant research activities and the recorded conclusions of his predecessors in the specialized field of visual economics.

Each member of that committee was chosen and appointed solely because of his conspicuous and proven capabilities and his particular fitness to perform the difficult delegated task, which was to establish as nearly perfect as is possible an accurate, just, uniform, and practicable method by which there could be readily determined the percentage loss of visual efficiency of an individual who had sustained any degree of visual impairment, the result of injury or of occupational disease, and for which compensation awards could be made in absolute fairness to every one concerned.

Since it has been conclusively proven and formally announced by the committee on compensation for eye injuries of the American Medical Association, and since it is also the composite opinion of the ophthalmologists of America, that only visual acuity findings determined with the use of correcting lenses should be utilized in evaluating partial permanent visual efficiency loss, is it not possible or even probable that the antithetical opinions of legislators, commissioners, and lawyers, regardless of their juristic acumen and sagacity, but who have little or no knowledge of ophthalmology, might be in error?

The erroneous conception seems to be prevalent that an ophthalmic lens, by its scientific use, usually will minimize partial permanent traumatic visual efficiency loss when in reality that contingency, like the white blackbird, is certainly a *rara avis*; one that is most infrequently observed.

Very rarely is it ever possible to compensate in any degree, by the use of an ophthalmic lens, for a reduction in visual acuity which is the result of trauma or of occupational disease. Not only do I want to call your attention to that fact, but I earnestly request your deliberate consideration and confirmation of it.

No one is justified in denying the obvious fact that properly prescribed ophthalmic lenses invariably minimize and frequently compensate entirely for visual efficiency disabilities, if those visual efficiency disabilities are the results of refraction errors and not complicated by traumatic results, congenital anomalies, or disease.

If the visual acuity of an eye which has sustained a traumatic partial visual efficiency loss is improved by the proper application of an ophthalmic lens, it is true, with exceedingly few exceptions, that the traumatized eye had a preexisting refraction error which had impaired its visual efficiency to an extent approximately equal to the amount of visual acuity improvement that can be accomplished by the use of any ophthalmic lens.

The assertion is frequently made that artificial arms and artificial legs are analogous to ophthalmic lenses. There exists not the slightest analogy between artificial legs or artificial arms and ophthalmic or correcting lenses. There does, however, exist a genuine analogy between artificial legs and artificial arms and artificial eyes. An artificial leg, an artificial arm, or an artificial eye is very accurately described and definitely identified as a prosthesis. Webster's International Dictionary defines prosthesis as follows: "The addition to the human body of some artificial part to replace one wanting, as a leg, eye, or tooth."

Obviously, there is no ophthalmic lens which can, by its placement over an empty orbit, replace and function vicariously for an enucleated eyeball which would, in any manner, be aptly comparable to the replacement and functioning results secured by the use of an artificial leg or an artificial arm.

There is no statutory enactment, nor any interpretation thereof, which can alter the basic fact that the use of an ophthalmic lens seldom minimizes the physical function impairment of an eye which has sustained a traumatic partial permanent visual efficiency loss.

I am not unmindful of the 23 industrial commissions that have no officially adopted method of procedure whereby partial visual efficiency loss must be computed. Earnestly I counsel each of those 23 industrial commissions to have proficiently compiled, for timely adoption, a readily comprehensible, scientifically formulated method whereby industrially sustained partial visual efficiency losses can be reliably and equitably evaluated.

Conversely, however, I declare that it is far more expedient for those 23 industrial commissions to retain indefinitely a convenient exemption from self-imposed, coercive injunctions and inflexible mandates relative to fixed percentage schedules and unalterable computation methods than it would for them, hastily and incompletely, to adopt and to make compulsory the use of nondescript, half-caste, partial visual efficiency loss computation monstrosities.

A few of those 23 industrial commissions that have adopted no partial visual efficiency loss computation method approve and usually use, either in its entirety or in a slightly modified form, some one of the several available partial visual efficiency loss computation methods. The plan which is regularly utilized by the industrial commission of New Jersey supplies an illustrative and notable example in confirmation of that statement.

The industrial commission of New Jersey for many years has exercised a preferential regard for a worthy partial visual efficiency loss computation method, which was presented originally in 1923, and later in 1932, in exceptionally meritorious papers, which were read before the eye, ear, nose, and throat section of the Medical Society of New Jersey, by Dr. Elbert S. Sherman, of Newark.

The partial visual efficiency loss computation method, which was proposed several years ago by Dr. Sherman, is similar in comprehensiveness and in most implications to the American Medical Association's method, except that Dr. Sherman's method prescribes the use of a percentage schedule of partial visual acuity losses, which is a slightly modified analog of the Allport percentage schedule. (See percentage schedule no. 4, hereto attached.)

To those industrial commissions whose executive and judicial activities have been unwisely restricted by inefficient legislative acts, or unreasonably curtailed by incompetent judicial decrees, and whereby those laws or those decrees operate with obvious injustice relative to the number of compensation weeks allowable for permanent total visual efficiency loss; to the percentage of an employee's average earnings; to the use or to the prevention of the use of correction lenses; to the percentage schedule of partial visual acuity losses or to the limit of useful industrial vision, both for the sake of accuracy and justice, I urge you to proceed persistently and aggressively to bring about a correction of those inadvertencies, by the enactments of amendments to your compensation acts.

Industrial Visual Loss Evaluation Methods

[Compiled by Walter L. Small, M. D., Kansas City, Mo.]

States	Compensation weeks for industrial visual loss of one eye	Compensation weeks for industrial loss of an eyeball	Percentage of average earnings	Visual factors used in computations ¹	Visual acuity determined with or without correcting lenses	Percentage schedules used (1) (2) (3) (4) (5) (6); See attached tabulation of percentage tables	Snellen notations which equal industrial blindness	Remarks
Alabama.....	100	100	50	No method adopted	for computing permanent, partial, visual loss.			See footnote (B). No adopted percentage schedule of partial visual loss.
Arizona.....	108	130	50, 55, 65	50% partial visual loss; 55% entire visual loss, one eye; 65% loss of both eyes; no specific method adopted for computing partial visual loss (A).				
Arkansas.....	No fixed number of weeks		61.75	1, 3, 4, 5.....	With.....	Table (6).....	Light perception.	No compensation law; common law applies. See footnote (C). See appended remarks (California).
California.....								
Colorado.....	104	139	50	1, 3, 4.....	Without.....	Table (3).....	20/190.....	See footnote (A). For the loss of an <i>only</i> eye, an award is made of 312 weeks.
Connecticut.....	208	208	50	1.....	With.....	None.....	20/200.....	See footnote (A). Commission not at all pleased with their present method.
Delaware.....	113	113	50	Will not accept obligation to be restricted to the use of any visual loss schedule, or to any evaluation method adopted by any other board or commission.				
Florida.....	100	100	50, 55, 60	1, 2, 3, 4, 5.....	With.....	Table (4).....	20/170.....	A. M. A. method used, except schedule 50% no dependents; 55%, 1 dependent; 60%, 2 dependents. See footnote (A). No other data supplied.
Georgia.....	100	100	50	(?).....	Without.....	(?).....	(?).....	Maximum weekly awards are: Single, \$13; married, \$13.10; married with children, \$16.
Idaho.....	120	140	55	1.....	do.....	Table (4).....	20/200.....	Visual loss based solely on visual acuity, at 20 feet, without lenses.
Illinois.....	120	120	50	1.....	do.....	Table (2).....	do.....	See footnote (B). No specific method for computing permanent, partial visual loss.
Indiana.....	150	150	55	(?).....	With.....	(?).....	do.....	See footnote (B). No percentage schedule of partial, visual loss has been adopted.
Iowa.....	100	100	60	(No provision made for permanent, partial, visual loss computation.)				Visual loss of an <i>only</i> eye may be rated with the aid of a correction lens.
Kansas.....	110	110	60	1, 2.....	Without.....	Table (1).....	20/800.....	No permanent, partial, visual loss awards have ever been made in Kentucky.
Kentucky.....	100	100	65	1.....	do.....	Table (4).....	20/200.....	of computing partial, visual loss. No workmen's compensation board or commission.
Louisiana.....	100	100	65	No percentage schedule of visual loss. No adopted method of computing partial, visual loss.				
Maine.....	100	100	66 2/3	1.....	With.....	Table (1).....	20/200.....	No permanent, partial, visual loss evaluation method. See footnote (B).
Maryland.....	100	100	66 2/3	(?).....	Without.....	(?).....	(?).....	Do
Massachusetts.....	\$500	\$500	66 2/3	(?).....	Without.....	(?).....	(?).....	See footnotes (A) and (B).
Michigan.....	100	100	66 2/3	(No provisions made for permanent, partial, visual loss computation)				Merits of partial, visual loss cases are appraised and rated by the Commission. No awards are made for permanent, partial, visual loss.

See footnotes at end of table.

Industrial Visual Loss Evaluation Methods—Continued

[Compiled by Walter L. Small, M. D., Kansas City, Mo.]

States	Compensation weeks for industrial visual loss of one eye	Compensation weeks for industrial loss of an eyeball	Percentage of average earnings	Visual factors used in computations	Visual acuity determined with or without correcting lenses	Percentage schedules used (1) (2) (3) (4) (5) (6): See attached tabulation of percentage tables	Snellen notations which equal industrial blindness	Remarks
Minnesota.....	100	100	66%	1.....	Without..	Table (2)..	20/200.....	See footnotes (A) and (F). No compensation law; common law applies.
Mississippi.....	108	118	66%	1, 2, 3, 4.....	Without..	Table (5)..	20/480.....	Awards are made for impairment to physical function; not loss of earning power.
Missouri.....	100	120	50 to 66%	(No adopted percentage table of partial visual loss)			(?).....	See footnote (B). 50% of earnings, if one dependent, to 66 2/3%, if 6 or more dependents.
Montana.....	125	125	66%					Partial, visual loss evaluation method is now being formulated. See footnote (A).
Nbraska.....	108	130	60	1.....	With.....	Table (4)..	20/200.....	Partial, visual loss is based solely on visual acuity, at 20 feet.
Nevada.....			50	(No classification of injuries. No accident board. No adopted visual loss schedule. Labor commissioner is not authorized to make settlements between employer and employee.)				
New Hampshire.....	100	100	66%	(No provision made for permanent partial visual loss computation)			20/200.....	No permanent partial visual loss percentage table. See footnotes (A) and (B)
New Jersey.....	100	100	55	(No adopted percentage table of partial visual loss)			(?).....	No permanent, partial, visual loss computation method. 110 weeks of compensation for enucleation.
New Mexico.....	100	100	66%	1, 4.....	With.....	None.....	20/100.....	Snellen notations taken at their fractional values See footnote (F).
New York.....	100	100	60	1, 2, 3, 4.....	Without..	Table (1)..	20/280.....	A. M. A. method of visual loss evaluation, except visual acuity taken without lenses.
North Carolina.....	100	100	66%	1.....	With and without.....	do.....	20/800.....	See footnote (E).....
North Dakota.....	125	125	66%	1, 2, 3, 4.....	With.....	do.....	do.....	Awards not made for visual loss less than 25%. See footnote (D).
Ohio.....	100	100	66%	1, 2, 3, 4.....	do.....	do.....	do.....	See footnote (D).
Oklahoma.....	\$1,000	\$1,000	None	1, 2, 3, 4.....	With and without.....	do.....	do.....	A. M. A. method approved, but not adopted. See footnote (B).
Oregon.....	125	125	65	(Uses percentage schedule which is found in Bulletin No. 406 U. S. Bureau of Labor Statistics)				What comprises industrial blindness has not yet been decided by the commission.
Pennsylvania.....	80	80	50	(?).....	With.....	None.....	20/200.....	No adopted method for computing partial, visual loss. See footnote (B).
Rhode Island.....	100	100	50	(Compensation law in effect only since September 1935)				See footnote (B). May later adopt the A. M. A. method.
South Carolina.....	100	100	55	(No provision made for permanent, partial, visual loss computation)				See footnote (B).
South Dakota.....								

Tennessee.....	100	100	50	1.....	With.....	Table (2)...	20/200.....	Partial, visual loss evaluation is based solely on visual acuity, at 20 feet.
Texas.....	100	100	60	(?).....	do.....	(?).....	Light perception..	See footnote (B). No specific method for computing permanent, partial, visual loss.
U. S. Government.....	160	160	60%	1, 2, 3, 4, 5.....	With and without..	Table (1)...	20/200.....	See footnote (E).
Utah.....	100	120	60	1.....	Without..	Table (7)...	20/230.....	Partial, visual evaluation is based solely on visual acuity, at 20 feet.
Vermont.....	100	100	50	1.....	With and without..	None.....	Light perception..	See footnotes (A), (B) and (E).
Virginia.....	100	100	55	1.....	Without..	Table (2)...	20/200.....	Computations of visual loss usually based on visual acuity, at 20 feet.
Washington.....	\$1,080	\$1,440	None	1.....	do.....	Table (1)...	do.....	Awards not based on earnings.
West Virginia.....	132	132	60%	1.....	With.....	do.....	20/400.....	See footnote (C). Visual loss of one eye equals 1/4 of total permanency award.
Wisconsin.....	250	275	70	1, 2, 3, 4, 5.....	With and without..	do.....	20/800.....	See footnotes (C) and (E). See appended remarks (Wisconsin).
Wyoming.....	\$1,800	\$1,800	None	(All awards paid in lump sums).....	Without..	See footnotes (B) and (C). District judges determine award amounts.

¹(1) Central visual acuity, at 20 feet; (2) central visual acuity, at 14 inches; (3) visual fields; (4) Muscle function (extra-ocular); (5) Secondary visual efficiency factors.

FOOTNOTES

(A) Additional compensation paid during the temporary, total disability period.

(B) Examining physicians' percentage ratings of permanent partial visual loss are accepted. No adopted method for computing permanent partial visual loss.

(C) Visual loss values, either permanent total or permanent partial, are based on the statutory value of permanent total disability.

(D) Uses the American Medical Association's adopted method without deletion or amendment.

(E) Uses, in partial visual loss computations, visual acuity elicitation, at 20 feet and at 14 inches, determined both *with* and *without* the use of correction lenses. Central visual acuity loss, either for distance or for near, is determined by deducting one-half of the difference between the percentage value of retained central visual acuity elicited *with* a correction lens and the percentage value of retained central visual acuity elicited *without* the aid of a correction lens, from the percentage value of the retained central visual acuity elicited *with* the aid of a correction lens. In no instance, however, shall such deduction be made for more than 25 percent or less than 5 percent.

(F) Both Minnesota and New York maintain special State compensation funds. That special fund in Minnesota has been created and is maintained by the payment, by the employer or by the insurance carrier, into that special fund 1 percent of the amounts of the awards which are made for industrially sustained permanencies, either partial or total, and by the payment into that special State fund of \$300 for each death claim case, wherein there are no dependents. The special State fund in New York is maintained by very small assessments, and by the placement in that special

State fund all death claim case awards wherein there are no dependents. In Minnesota and in New York, when an employee loses an only eye, an only hand, an only arm, an only foot, or an only leg, the employer or the insurance carrier is assessed, not for a total permanency but only for the compensation value of the member which has been the more recently lost. The deficit which is due the employee, who is entitled to a total permanency award, is paid from that special State compensation fund.

California.—In California 3 *standard* basic factors are employed in computing compensation awards. The standard man is an unskilled laborer. The *standard* age is 39. The *standard* disability is the loss of the major arm at the shoulder, which is accepted as a loss that is equivalent to 60 percent of total permanency. 4 weeks of compensation are awarded for each 1 percent of total permanency.

Compensation is paid principally for the purpose of accomplishing rehabilitation; not primarily for indemnification. A standard man (an unskilled laborer), who is the standard age (39), who has sustained the industrial visual loss of 1 eye, is awarded 20 percent of the amount of an award for total permanency if there exists no obvious blemish; 25 percent of the amount of an award for total permanency is awarded if there exists a conspicuous disfigurement; 30 percent of the amount of an award for total permanency is awarded if the eyeball is enucleated.

The higher the workman is skilled, the higher is the percentage rating, and the older the workman, the higher is the percentage rating. If a workman loses an only remaining eye, he is compensated as if the previously lost eye were a normal eye. 20/200 Snellen equals a visual loss of 87.5 percent. Industrial blindness is visual acuity reduced to light perception. The California Industrial Accident Commission has 12 separate rating tables, and the adopted schedules of industrial disabilities comprise a book of 70 pages.

Industrial Visual Loss Evaluation Methods—Continued

FOOTNOTES—Continued

In California, for the entire loss of sight of 1 eye, without obvious blemish, 3 common laborers whose ages are 24, 39, and 54 years would be awarded, respectively, 17.5, 20, and 22.75 percent of an award for total permanency. If those 3 workmen were skilled mechanics, they would be awarded, respectively, 18.25, 22, and 26 percent of an award for total permanency.

Wisconsin.—The Wisconsin method of evaluating industrial visual efficiency loss complies in all details with the scientific and comprehensive method, which has been adopted by the American Medical Association (see A. M. A. bulletin: Appraisal of Visual Efficiency Loss), except in 2 particulars. Those digressive exceptions are major ones. They are:

(1) Visual acuity determinations, elicited both *with* and *without* the aid of correction lenses, are utilized in exact compliance with footnote (E), in computing visual acuity efficiency.

(2) The Wisconsin method assumes, when diplopia exists throughout the entire motor field of binocular fixation, and is so registered on a motor field chart comprising 20 rectangles, each 4° by 5° in size, that the loss in coordinate visual efficiency function amounts to 50 percent of the visual efficiency of an eye thus affected. The American Medical Association method assumes that an eye, in that manner and to that extent affected, has sustained a 100-percent visual efficiency loss. (See Wisconsin's Rules for Determining Loss of Visual Function, p. 5, table 2. See A. M. A. bulletin: Appraisal of Visual Efficiency Loss, p. 6, table 2.)

Since the sole purpose of the visual evaluation procedure is to determine the amount of visual loss which has resulted *only from injury*, presbyopia (normal old-sight), when it exists, must be corrected with a lense, while eliciting near vision "Without the aid of a correction lense."

All awards for *total permanent disabilities* made by the Industrial Commission of Wisconsin are based on the premise that an employee, who is 30 years of age or younger, is entitled to 70 percent of his average pre-traumatic earnings for 1,000 weeks. That award of 1,000 weeks for a *total permanency* is reduced, in the amount of 18 weeks, for each year that the employee's age is in excess of 30 years, until the employee has attained the age of 70 years. Thereafter no deductions in time are ever made. An employee in Wisconsin, who is 70 years of age or older, for the loss of both eyes or for any other *total permanent disability* is awarded 280 weeks of compensation.

In evaluating the percentage value of *permanent partial* disability of an employee who has industrially sustained either a permanent partial or a permanent total visual loss of 1 eye, 50 years (30 years is the basic age utilized in evaluating *total permanencies*) is accepted as the basic age. For the permanent total industrial visual loss of 1 eye, an award of 25 percent of a total permanency award or 250 weeks is made if the employee is not to exceed 50 years of age.

Beginning at the age of 50 years, the number of compensation weeks, comprising awards for the total and permanent visual efficiency loss of 1 eye, the standard award of 250 weeks for employees of 50 years of age and younger is reduced 2.5 percent each year.

For the total and permanent visual loss of 1 eye, an employee who is 55 years of age will be awarded 218.75 weeks of compensation. If that employee were 60 years of age, his award would be 187.5 weeks of compensation. If that employee were 70 years of age, his award would be 125 weeks of compensation.

Percentage values of central visual acuity losses, corresponding to the various Snellen notations, as they are shown to be on the 7 different visual loss schedules which are in use in the United States, at this time

Snellen notations of visual acuity retained at 20 feet	Kansas, Maine, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, U. S. Government, Washington, Wisconsin, West Virginia	Illinois, Minnesota, Tennessee, Virginia	Colorado,	Idaho, Kentucky, Nevada, Florida	Missouri	California	Utah
	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
20/20.....	00.0	00.0	00.0	00.0	00.0	00.0	00.0
20/25.....	4.8	5.0				12.5	
20/30.....	8.5	10.0	10.0	5.5	12.0	25.0	5.0
20/33.....					15.3		
20/35.....	12.5						
20/40.....	16.4	20.0	20.0	11.0	22.6	37.5	10.0
20/45.....	20.0						
20/50.....	23.5	25.0	30.0	16.5	31.9	50.0	15.0
20/60.....	30.1	33.3	40.0	22.0	40.0		20.0
20/70.....	36.0	40.0	45.0	27.5	47.3	62.5	25.0
20/80.....	41.5	50.0	50.0	33.0	53.6		30.0
20/90.....	46.6	62.5	55.0	38.5			35.0
20/100.....	51.1	75.0	60.0	44.0	64.1	75.0	40.0
20/110.....		80.0	65.0	50.0			45.0
20/120.....	59.1	85.0	65.0	59.0	72.2		50.0
20/130.....		87.0	75.0	63.5			55.0
20/140.....	65.8	89.0	75.0	68.0	78.5		60.0
20/150.....		91.0	80.0	71.5			65.0
20/160.....	71.4	93.0	80.0	77.0	83.3		70.0
20/170.....		95.0	85.0	81.5			75.0
20/180.....	76.1	97.0	85.0	86.0			80.0
20/190.....		99.0	90.0	88.0			85.0
20/200.....	80.0	100.0	90.0	90.0	90.0	87.5	90.0
20/210.....			95.0				
20/220.....	83.3		95.0				
20/230.....			100.0				
20/240.....	86.0				94.0		
20/260.....	88.3						
20/267.....							93.0
20/280.....	90.3						
20/300.....	91.8						
20/320.....	93.2				97.9		
20/340.....	94.3						
20/360.....	95.2						
20/380.....	96.0						
20/400.....	96.7						96.0
20/450.....	97.9						
20/480.....					99.7		
20/500.....	98.6						
20/600.....	99.4						
20/700.....	99.7						
20/800.....	99.9						99.0

Chairman WISE. Thank you. Mr. L. J. Carey will now discuss the legal aspects of the measurement of vision.

Legal Aspects of the Measurement of Vision

By L. J. CAREY, General Counsel, Michigan Mutual Liability Co., Detroit, Mich.

In the limited time allotted for delivery it is impossible to make any very thorough or complete analysis of the law applying to cases involving loss of vision. Such a task is made doubly difficult because

of the variations in the provisions of the compensation acts of the various States with respect to the compensation to be allowed for visual losses. Time would not permit of outlining the distinctions in the provisions of all the acts. I have appended a list of all the decisions to which I will refer, and additional decisions involving questions of visual losses, grouped as to States, for convenience in future reference.

In a general way, however, we should consider what the various compensation acts attempt to compensate for when they deal with the loss of sight or the loss of an eye. Do they attempt to compensate for loss of earning power; or for loss of sight regardless of its effect upon earning power; or for the loss of the orbit rather than the sight; or for the loss of ability to obtain employment due to this physical defect?

It seems to me quite elementary that all of our compensation laws were originally designed and drafted to take care of a loss of wages, a loss of earning power. That was the theory back of them all. When the common-law liability was removed, when questions of negligence and contributory negligence, assumption of risk, and all of those were taken away from the employer, compensation acts were put into effect. The very basis of them was to give some partial, not complete, compensation for loss of wages and earning power to each individual. That is fundamental, and that certainly, regardless of the fact that schedules in some States for specific losses have been instituted, still forms the basis for those scheduled losses. It is only in the interest of certainty and of ease in the administration of these acts that the legislatures have attempted to compute in advance the average period of disability, and the average loss of earning power, or wages, that has occurred. In Michigan, for instance, our specific loss schedule, which is not for partial, but for specific loss for amputations and for total loss of the sight of the eye, states that the disability shall be deemed to continue in the following cases, for the following number of weeks. That is exactly what the basis of compensation laws was, and it is specifically stated in some of the statutes.

In a great majority of these acts the language, "loss of an eye", means the loss of sight of the eye rather than the physical loss of the orbit, but we do have holdings, in one State at least, where the loss does not seem to be based upon the loss of sight and its attendant loss of ability to work but on the loss of the organ itself. In Minnesota the court has held that it is not loss of sight that is to be compensated for but the loss of the eyeball or orbit itself, and compensation has been granted in that State for the loss by enucleation of an eye that was previously blind; and in an instance where 90 percent of the loss of vision in the injured eye had previously been paid for; and in another instance where the loss of the same eye had previously been fully compensated for. This court held that if the man could recover twice for the loss of the same eye this was merely his good fortune, and that there was nothing in their construction of the act to prevent it.

Hessley v. Minnesota Steel Construction Co. (195 N. W. (Minn.) 274).
Varcheinn v. Melrose Granite Co. (201 N. W. (Minn.) 543).
Shaughnessy v. Diamond Iron Works (208 N. W. (Minn.) 188).
Mosgaard v. Minn. Street Railway Co. (201 N. W. (Minn.) 545).

The same rule was followed in Idaho, where, after payment for 90 percent loss, 100 percent was granted upon enucleation. The court held that in specific losses the compensation was not based on loss of earnings (41 Pac. 2d) (Idaho) 618). The contrary, however, has been held in other jurisdictions. In holding to the opposite view the Michigan court, in *Rye v. Chevrolet Motor* (229 Mich. 39), said:

In using the words "the loss of an eye" the legislature evidently intended the loss of the sight or vision of an eye rather than the loss of a physical eye. If this was the meaning intended by the legislature, it was made apparent by the fact that if the physical eye is seriously injured and the sight is not appreciably affected there would not be loss of the eye. Whereas, if sight is destroyed without the destruction of the physical eye, the loss of an eye under the act would be conceded. If this be the proper construction, the plaintiff had no left eye to lose when he began work for the defendant. If he had no left eye within the meaning of the compensation law, he suffered no compensable loss when the physical eye was removed. He sees now as well as before and the accident which occurred does not interfere with his work. The idea back of the compensation law is compensation for a loss to the employee by accident. To award plaintiff a sum of money when he had lost nothing is placing a burden upon industry which was never contemplated by the statute. The award should be vacated and set aside.

To the same effect see:

Rector v. Roxana Petroleum Corp. (235 Pac. (Okla.) 183).

Quinn v. American International Shipbuilding Corp. (77 Pa. Super. Ct. 304).

Lemon v. Lamar Lumber Co. (148 So. (La. App.) 94).

Thompson Starrett Co. v. Ferguson (182 N. E. (Ohio App.) 47).

The courts of last resort of many of the States have held that where there is a scheduled number of weeks provided for total loss of the eye or of the sight thereof, boards and courts construing such statutes have nothing to do with the question of loss of earnings, and that that subject is not involved where there is loss of industrial vision, for, even though the legislatures may have established this period as an average during which disability might be deemed to continue, when they did so they removed all power of the board or courts to deal with the question of whether such total loss of sight affected the employee's earnings. In other words, again we have the situation where in the attempt for certainty, and in the average disability that is to occur to all people because of the total loss of sight, the legislature has set the period of disability and has said that is the period that shall be deemed to continue, and then the right to look into the question of the loss of earnings in those States where there is no compensation provided for a healing period—that power is gone from the board or court.

In the question of a partial loss of vision, however, an entirely different situation arises, and we must look to the specific provisions of each statute in each State to determine whether loss of earning power forms any basis for the determination of the compensation to which the employee is entitled.

It has been held quite generally, particularly in States having no provision for partial loss of vision, and even in some States where there is such a provision, that to be entitled to compensation for the loss of an eye the employee need not have lost a perfect or normal eye. It may be an eye having serious disabilities, such as considerable restriction of vision; but if the vision remaining is used by him in his work, he is entitled to compensation for the loss of an eye

when the remaining sight is destroyed. As one court said: "He has lost an eye, although an infirm one"; and, as another court said, "Few of us have perfect vision." *Purchase v. Grand Rapids Refining Co.* (184 Mich. 103); *Hobertie v. Columbia Shirt Co.* (186 App. Div. (N. Y.) 397); *Pawling v. Mildenerger* (184 N. W. (Wis.) 455).

However, there are States where compensation is awarded for percentages of partial loss of vision, where it has been held that the employee is only entitled to that percentage allowed for the loss of an eye as the actual loss, as a result of the last accident, bears to the amount provided for the total loss of an eye, and in other instances to the amount provided for total permanent disability.

What is the total loss of sight or loss of an eye? The provisions of the various acts are not uniform, and, while a liberal construction in view of the purposes of the act is usually given, where the act is clear and unambiguous, the courts will not change its plain meaning. In some of the acts we find the provision that when a man retains only one-tenth vision, his loss shall constitute the total loss of sight or loss of the eye. The majority of the States, however, have no such provision, and reported decisions can be found in which the courts held, or have affirmed boards or commissions in their holding, that there was a total loss of the eye where the remaining vision was 5, 8, 10, 15, or 20 percent, and even as high as 25 percent, where other factors were involved. It is practically impossible to reconcile these decisions, and the result forecasts the thought to be expressed later, that in the majority of cases the law now is, and probably will be, that the extent of visual loss is a question of fact to be determined by the boards and commissions, taking into consideration all of the surrounding facts and circumstances in each individual case.

Thus, in Rhode Island the loss of 90 percent of vision was held "not the entire and irrevocable loss of sight" under their statute. *Keyworth v. Atlantic Mills* (108 Atl. (R. I. 81)).

In Kentucky, the loss of 90 percent of the sight was held to justify an award for the total loss of the eye, this being regarded as industrial blindness. *Burt v. Clay* (269 S. W. (Ky.) 322). That visual acuity, or vision of 8 percent or less, constituted industrial blindness was held in *McDonald v. State Treasurer* 16 Pac. (2d) (Idaho) 988). In a later case the same court specifically denied that it meant to set up 8 percent vision or less as a standard of industrial blindness, and lays down the rule that each case depends on its own facts. *Kelly v. Prouty* (30 Pac. (2d) 769). Where with a proper lens the vision was restored and increased to about 25 percent, and for other uses was sufficient to see large objects at the sides and up and down, but the eyes did not coordinate, it did not prevent an award for the loss of an eye. *Lindhout v. Brochu & Hass* (238 N. W. (Mich.) 231).

On the other hand, it was held that where one retained 13 percent of vision it did not constitute the loss of an eye, the court stating that the man's eye still rendered him service, and he had vision to lose before it could be said that he had lost an eye. *Crane v. Aetna Portland Cement Co.* (234 Mich. 110); and evidence that vision left in the eye was 25 to 30 percent normal was held not to justify an award for loss of an eye. *Underwriters Land Co. v. Willis* (218 Pac. (Okla.) 692); and that a verdict of total and permanent loss of sight could not stand when the undisputed evidence showed that

20 percent vision remained in the injured eye. *Traders & G. Ins. Co. v. Valentine* (81 S. W. (2d) (Texas) 187).

When we come to the question of compensation for partial loss of vision, an even more complicated situation arises. Then the variation of the provisions of the various compensation laws regarding the method of compensation for partial loss of vision makes difficult the analysis of the decided cases. In my own State of Michigan, as in many other States, there is no provision in the statute compensating for partial loss of vision by any specific percentages. Other than for total loss, the question of the extent or percentage of remaining vision is unimportant, except as it affects or determines the man's ability to work and earn wages, or to secure employment. Therefore what charts or tables are to be used is also relatively unimportant. The extent to which the impaired vision can be actually made use of in the man's employment is of utmost importance. The question, of course, becomes one of fact as to whether the remaining vision is and can be used by the employee in his work. As compared with those States having statutes specifically providing for a percentage of disability compensated for, regardless of employment, inequities frequently exist on both sides. One may have considerable impairment of vision; but if he is able to and has returned to his employment and is capable of earning wages commensurate with those earned before the injury, he receives no compensation. On the other hand, if the injuries to his eyes and his vision are such that they prevent him from returning to his employment, and yet are not sufficient to constitute total loss of sight or industrial blindness, such an employee may recover more in temporary total disability than he would recover in the case of total loss of sight. *Snophoski v. Home Riverside Coal Mines Co.* (244 Pac. (Kan.) 849).

In some States the compensation is awarded on a percentage basis in its relative proportion to that awarded for total permanent disability. In other States such percentage is in relation to the amount provided in the schedule for the total loss of an eye, and in Oklahoma and some other States specific compensation is allowable for partial loss of vision in one or both eyes, based upon the percentage of vision lost, and if there has been a previous partial loss of vision, compensation is only allowed for that percentage of vision actually lost by the accident. That is, any loss of vision which it can be shown was sustained prior to the accident must be deducted in computing the percentage of loss due to the accident.

I had thought that I would remark that in the interests of definiteness, justness, and ease in the administration of the Compensation Act this latter method of compensating on a percentage basis for the actual percentage lost would be desirable in all States. However, my review of the authorities discloses that in the State of Oklahoma more litigated cases having to do with eye disabilities and visual loss have reached the courts of last resort than in any other State in the country. This rather detracts, then, from the suggested recommendation unless we can assume that the result in Oklahoma has been due solely to the litigious character of its citizens. In comparing the number of the higher court decisions in Oklahoma with large industrial States such as New York, Pennsylvania,

Illinois, Michigan, and Ohio I have been inclined to consider continuing my journey from here and landing in Oklahoma, my only remaining inquiry being as to the adequacy and collectibility of the lawyers' compensation.

In the States where percentages of loss of vision are compensated for, what method is followed to determine what is the percentage of loss? While individual commissions may have adopted tables, charts, or specific methods for measuring this disability, decisions of the courts indicate an almost unanimous rule, sometimes founded on the specific wording of the statute, sometimes promulgated by the court itself, that this question is a question of fact to be determined by the board or commission, based upon the evidence presented by all of the witnesses, including the plaintiff and the ophthalmologist, and that such findings, if supported by competent evidence, are final and binding.

In the case of *Struble v. Vacuum Oil Co.* (210 App. Div. (N. Y.) 344), the court had before it the question of the conflict of medical testimony having to do with the interpretation of these various methods of rating eye disabilities.

The court apparently made a serious study of just what was meant by the notations and symbols of the Snellen test chart, and there decided that the testimony of a physician who based his percentage of visual loss solely on the fraction used in the Snellen chart should be disregarded. In that decision is found an analysis and description of the meaning back of the Snellen test. The matter was sent back to the commission for a determination of the extent of loss, based upon competent evidence, which would consider more than mere central near and far visual acuity, and came up again in 214 Appellate Division, page 844. It was again sent back for consideration of or competent testimony on the question of visual loss, and came again to the appellate division in 217 Appellate Division, page 411. On each of these occasions the board had granted a 60-percent loss, and this percentage was finally approved on the last appeal, because it was stated by the board and found by the court that consideration was given to all the various factors entering into determination of visual loss, including field of vision, binocular vision, and so forth.

Then in the case of *DeCaprio v. General Electric Co.* (218 App. Div. 310), the board awarded loss of an eye on testimony of 80-percent loss of useful vision, this being considered the loss of an eye under the New York statute in effect at that time.

However, here again the testimony showed that this 80-percent loss was based on central visual acuity only, as the testimony also showed that the other primary factors, such as field vision, binocular vision and so forth, were normal. The only testimony to support this 80-percent loss in central visual acuity was that of a doctor who said that the Snellen notation of 20/100 which he found was interpreted by him as one-fifth, or 20-percent visual efficiency, and therefore an 80-percent loss. This being the only testimony in the case as to this loss, the appellate court reversed the board on the basis of their previous decision in *Struble v. Vacuum Oil Co.*, *supra*.

Permission was obtained in this case for appeal to the court of appeals, and this question was certified:

Was there any evidence in the record upon which the State industrial board had jurisdiction to make a finding of fact of permanent loss of 80 percent of useful vision of the right eye and following that an award for total loss of useful vision of said right eye?

The court said the question was whether any standard method of determining loss of visual efficiency has been so established as to make all others erroneous as a matter of law, or whether a difference of opinion may exist among experts as to the proper interpretation of recognized tests. The court stated that they were unable to say that the doctor was wrong as a matter of law in his interpretation of the Snellen test, and that until the legislature or the board established a proper standard method the question must remain one of fact. The court further stated that while the weight of authority doubtless inclined to the rules adopted by the American Medical Association, on this record the question must be answered in the affirmative and the award of the board affirmed. Just how the court reached this determination, unless it was on the basis of the status of the record in this particular case, seems quite impossible to understand. Possibly if this case had in it some of the evidence construed by the appellate division in *Struble v. Vacuum Oil*, a different situation might have existed.

But if the courts are to take this position, then it is certainly advisable for industrial commissions to adopt rules for determining loss of visual efficiency, as has been done in Wisconsin and elsewhere.

In many of the States throughout the country, estimates of visual loss are being given by medical witnesses in the trial of compensation cases, based solely on the Snellen test notation, and the fractions of the Snellen test are used to indicate percentages of loss, and in my humble opinion these are incorrect as they fail to take into consideration the other primary factors necessary to determine loss of visual efficiency. As I understand it, not only did Snellen never intend them for this purpose, but when he devised his chart he did not use fractions at all. These have since been added for the purpose of securing an international language, principally for the purpose of describing refraction and its errors and their correction by glasses. Litigation could be materially reduced, and expense to the workman and to the employer eliminated, if deputy commissioners, referees, and others originally presiding in the taking of testimony had some idea of what testimony they needed to secure from the medical witness, so that some reasonable approximation of the visual loss might be determined. If, as indicated by these decisions and by the majority of the decisions throughout the country, the question of the extent of visual loss is a question of fact for the board, which if supported by any competent testimony is final and binding on the courts, then just that much more the need for having the boards and commissions know what competent testimony is, and something about how visual loss is actually determined. The work done by interested and highly trained ophthalmologists in their associations and committees should be carried down through the administration of these compensation acts to the remotest corners, and the coordinated results of their work should be made use of in the development of the evidence and testimony originally submitted; and this can only be done by putting the results of their work and the conclusions arrived at by the commission as to a standard method into rules and regulations to be followed

by deputies, referees, examiners, and others in the securing of such evidence.

Where no statutory provision or regulation of the board or commission has established the method of determining visual loss, the question has frequently arisen as to whether or not in determining the percentages of loss the use of glasses should be considered. Under the Michigan act it has been held that an employee could not be compensated for the total loss of an eye in the course of his employment if the sight was diminished only 50 percent and glasses were used, although without glasses the diminution was 90 percent. *Kline v. Studebaker Corp.*, 189 Michigan, 514. In New York, in an early case, it was held that a finding that the injury resulted in the loss of an eye was not justified where the testimony was to the effect that the eye with the aid of a proper glass was nearly normal for many purposes. *Valentine v. Sherwood Metal Company*, 189 App. Div. 410. I realize, of course, that since the adoption of these methods of determining loss in the various States these decisions cited will probably have little effect, but they are cited here for the benefit of the commissioners from other States who have no such tables which have yet been adopted. It has been held that where the testimony in substance was that it would be very inconvenient for the workman, who was a master mechanic and superintendent, to wear glasses, this evidence was held not to support a finding by the commission that the man could not wear glasses while engaged in the regular course of his employment, and that where the loss of vision may be corrected or supplied by the use of glasses, no award for compensation is to be made. *McNamara v. McHarg Barton Company*, 200 App. Div. 188. In holding that an eye was not totally and permanently lost where with glasses there was a loss of 99 percent, it was held by the Texas court that compensation could not be awarded. The court there said:

For such a case as that before us, science has devised appliances which in substantial part at least supply the destroyed parts of the agency which nature designed. Through those artificial means, or through those means employed in aid of nature, the sense functions. A solecism exists in a declaration that that which may be recovered is lost, and there is manifest contradiction of terms in saying that a sense or emotion which is merely suspended in whole or in part, for a time, and which becomes active again, is permanently lost.

There the lower court had followed the decisions of New Jersey, Minnesota, and Pennsylvania in preference to those of New York, Michigan, and Utah. Although the court was held precluded from reviewing on the merits, the Utah commission's decision in finding that the man was permanently industrially blind where the sight of one eye was entirely lost, but with glasses he still had near normal vision in the other, the court expressed the opinion that he did not sustain a total disability, since he had only a partial loss of vision, which was subject to correction by the use of glasses. *United States Smelting, Refining and Mining Co. v. Evans*, 35 Fed. (2d) 459.

However, in New Jersey and Minnesota it was held that recovery of compensation for permanent injury could be had, although normal sight or fair vision could be obtained by the use of glasses.

Johannesen v. Union Iron Works (117 Atl. (N. J.) 639).
Butch v. Shaver, 184 N. W. (Minn.) (572).

In Oklahoma and Delaware a similar decision was reached.

Marland Refining Co. v. Colbaugh (238 Pac. (Okla.) 831).

Alessandro Petrillo Co. v. Marioni (131 Atl. (Del.) 164).

Parrott Motor Co. v. Jolls (31 Pac. (2d) (Okla.) 925).

And yet, in refusing compensation for partial permanent loss of vision, on the grounds that the record presented no evidence of the permanence of the loss, the Oklahoma court, also said that the evidence showed that claimant's loss of sight might be corrected by the use of glasses or by the removal of pterygiums from the eye; and it was held in a Kansas case that unless the artificial means will improve his vision enough to enable the employee to carry on his work, they do not need to be considered in allowing compensation for total loss of sight. *Masoner v. Wilson & Co.*, 44 Pac. (2d) (Kan.) 265). The Idaho court held that the use of glasses to improve vision may not be taken into consideration in determining whether the employee is entitled to the specific award for the loss of an eye. But the court expressly refused to apply it in case compensation for total disability is sought, since the theory of the Idaho statute in respect to total disability is that the claimant has suffered a loss of earning capacity; and "if the employee by means of a simple scientific device, such as glasses, is able to see just as well as he ever did, is capable of performing the same kind or class of work, and does actually carry on in the field of labor without in any sense being disabled for work, it does not appeal to a sense of justice to say that he has a total and permanent loss of sight and should require compensation for total permanent disability for the remainder of his life." Therefore we apparently have a situation where the use and effect of glasses is not to be considered in cases involving the question of the loss of an eye under the schedule, but is to be considered in a claim for total permanent disability due to injuries to both eyes. And in Michigan it was held that if the glasses did not improve the ability of the eyes to focus together, the fact that they increased the vision of the injured eye by 25 percent did not prevent an award for the loss of an eye.

Lindhout v. Brochu & Hass (238 N. W. (Mich.) 231).

There is, therefore, a rather definite conflict of authority on the question of whether glasses should be considered in determining the extent of the remaining vision. However, although perhaps not the prevailing rule, certainly the reasonable rule seems to me to be that in this day and age, when such a very large percent of people require and use glasses, either the whole or a part of the time, loss of vision should properly be judged with the use of glasses. Of course, in those tables and methods, as Dr. Small pointed out, in which correction has been used in determining and laying out that method, then certainly where correction is not used the method should not be applied.

Another question rather frequently before the courts on visual losses is that of whether there has been the loss of sight of an eye, or whether partial loss should be allowed, where power to focus or use the eyes together is lost. In the early case of *Frings v. Pierce Arrow Motor Car Co.* (182 App. Div. 445), the New York court held that there was not a permanent loss of the use of the eye within the act where, through the use of an artificial lens, it could fulfill the natural function

of the eye when the uninjured eye was closed and the employee was able to continue work, but owing to a lack of coordination of images the eye could not be used in conjunction with the other. It was stated there that the theory of the New York law was not indemnity for loss of a member or physical impairment, but compensation for disability to work made on the basis of average weekly wages. However, the reasoning and decision of the *Frings case* has not been followed in later cases. In a later case, where with the use of powerful glasses the man had a vision of about one-third but could not make it coordinate, he was held entitled to compensation for the permanent loss of the use of his eye.

Smith v. F. & B. Construction Co. (185 App. Div. 51).

The Illinois court refused to follow the rule of the *Frings case*, stating:

The question before this court is whether or not this man has for all practical uses and purposes lost his eye. The application of laws of this character should not be made to depend upon fine-spun theories, based upon scientific technicalities, but such laws should be given a practical construction and application. * * * We believe the true rule should be that where, as here, the employee has lost all practical use of an eye, which practical use cannot be restored so long as he has his other eye, such amounts in effect to the loss of the eye, and compensation for such loss should be paid.—*Juergens Bros. Co. v. Industrial Commission* (125 N. E. (Ill.) 337).

A similar holding was made in Kansas, Massachusetts, Louisiana, and Michigan.

Stefan v. Red Star Mill & Elevator Co. (187 Pac. (Kan.) 861).

O'Brien's case (17 N. E. (Mass.) 1).

Oliver v. Christopher (159 Pac. (Kan.) 397).

Knipfel v. Gulf State Utilities Co. (141 So. (La.) 9).

Lindhout v. Brochu & Hass (238 N. W. (Mich.) 231).

A Michigan case, apparently holding to the contrary viewpoint and frequently cited, but distinguished in the *Lindhout case*, is that of *Powers v. Motor Wheel Corp.* (234 N. W. (Mich.) 122), where glasses had increased the vision from 66 $\frac{2}{3}$ to 90 percent of normal but coordination with the other eye was destroyed; nevertheless there was testimony that by not using glasses the two eyes would coordinate in such a way as to give the workman the benefit of the entire sight of the good eye and the peripheral or protective vision of the injured eye, and where there was evidence that such peripheral or protective vision was of decided industrial use.

One of the very interesting questions involving compensation for visual loss is that involved in the determination of whether a one-eyed man—that is, one who has previously sustained the loss of one eye from any cause whatsoever—receives an injury destroying the sight of the only remaining eye is entitled to compensation for the loss of an eye under the specific schedules of the statutes, or whether he is entitled to compensation for total permanent disability.

I am reciting the decisions of the courts here now with no reference to any specific statutes or amendments to statutes which may now cover just this situation in some States. * * *

In an early case in Michigan our court held that loss of the remaining eye by one who has lost another eye several years before, in another employment, although it totally incapacitated him, entitled him only to compensation for the specific loss of an eye. The court said:

In the instant case the loss of the first eye was a partial disability, for which, if our workmen's compensation law had been in existence, the then employer would have been liable, and for which disability the present employer was in no degree the cause. The loss of the second eye, standing by itself, was also a partial disability, and of itself did not occasion the total disability. It requires that in addition to the results of the disability occasioned by the accident of 7 years ago, there should be added the results of the partial disability of the recent accident to produce the total disability. The absence of either accident would have left the claimant partially incapacitated. We think it clear the total incapacity cannot be entirely attributed to the last accident. It follows that the compensation should be based upon partial incapacity for the loss of one eye.—*Weaver v. Maxwell Motor Co.* (152 N. W. (Mich.) 993).

About the same time the Massachusetts court, in *Branconnier's case*, held to the opposite view, and said:

The employee, when he entered the service of the subscriber, had that degree of capacity which enabled him to do the work for which he was hired. That was his capacity. It was an impaired capacity as compared with the normal capacity of a healthy man in the possession of all his faculties, but nevertheless it was the employee's capacity and enabled him to earn the wages which he received. * * * But that capacity, which was all he had, has been transformed into a total incapacity by reason of the injury. The result has come to him entirely through the injury.—*Branconnier's case* (111 N. E. (Mass.) 792).

The Minnesota court followed the decision of the Michigan court. *State, Melrose Granite Co. v. District Court*, 173 N. W. (Minn.) 857; *State ex rel. Garwin v. District Court*, 151 N. W. (Minn.) 910.

The Supreme Court of Pennsylvania also followed this rule in *Tony Lende v. Lucci*, 119 Atl. (Penn.) 132.

Indiana appeared to follow this rule in one case, but qualified it somewhat in a later case, and later returned again to this rule.

Stevens v. Marion Machine Foundry & Supply Co. (133 N. E. (Ind.) 23).
Calumet Foundry & Machine Co. v. Morse (137 N. E. (Ind.) 627).
Cain v. Staley Mfg. Co. (186 N. E. (Ind.) 265).

However, a rather recent case decided by the Montana Supreme Court has not only gathered together all of the reported decisions covering this question, but has digested most of them and analyzed the reasoning, and in most instances the peculiar wording, of the compensation act involved in each case, and vigorously and rather convincingly argues that the weight of authority is against the holding of the Michigan, Pennsylvania, and Minnesota decisions, and is to the effect that when one has a seriously injured or blind eye, and subsequently loses the other eye as the result of an accident, the compensation to be awarded is for total permanent disability and not the compensation provided in the schedule for the loss of an eye. In disposing of the reasoning of the Minnesota court, that if total permanent disability was allowed in such cases, the one-eyed, one-legged, and one-armed men would all lose opportunity for employment because of the added liability, the Montana court said:

This argument is not too persuasive, for with the policy, wisdom, and expediency of a provision this court has nothing to do; those are considerations which may be indulged in only by the legislature.—*McDaniel v. Eagle Coal Co.* (43 Pac. (2d) (Mont.) 655).

Some of the States, such as Wisconsin and New York, have taken care of this situation by having the difference between the specific loss which the employer is rightfully and clearly liable for and the

total disability loss actually suffered by the injured man paid from a special fund set up by contribution in death cases where there are no dependents.

Lehman v. Schmall (229 N. W. (Minn.) 553).

I may appear to have wandered from the specific title of the subject assigned, but in view of the very thorough and exhaustive papers of the "medics" who preceded me on this question of measurement of visual loss, perhaps this rather general picture of the cases involving eye injuries which have been decided by the courts of last resort throughout the country will have answered some of the other questions so frequently puzzling the minds of you men who have charge of the general administration of these very interesting and beneficial compensation acts.

LIST OF CASES

- Alabama: *Paterson v. Wisener* (117 So. 663).
- Alaska: *Killison Packing Co. v. Scott* (14 F. (2) 86).
- California: *Globe Cotton Oil Mills v. Ind. Acc. Comm.* (221 P. 658); *Liptake v. Ind. Comm.* (251 P. 635); *Edson v. Ind. Comm.* (273 P. 572); *Hercules v. Ind. Comm.* (21 P. (2) 1014).
- Colorado: *Col. Ind. Comm. v. Johnson* (172 P. 422); *Employers M. I. Co. v. Col. Ind. Comm.* (199 P. 482); *Colo. Ind. Comm. v. State Fund* (203 P. 215); *London Guar. Acc. Co. v. Ind. Comm. Colo.* (298 P. 955).
- Connecticut: *Fair v. Hartford Rubber Co.* (111 Atl. 193); *Reilly v. Carroll et al.* (134 A. 68); *Gigleo v. Dorfman* (138 A. 448); *Dombrozzi v. E. Gross & Co.* (153 A. 780).
- Delaware: *Petrillo v. Marioni* (131 A. 164).
- Idaho: *McDonald v. State Treasurer* (16 P. (2) 988); *Kelly v. Prouty* (30 P. (2) 769); *Peach v. Grangeville* (41 P. (2) 618).
- Illinois: *Wabash Ry. v. Ind. Comm.* (121 N. E. 569); *Juergens Bros. Co. v. Ind. Comm.* (125 N. E. 337); *Heaps v. Ind. Comm.* (135 N. E. 742); *Superior Coal Co. v. Ind. Comm.* (158 N. E. 209).
- Indiana: *Garton v. Kleinknight* (128 N. E. 770); *Stevens v. Marion Mach. Fdry. & Supply* (133 N. E. 23); *Calumet Fdry. & Mach. Co. v. Mros* (137 N. E. 627); *Calumet Fdry. & Mach. Co. v. Mros* (141 N. E. 883); *Eureka v. Melcho* (154 N. E. 774); *EBBW Vale C. Co. v. Quackenbush* (159 N. E. 155); *Cain v. Staley Mfg. Co.* (186 N. E. 265).
- Iowa: *Jennings v. Mason City Sewer Pipe* (174 N. W. 785); *Daugherty v. Scandia* (219 N. W. 65).
- Kansas: *Stefan v. Red Star* (187 P. 861); *Cooper v. Fuller* (207 P. 798); *Snopkoski v. Home Riv. Coal Co.* (244 P. 849); *Moore v. Western Coal Co.* (257 P. 724); *Masoner v. Wilson & Co.* (44 P. (2) 265).
- Kentucky: *Nelson v. Kentucky* (209 S. W. 506); *Burt v. Clay* (269 S. W. 322); *Combs v. Hazzard* (268 S. W. 1070); *Jackson v. Hurst* (61 S. W. (2) 611).
- Louisiana: *Brooks v. Peerless* (83 So. 663); *Hargis v. McWilliams* (119 So. 88); *Haas v. Globe Ind.* (132 So. 246); *Knispel v. Gulf States* (141 So. 9); *Thornton v. Hayesville Lbr.* (155 So. 784).
- Maine: *Borello's case* (134 Atl. 374).
- Massachusetts: *Branconnier's case* (111 N. E. 792); *Hebron's case* (142 N. E. 60); *Biscardi's case* (187 N. E. 92).
- Michigan: *Purchase v. Gd. Rapids Refrigerator* (194 Mich. 103); *Weaver v. Maxwell Motor Car Co.* (186 Mich. 588); *Kline v. Studebaker Corp.* (189 Mich. 514); *Collins v. A. Albrecht Co.* (212 Mich. 147); *Stammers v. Banner Coal Co.* (214 Mich. 215); *Rye v. Chevrolet Motor Co.* (229 Mich. 39); *Sugges v. Ternstedt Mfg. Co.* (232 Mich. 599); *Hayes v. Motor Wheel Corp.* (233 Mich. 538); *Crane v. Aetna Portland Cement Co.* (234 Mich. 110); *Powers v. Motor Wheel Corp.* (252 Mich. 639); *Lindhout v. Brochu & Hass* (255 Mich. 234).
- Minnesota: *State Melrose Granite Co. v. Dist. Ct.* (173 N. W. 857); *Cheovitte v. Zenith* (181 N. W. 643); *Butch v. Shaver* (184 N. W. 572); *Wareheim v. Melrose* (201 N. W. 543-5); *Vernon v. Mangelsen* (208 N. W. 188); *Lehman v. Schmahl* (229 N. W. 553).
- Missouri: *Graff v. National Steel* (38 S. W. (2) 518).
- Montana: *McDantel v. Eagle Coal Co.* (43 P. (2) 655).

New Jersey: *Combination Rubber Co. v. Obser* (115 Atl. 138-9, 95 Atl. 143 (out)); *Johannesen v. Union Iron Works* (117 Atl. 629-630).

New York: *Black v. E. W. Bliss* (177 App. Div. 370); *Fringe v. Pierce Arrow Co.* (182 App. Div. 445); *Smith v. F. & B. Construction Co.* (185 App. Div. 51); *Hobertis v. Columbia Shirt Co.* (186 App. Div. 397); *Valentine v. Sherwood Metal Co.* (189 App. Div. 410); *Turpin v. St. Regis Paper Co.* (199 App. Div. 64); *McNamara v. McHarg Barton Co.* (200 App. Div. 188); *Ladd v. Foster* (205 App. Div. 794); *Arnold v. Mfg. Co.* (208 App. Div. 305); *Bohecchio v. Charin* (209 App. Div. 819); *Strubel v. Oil Co.* (210 App. Div. 344); *Przechop v. Ajax* (214 App. Div. 512); *Carlo v. Elmwood* (215 App. Div. 857); *Struble v. Oil Co.* (217 App. Div. 411); *Caprio v. Electric Co.* (219 App. Div. 757); *Clark v. Ind. Board* (225 App. Div. 190); *Zepnitz v. Ind. Board* (231 App. Div. 768); *DeCaprio v. Gen. Electric Co.* (244 N. Y. 500).

Ohio: *Thompson v. Ferguson* (183 N. E. 47); *State ex rel v. Ind. Comm. of Ohio* (187 N. E. 770).

Oklahoma: *Mullon Coal Co. v. Scarage* (208 P. 771); *Crabtree v. Amer. Natl. Bank* (212 P. 1006); *Huttig v. Brown* (215 P. 1056); *Underwriters Land Co. v. Willis* (218 P. 692); *Rector v. Roxana Petroleum Corp.* (235 P. 183); *Mariand Refining v. Colbaugh* (238 P. 831); *City v. Ind. Comm.* (242 P. 217); *Nease v. Hughes Stone Co.* (244 P. 778); *Maryland Casualty v. Ind. Comm.* (282 P. 293); *Capitol v. Cole* (288 P. 473); *Okl. City v. Ind. Comm.* (298 P. 577); *Wise v. Risco* (1 P. (2) 411); *Parson v. Fox* (4 P. (2) 33); *Hazel v. Pendergrass* (4 P. (2) 96); *Manahan v. Bazzel* (4 P. (2) 745); *Olson v. Goodwin* (4 P. (2) 1056); *Mid Kansas v. State Ind. Comm.* (5 P. (2) 117); *Hanna v. Penrose* (7 P. (2) 164-169); *Indian v. Lomax* (8 P. (2) 33); *Gilmore v. Booth* (8 P. (2) 717); *Magnolia v. Bunnell* (11 P. (2) 460); *Collins v. Yancey* (11 P. (2) 532), (12 P. (2) 694 (out)), (12 P. (2) 900 (out)); *Indian v. Hendrickson* (13 P. (2) 137.), (16 P. (2) 242 (out)), (16 P. (2) 867 (out)); *Tulsa v. Machinery Co.* (21 P. (2) 759); *Helmerick v. Stratton* (21 P. (2) 772); *Independent Oil v. Well* (22 P. (2) 105); *World Record v. Kehoe* (25 P. (2) 696); *Okmulgee v. Fields* (26 P. (2) 186); *Parrott Motor Co. v. Jolls* (31 P. (2) 925).

Oregon: *Chebot v. State Ind. Comm.* (212 P. 792).

Pennsylvania: *Dinn v. Bldg. Co.* (77 Pa. Supp. 304); *Bassett v. Coal Co.* (82 Pa. Supp. 579); *Tone Lende v. Frank Lucci* (119 Atl. 132); *Androlonis v. Philadelphia* (124 Atl. 336).

Rhode Island: *Keyworth v. Atlantic Mills* (108 Atl. 81).

Tennessee: *American Zinc v. Lusk* (255 S. W. 39); *Wilkinson v. Shale* (2 S. W. (2) 89); *Coleman v. Isbell* (19 S. W. (2) 243); *Mayberry v. Bonair* (26 S. W. (2) 148); *Shelbyville v. Kendrick* (29 S. W. (2) 251); *Callett v. Chattanooga Handle Co.* (55 S. W. (2) 257); *Williams v. Constr. Co.* (66 S. W. (2) 902).

Texas: *Travelers v. Richmond* (291 S. W. 1085); *Gilmore v. Lumbermens* (292 S. W. 204); *Texas Ind. v. Wingo* (47 S. W. (2) 397); *Great Amer. Ind. v. Stultz* (56 S. W. (2) 200); *Hartford v. T. W. Leigh* (57 S. W. (2) 605); *Traders & G. Ins. Co. v. Valentine* (87 S. W. (2) 187).

Utah: *Moray v. Ind. Comm.* (199 P. 1023); *U. S. Smelting & Ref. v. Evans* (35 P. (2) 459); *Marker v. Ind. Comm.* (37 P. (2) 785).

Wisconsin: *Nestle's Food v. Ind. Comm.* (178 Wis. 646), (157 N. W. 522 (out)); *Pauling v. Mudenberger* (174 N. W. 455); *Bend v. Kolka* (178 N. W. 646); *Nestle's v. Duckow* (190 N. W. 434); *Lehman v. Schmall* (229 N. W. 553).

DISCUSSION

Dr. SMALL. In my appraisal of New York's industrial commission's method of evaluating visual efficiency, I will say that New York City is unquestionably the largest city in the United States and there can be no disputing that she has the tallest buildings. She may have the most eminent physicians and the most clever politicians, but she most assuredly does not have the best method of evaluating permanent visual efficiency loss, according to my humble opinion. However, I want to append this remark: That Dr. Mehl has presented a most excellent scientific explanation of the Snellen notations and visual angles, which is in compliance with all authoritative opinion, and I approve it 100 percent.

Mr. MURPHY (New York). New York seems to have been placed in the position this afternoon of the old song, "They were all out of step but Jim." However, let me say before the New York board adopted the method now in use for determining the percentage loss of vision, they studied it thoroughly, and to those States who have not as yet adopted any such plan or method I should recommend that they read carefully the methods so ably outlined in Dr. Mehl's paper today. I think they will find much food for thought and reason to believe that a man who, through an accident, is unable to see at 20 feet what he formerly saw at 20 feet is entitled to 50 per cent loss of vision.

Mr. ZIMMER. I was very much interested in Dr. Small's paper, and he has performed a splendid service for this organization, because we will be able to print some things about our States that neither my division nor any other governmental agency, nor even this agency, would want to print of their own accord and take the responsibility for. I think it is perfectly right, however, for this association, without any great fear of criticism, through the medium of Dr. Small's paper, to bring that appraisal before the public.

I was extremely interested in his jocular reference to New York City politicians.

Candidly, I do not think politics has played any part in the New York Compensation Act or its interpretation. While it is a fact that I am no longer connected with that commission or department, I rather sympathize with the remarks of Mr. Murphy. I think that before the States which do not now have a definite method for calculating these losses adopt the American Medical Association standards, which, I gathered, Dr. Small is very much for, they should study closely not only the paper that Dr. Mehl has presented but the facts surrounding the adoption of that standard by the American Medical Association.

In spite of some long years of listening to doctors on compensation administration, I am not altogether a medical atheist, but neither am I altogether sold on the idea that what is promulgated by a group of doctors necessarily is the last word upon that thing. I do not believe that even Dr. Small would deny that occasionally there crops out a little politics in a medical association. I do not mean the ordinary partisan politics, but politics that represent some particular interest or concern of certain groups or individuals. I have not thought much about this for 10 years, but I am inclined to think if we went back into the records of the controversy leading up to this dispute in New York we would find some significance in the fact that a year or two before the legislature changed the schedule for an eye from 120 weeks to 160 weeks. I would not be surprised, if we searched closely, that we could find participating in the discussions at the "scientific parley" physicians who were retained frequently by insurance carriers or identified professionally with self-insurers. And so there is room in the minds of laymen, I think, for the thought that the subject was not approached solely in the cold light of scientific appraisal, but with some regard to economic effects.

I have been somewhat concerned about the revelation of Dr. Small's appraisal in respect of the great differences existing among the States. It may be that New York and the other few States who follow a similar system of measurement are entirely out of step,

entirely wrong. If that is truly the case, then employers in New York are paying perhaps a half a million dollars a year more than they should be paying, and at the same time the workers are getting too much compensation for their loss of vision.

One other point. The doctor spared no punches in his reference to the States which do not permit the calculation of the loss with corrections. It is true that in New York they do follow the system of correction, but I am not so sure that that is not right. I have heard some pretty good arguments on the other side in past years, when there was an effort to get the legislature to change that to conform with what now exists in North Carolina and a number of the other States. There is something to be said for this. In New York the statute provides now for a partial loss of hearing, but it does not require that loss of hearing shall be determined only after hooking on an appliance that a man would have to carry around in order to hear as well as he did before. Theoretically, it seems to me the reasoning is much the same.

In connection with this discussion there arises the question of whether you are awarding for the actual physical loss, or whether you are considering the employability of the injured person—his ability to get employment. I think most of us will agree that with the present method of preemployment examination, the man who steps into the employment office wearing glasses has a little poorer chance of getting on the pay roll than the man who does not have to wear them. I know that Mr. Carey remarked that most of us need glasses, especially when we get along to middle age, but that does not alter the fact that it may well affect the chances of a man to get a job. I feel that any committee considering the problem for the association might well go into that phase. Perhaps they will conclude that some of these States may be right in holding that the measurement should be without glasses.

Then again, on this question of evaluating near vision at 14 inches instead of using the standard test at 20 feet, on the theory that near vision is more useful to a worker, I can see some complications in practical application. Suppose it is a case of a driver, a chauffeur who has an eye injury. Which vision is more valuable to him, the close vision, or the ability to see ahead? Well, if I were driving in the opposite direction, I would rather he had the distant vision.

I do not want to take up all the time. I know there are a lot of administrators here who have some thoughts on this subject and I like to support the chairman in urging that we get some comment from as many of you as possible.

Chairman WISE. I can readily see that any committee that undertakes to evolve uniform standards of measurement of vision for the association is going to have a problem on its hands. Are there any other questions or suggestions or discussions, gentlemen?

Mr. NELSON (Missouri). I should like to hear Dr. Small's recommendations to this convention. I am sure that out of the exhaustive study Dr. Small has made he has some very concrete ideas with regard to making it possible for this association to do some work along the lines that his studies would suggest. Have you any recommendations along that line, Dr. Small?

Dr. SMALL (Missouri). I have prepared primarily for Commissioner Nelson and the other commissioners of the Workmen's Com-

pensation Commission of Missouri a series of recommendations which I have been formulating over a period of a year or more. Those recommendations have been typed, are folded, and the envelope is addressed to Chairman Nelson, and I will see that he gets them within the next few days. If he thinks they are worthy, no doubt our Missouri Workmen's Compensation Commission will give them whatever breadth of distribution they merit.

Chairman WISE. Are there any other questions, gentlemen?

Dr. PATTON (New York). I wish to recall a thing that happened in 1921 and 1922. In New York State a special legislative committee was appointed to consider the vexing medical questions. The committee, which included physicians, representatives of insurance carriers, representatives of the Department, sat for 2 years. They finally issued a special bulletin, no. 115. The amusing thing was that they said these other medical problems were difficult of standardization, neuroses, back problems, and so on, but, practically, they said this: "However, there is one field in which standardization is possible, namely, the measurement of eye disabilities. It can be scientifically determined." And within less than 2 years after that report came out this series of decisions that Mr. Carey spoke of came along, the *Struble case* and the *DeCaprio case*. And in the *DeCaprio case* the court reversed the decision of the board, saying, "You omitted the peripheral vision and the binocular vision." They sent it back to the board, whereupon the board returned the report with the statement: "We have now considered all three forms of vision, and our conclusion is that the applicant, as stated in our first decision, has lost 60 percent of vision." And the court, the same court that had reversed them before, now accepted their findings. Later, in the *DeCaprio case*, the Court of Appeals, our highest court, although they had before them the American Medical Association report, felt themselves unable to approve of it as being a sufficiently careful study of the problem from its industrial aspects as well as ophthalmological aspects.

I want to bring up one very minor consideration. Holding as strongly as I do to the validity of the Snellen test, which Dr. Mehl brought out, I have heard it said that that card he has on the blackboard is merely one of a large number of such cards. A great many optical houses print them. They say there are sufficient variations in the height and width of those letters to account for a divergence of as much as 5 percent in the findings of the ophthalmologist. It is the belief of many that the National Bureau of Standards should prepare those cards. I wonder if Dr. Small or Dr. Mehl or anyone else has heard that considered. Any printer can print that card, and no two printers need necessarily have them the same size.

Dr. MEHL (New York). My legal friend, Mr. Carey, pointed out clearly that the rate of compensation in various States depends upon legal enactment in the State, depends upon what the legislators decide shall be done. In the face of that, how can we accept the American Medical Association table as applied to these various States, when they have a very definite idea as to what percentage loss to ascribe to each Snellen notation? I said during the course of my remarks that if the States determine first under what system they desire to operate, and if under it they want to consider economic loss,

the American Medical Association table might serve, but not otherwise.

I heard a statement here, too, that Snellen never intended that 20/40 be considered as 50 percent. That is an assertion, but it is not a fact. But I read Snellen's work covering this matter, and he does say that 20/40 means a 50-percent loss of vision acuity.

I again repeat, if they accept 20/20 as being normal vision, and if they accept the matter of visual angles, they give a very good reason why they do not accept the balance of it. They talk much about visual efficiency, and assert that efficiency of vision is quite distinct from acuity of vision. Perhaps I am stupid, but I cannot find the difference between visual efficiency and vision, except, if by visual efficiency you mean a sort of economic efficiency, as distinguished from vision or visual acuity per se.

Unlike Dr. Small, I am not surprised at all that the various States do not accept the American Medical Association table. A bold statement in itself does not make it authoritative. In order to understand a little better how authoritative the American Medical Association table is, we must follow the building of that table. I have watched it during a period of 10 or 12 years. First they brought in the matter of footage, and they allowed so much for each foot, an equal value for each foot, which has proven conclusively to be all wrong. They admit it now themselves. But at that time it was held out as being authoritative. A few years later they said, "Well, now we have central vision and we have peripheral vision. We know that if an individual loses all of his peripheral vision, for all practical purposes he is blind. It would be just as though he were looking through one of the little straws that they use in ice-cream sodas. That is all he would see. He would not be able to move about. For all practical purposes a man without peripheral vision is blind. The same thing holds true with central vision." The scheme put forth at that time was this: If central vision is one-half the value of the eye, peripheral vision is the other half the value of the eye. Then when you have lost 50 percent of your central vision you have not lost 50 percent of vision, but you have lost 50 percent of 50 percent.

They have changed now. They give it equal value, and they say if you have lost 50 percent of either of the factors you have lost 50 percent of the eye. I mention that to show you that there is nothing authoritative or infallible about the American Medical Association tables. They represent the opinion of a few men. Do not think for a moment that we ophthalmologists throughout the country write in and tell this committee what our opinions may be. The American Medical Association meets each year. They have a section on obstetrics, a section on dermatology, gynecology, ophthalmology, and so forth. Each section has a group, and we meet separately, and in that group there will be two or three men who follow on these committees each year. The other men are not so much interested. I myself go very rarely. And then the opinion of these three men, through their section, is accepted as the opinion of the American Medical Association, numbering thousands and thousands of men.

That is not so important, however, as to how such findings are accomplished, but the fact remains that there has been a constant change. How can an industrial commission in any State be expected to say, "That is authoritative. I will accept it", when the very re-

ports of this same American Medical Association change from year to year, but each time state that this is authoritative?

Mr. CAREY (Michigan). In answer to the statement with reference to the *DeCaprio case* decision in New York, the Court of Appeals in New York did have before it the American Medical Association method of computing in that table, but what they held was that they could not say as a matter of law, which is quite a distinct technical difference, that that was the method to be adopted. They said that the board were the priors of the fact, and if their decision was supported by any competent testimony, they had to take that decision of the board, and that is exactly what they did, because the decision of the board in that case did have testimony of one physician behind it, based on the Snellen test, and they said they could not throw that thing out and decide as a matter of law that the American Medical Association's method of computing visual loss should be adopted.

In answer to the doctor's question about the statement with reference to the fact that fractions were not used by Snellen in originating this test, I may say that I was probably guilty of ignorance, because I took that from an article written by Dr. Frank Albert, of Chicago, a prominent ophthalmologist. In answer to the last question, part of the remarks that the doctor made, I still say that in determining visual losses the primary factor back of all compensation was loss of wages, and there is more than central visual acuity involved in that question.

Dr. MEHL. I never meant to give the impression that you measure only central visual acuity. I did mention that you take into consideration the three factors.

Dr. PATTON. The industrial board and the medical department and the department of labor have never yet been firmly convinced that the American Medical Association method is a better factual method than the one formerly used. The court of appeals said you could use either, and to this date we have many methods.

September 23—Morning Session

William F. Broening, Chairman of the Industrial Accident Commission of Maryland, Presiding

Chairman BROENING. This convention has long considered the matter of injuries, disabilities, due to trauma. Last year was the first session in which we held a symposium dealing with occupational diseases. We are fortunate this morning to have Dr. Hamilton, who has a reputation well merited and well deserved.

The Making of Artificial Silk in the United States and Some of the Dangers Attending It

By Dr. ALICE HAMILTON, *Medical Consultant, Division of Labor Standards, United States Department of Labor*

The making of artificial silk is a very important industry in the United States and it is a very mysterious industry. If there is any man in the room who knows anything in detail about the artificial-silk industry and knows of any occupational poisoning in connection with it, I should be enormously grateful to meet him and to hear about it. I may say that I have myself visited a few plants, but I know very little about what actually occurs in them. When I want to know about artificial silk I go to the foreign authorities.

The manufacture of artificial silk using cellulose obtained from cotton waste or wood pulp instead of cellulose from silkworm cocoons is a recent and very important feature in all industrial countries. We owe the invention of the processes which made this possible to the Swiss, the French, the German, and the English—especially the English.

In 1855 a Swiss, Andemann, patented a process of spinning an ether-alcohol solution of nitrocellulose, but it was not until 1884, when the Frenchman, Chardonnet, invented a method of producing the filaments of silk by forcing the solution through fine capillaries, that it became commercially profitable, and in 1891 the manufacture of the so-called Chardonnet silk began at Besançon in France. A little later, three English chemists—Cross, Bevan, and Beadle—treated mercerized cotton with carbon disulphide, producing cellulose xanthate which they called "viscoid." Later, they treated cellulose with acetic acid, and this was the origin of the fourth kind of artificial silk—acetate silk. The third in point of time was a German invention—cuprammonium silk—made by Pauly in 1897. All four processes are still used, and all start with cotton linters, or wood pulp made from spruce reduced to pulp by the sulphite process. The raw material used is identical with that eaten by the silkworm and used for its cocoon; that is, the cellulose of mulberry leaves, but the cocoon is an organic product containing nitrogen, while the artificial fiber is nitrogen-free. It is like the vegetable celluloses, cotton, flax, hemp, while the natural silk is, like wool, an

animal product. The principle of manufacture is to transform a solution of cellulose, $C_6H_{10}O_5$, into fine, endless, solid filaments. This takes about 15 days.

Starting with cotton, the first stage is digestion with caustic soda, then washing, bleaching with chlorinated lime, washing, drying, pressing into sheets. (1) (2) Starting with wood pulp, the first stage is cooking with calcium bisulphite, washing, bleaching, washing again, drying, putting through a paper mill to make sheets. Then one of the four methods begins.

1. *Chardonnet*.—Cellulose is changed to nitrocellulose by treatment with mixed acid, sulphuric and nitric, just as in making guncotton or celluloid. As in the latter production, the nitrated product is dissolved in a mixture of ether and alcohol to form a sirup, which is forced through capillary tubes and forms filaments, which are wound into skeins. Hot air drives off the solvents, which are recovered and used again. The threads are freed from nitrogen—otherwise they would be explosive—by sodium hydrosulphide, and then the usual washing, bleaching, and so on follow. It is an expensive method.

The dangers here are those we all became familiar with during the war, when so much smokeless powder and military guncotton was made. Nitric acid is a dangerous substance to use, it eats through most materials; and when a leak or spill occurs the fumes of nitrous oxides constitute a serious menace to the workmen. These fumes are irritating but not impossible to breathe and, therefore, unless he escapes at once, the man is likely to fill his lungs more or less with the gases, and then later on, after some hours, he develops an acute congestion of the lungs, which may go on to dropsy of the lungs and end fatally. Such accidents were not at all uncommon during the war, but probably now they are rare. In the first place, the nitric acid used is not so strong as for guncotton; in the second place, the engineering problems have been solved since then, and accidental escape of fumes is far less frequent.

The second danger comes from the solvent. Ether alcohol was used in enormous amounts during the war and caused some trouble, especially among new hands, who suffered from slight anaesthesia toward the end of the day, sometimes from nervousness, drowsiness, or insomnia, and constipation. But these solvents are expensive and every effort is made to recover any fumes and keep them from escaping.

2. *Cuprammonium*.—Cotton or wood pulp is mixed with finely divided copper hydrate and dissolved in concentrated ammonia, forming a blue viscous mass. After filtering it is forced through spinnerets into a setting bath of sulphuric acid or caustic soda, or first soda and then acid. This process has no risks except in case of accident, when there might be burns from caustic or acid, or injury to the lungs from ammonia fumes.

3. *Acetate process*.—Cellulose acetate silk is the newest variety, a post-war development chiefly, from the making of airplane dope, which was carried on by the Dreyfus brothers in Switzerland and the product sold to England and the United States. They went to England after the war and made celanese there, but were not successful in introducing it into this country until much later, in 1924, when Dreyfus made celanese in Cumberland, Md., in the same plant

in which he had made acetate dope for the War Department in 1917 and 1918. Meantime a small acetate plant, the Lustron, operated for a few years, near Boston, but closed about 1924. This was, so far as I know, the only acetate silk factory which used the dangerous solvent, tetrachlorethane. Our airplane dope for war purposes was made with less harmful solvents, for we were warned by the British against using tetrachlorethane, which had given rise in their factories to cases of toxic jaundice, often fatal.

Bleached and dried cotton waste is treated with a mixture of acetic anhydride, glacial acetic acid, and sulphuric acid or zinc chloride. Then it is allowed to "ripen," is precipitated by water, filtered, washed, dried, and dissolved in acetone. We had much experience with acetone during the war, when it was used in great quantities as a solvent for smokeless powder and we had no trouble at all from its use. It seems to be the least harmful of solvents.

This is, according to the best information I could secure, the usual way of making acetate in this country, but it may not be the only way. In an article on acetate silk in the International Labour Office's series on Occupation and Health (No. 30) other solvents are mentioned as used in the production of this kind of rayon and, since the American methods are simply copied from the European, it seems probable that these compounds may be used here also.

The toxic compounds mentioned are benzene, used as a precipitant; and chloroform, carbon tetrachloride, tetrachlorethane, used as solvents. All these are poisons. According to Allen Rogers (1), if the cellulose acetate is precipitated as the triacetate, it is not soluble in acetone but in mixtures of alcohol and chloroform or tetrachlorethane. The acetone-soluble acetate is formed when a period of "ripening" comes in between the acetylation and the precipitation. It is therefore important to know exactly how the acetate in any given factory is produced.

4. *Viscose process.*—This is by far the most important method. It is used for about 80 percent of all artificial-silk production, and it is, according to foreign authorities, much the most dangerous to the health of the workers. All the great industrial countries except our own (England, Germany, France, Italy, Holland, Japan) have called attention repeatedly to the serious health hazards connected with this industry, and the medical journals are full of articles describing the various forms of injury that workmen may suffer. These injuries are to be traced to two poisons, carbon disulphide and sulphuretted hydrogen, the first of which is a chemical essential to the process, the second a byproduct, troublesome and of no use.

As always, the process starts with bleached and dried wood pulp or cotton linters. The first step is steeping or mercerizing in a vat with dilute caustic soda.¹ The vat is called a steeping press because it has a mechanism for pressing the pulp dry as it comes out in sheets of alkali-cellulose. These sheets are shredded to crumbs, without breaking the long fibers, then aged in cans like milk cans for some hours. Next comes xanthation, which takes 2 to 3 hours. The alkali-cellulose crumbs go into a churn or hexagonal drum (*baratte*),

¹The caustic soda is bought in liquid form or in solid form and dissolved in water at the plant. The risks attendant on the handling of this caustic are well known, but when used for mercerization it is only of 17 to 18 percent strength.

which rotates horizontally, and to which is added carbon disulphide² after the churn has been tightly closed. No fumes are supposed to escape from the churn. Here the cellulose shrinks to half its size and turns orange yellow and forms balls or marbles, rubbery in appearance. The excess carbon disulphide vapors are drawn off by an exhaust and the drum opened, the xanthate is allowed to fall down a chute into the mixing or dissolving machine. If this can be done automatically without any help on the part of the men, and if the insuction of air is strong, there need be no danger from carbon disulphide fumes, but if the discharge has to be helped along by the man running a long-handled paddle inside, or even putting his head in to get out the last crumbs, then there is decided danger. It is from this source, and from leaking churns, that the cases of poisoning arise in the churn room.

The next step is dissolving the xanthate in dilute caustic soda. This is done in the mixing machine, a brine-jacketed tank with a stirring and shredding mechanism. Here the rubbery xanthate dissolves to viscose, a yellow syrup. To prevent too much sulphureted hydrogen forming in spinning later on, some sulphuric acid is often added at this stage, and if lustreless silk is desired, titanium oxide, but that is quite harmless. Then comes passage through a filter press, with cotton and cotton batting filters and compressed air to force it through. For several days, then, it must ripen or age to be fit for spinning. Spinning consists in forcing the sirup through spinnerettes, which are like microscopic sprinklers, into a setting bath containing warm water with 8 to 10 percent sulphuric acid, 13.5 to 21 percent caustic soda, 1 percent zinc sulphate, and 4 to 10 percent corn sugar. Here the xanthate breaks down and is precipitated as cellulose.

In the spinning bath some complicated chemical processes take place, which result in the liberation of sulphureted hydrogen and carbon disulphide, so that this is the second place in which carbon disulphide poisoning may occur and the one in which hydrogen sulphide gas is chiefly encountered.

One feature that makes it harder to carry off fumes in spinning is that much of the bath liquid is carried along on the thread as it emerges. The finished "cake" of yarn is only 29 percent cellulose, the remaining 71 percent is bath liquid. This explains also why poisoning occurs in the subsequent steps of the process, washing the cakes, and drying them in heated dryers and desulphurizing them in alkaline sulphide, or possibly sodium cyanide solutions. Last comes bleaching, with straight chlorine or with dilute bleaching powder or hypochlorites, washing again, centrifuging, and drying.

The danger from carbon disulphide is not only in the churn room, where the cellulose is treated with it. In fact, it is easier to control the escape of this gas there than in the later processes which are open, the spinning, aging, washing, and filtering. In all these processes carbon disulphide gas may escape. In fact a German authority (3) found carbon disulphide most evident in the air of the press-fitter room. The explanation for the presence of carbon disulphide and sulphureted hydrogen gas in the factory air is as follows: When cellulose xanthate goes through the "ripening process"

² Carbon disulphide, being inflammable and explosive, must be kept in tanks outside, usually under water, and handled with much caution. To produce 1 pound of rayon by the viscose process, requires 1.7 to 1.9 pounds of sulphuric acid, 1.4 pounds of caustic soda, 0.35 pound carbon disulphide, one-half pound corn sugar, and 100 to 200 gallons of water.

trithiocarbonate, Na_2CS_3 , is formed and it splits into Na_2CO_3 and H_2S . Then in the spinning bath with warm sulphuric acid, more Na_2CS_3 splits off and forms more H_2S . Another body in the cellulose xanthate is trithiocarbonic acid, CH_2S_3 , which in splitting forms both H_2S and CS_2 . (3) (13)

In one Dutch factory, in the air of the spinning room, 2 mg of CS_2 per liter was found, and in three other factories from 0.08 to 3.0 mg per liter. In a washroom the amount was 0.18 mg per liter. So many cases of carbon disulphide poisoning occurred in one German factory in connection with washing that all those receptacles were ordered covered with glass. The hot air in the drying cabinets drives off the gas left after washing. Even washing out the cloths from the filter press has caused poisoning.

Carbon disulphide when pure is a water-clear liquid, but the crude variety is yellowish and has a characteristic odor, which may vary with the purity. It is very volatile, for its boiling point is only 46°C . (115°F .) and it evaporates at ordinary room temperature. The vapor is $2\frac{1}{2}$ times as heavy as air, and therefore collects near the floor. This vapor is explosive and inflammable.

It was in connection with the vulcanizing of rubber that Europe first heard of carbon disulphide poisoning. Rubber can be vulcanized by heat and pressure, the so-called heat cure, which is the method used almost universally in this country, or by the Parkes' process, the so-called cold or acid cure. The first uses flowers of sulphur, perfectly harmless; the second uses sulphur monochloride, and the best vehicle for it is carbon disulphide. Europeans have always favored this last method and so did the English for several decades, and it was the use of carbon disulphide which placed the rubber industry in the class of the very dangerous trades. The German, French, and English medical writings of the last half of the nineteenth century are full of descriptions of the mental and physical breakdown in rubber workers (4). Then better hygiene brought about a lessening of cases in the rubber industry, but after some 15 or 20 years of comparative freedom, industry again became responsible for this distressing form of sickness and this time it came from the making of viscose.

Carbon disulphide is a dangerous poison, of a very unusual character, capable of causing almost as varied a picture as lead (5). It attacks the gastro-intestinal system, the central nervous system—brain and spinal cord—the genital system, and the endocrine—ductless gland—system. Usually the symptoms of brain and spinal cord disease are so prominent as to overshadow the others, but careful study of cases brings out less striking but quite clear damage to those I have mentioned above.

Let us take the gastrointestinal system first. Usually the trouble consists of indigestion, pain, and tenderness of the abdomen, acid eructations, overacidity of the gastric juice, loss of weight and of strength.^a But there may be stomach ulcer, even with hemorrhage. Weise (3), a German, studied the sickness insurance records of rayon factories and compared them with those of textile mills. He found that no less than 17.7 percent of the silk workers suffered from stomach or intestinal disease in 1 year, but only 2.9 percent of textile workers.

^aThe expired air smells of celery, which helps in making an early diagnosis.

The figures for gastric ulcer were 2.6 percent for the former, only 0.3 percent for the latter. He tested on animals the two gases formed in rayon manufacture—carbon disulphide and sulphuretted hydrogen—and found that the latter did not cause injury to the stomach, but carbon disulphide did.

Another German, Bonhoeffer (6), examined 14 cases with nervous symptoms. All complained of headache, dizziness, weakness, irritability, and sleeplessness. Nine had numbness affecting arms and legs and neuralgic pains, a feeling of crawling over the skin, muscular cramps. Three had affection of the nerve of the eye and two of the auditory nerve. The most serious case had loss of memory, attacks of confusion when she did not know where she was, rapid change of mood from depression to excitement, and hallucinations of sight and hearing. In a case reported from England there was partial blindness, headache, vomiting, delirium, loss of muscular power, and almost complete loss of sensation (4).

A typical case is described by an Italian (7). This was a young man employed only a few months in making artificial silk when he began to feel weary, his legs were weak, he became irritable and unreasonable, had headache and could not sleep, had pain in his arms and then a tremor which came on whenever he tried to do anything and could not be controlled. He felt crawling over his skin and heaviness in the legs, he was constipated, had indigestion and sweating.

Several of the cases reported from Italy are of a palsy resembling paralysis agitans (8) (9); a case reported from Germany resembled one of brain tumor (10).

As for the psychoses, they may be of many types, manic-depressive, confusional, with or without hallucinations, or dementional; the first forms pass over if there is no further exposure to the fumes, but not always rapidly; the last usually is incurable (9). Generally the trouble comes on slowly, after some months' work, starting with depression and loss of memory, but sometimes there is a sudden attack of maniacal excitement. Women may suffer from a sort of latent hysteria, associated with ideas of persecution. Laudenheimer (11) found seven times as high an insanity rate among women using carbon disulphide as among those in the same factories but not exposed to it. Carbon disulphide is one of the poisons that cause blindness by injuring the nerve of sight, the optic nerve, just as do lead and alcohol. Examination of the eye ground shows a neuritis and later an atrophy (12). The effect on the nerves of the limbs is shown by both motor and sensory symptoms, but the motor are more striking. Usually the muscles of the legs are most affected; they feel heavy, walking is difficult, going upstairs may be almost impossible, and with this loss of strength may go painful muscular cramps and neuralgic pains. In a group of 100 cases studied in Italy by Ranalletti (13) 80 percent had involvement of the nervous system, 52 percent had psychoses, the others had polyneuritis, or paralysis agitans, or affection of the optic nerve. The remaining 20 percent had anemia and gastrointestinal disturbances. Thirty-five percent of the cases came from the washing process, 26 percent from the churn room, 26 percent from the spinning room. To estimate the relative danger in these departments one should

know the number of employees in each. All we can say is that a much larger number are employed in spinning than in the churn room.

As for sulphuretted hydrogen poisoning, that is a source of great trouble in the spinning room. From all the manufacturing countries come articles describing inflammation of the eyelids and the covering of the eyeball among spinners. This is not an injury to the inner structures of the eye, it is superficial; but, of course, a man may suffer from both poisons, from carbon disulphide, which will affect his vision, giving him color blindness or a narrowing of the field of vision or night blindness or fogginess and a grey mist before the eyes, and at the same time he may have a severe conjunctivitis from the fumes of sulphuretted hydrogen. (14) (15)

The mildest form of this form of poisoning—sulphuretted hydrogen—is an irritation of the conjunctiva, with reddened and somewhat swollen eyelids and photophobia (sensitiveness to light). Severe forms are seen, the eyes swollen almost shut, much pain, light intolerable, and injury not only to the lining of the eyelids but to the covering of the eyeball, the cornea. Here tiny blisters may form and make the victim feel as if his eye were full of sand. These blisters do not develop at once, but take some hours, which explains why the worker often experiences severe pain after he has gone home, often during the night.

German physicians have reported the occurrence of many cases of severe inflammation and ulceration of the cornea, sometimes deep ulcers. Some workers succumb after a few days' exposure, others are not affected for years. But if a worker is susceptible, he does not get acclimatized; on the contrary he grows more susceptible.

Efforts have been made to discover the minimum harmful dose of carbon disulphide. It was tested in 1894 by Lehmann (16), who found that acute symptoms begin after some hours exposure to 320 parts per million. The British Factory Inspection Service (form 836, Nov. 1935) gives these figures: With 322 to 386 parts per million, slight symptoms appear after some hours; 483 to 807 parts per million is the maximum that can be breathed 1 hour without serious symptoms; 1,150 is dangerous after $\frac{1}{2}$ to 1 hour. These have to do with acute intoxication, which is not nearly so important as the form caused by long-continued exposure to small quantities. It is not easy to find data as to the minimum dose that will cause chronic poisoning. The British put it at 30 parts per million. Others have put it as low as one part. In a study of French factories, Consten-soux and Heim (17) found that when the concentration of carbon monoxide was not over 181 p. p. m. symptoms of psychic disturbance would occur, but would not be serious. When it reached 830 to 1,245 p. p. m. no less than 82 percent of the employees had such symptoms, some decidedly severe, and 78 percent of these had disturbance of vision.

As for sulphretted hydrogen, Lehmann (16) found that 150 p. p. m. of air would cause burning and irritation of the eyes and the lining of the nose and throat, but obstinate inflammation of the eyes had been known to follow as little as 15 p. p. m.

Analyses have been made of the air in spinning rooms to determine the amount of sulphretted hydrogen present. In an Austrian factory it ran from 24.5 p. p. m. to 58 p. p. m. In four Dutch factories it

was from 16.6 p. p. m. to 29 p. p. m.; 12.4 p. p. m. to 18.2 p. p. m.; 7.1 p. p. m.; and 72.1 p. p. m. (3).

Legge (18) reported in 1931 that an artificial-silk factory in England, using the viscose method, had many cases of severe irritation of the eyes, although the concentration of CS_2 was only 20 parts per million in the air. He describes the appearance of the eyeball under a magnifying glass as resembling the sky on a starlight night, with hundreds of tiny, fluorescent breaks in the outermost layer. These are really tiny ulcers. He urges the substitution of some safer chemical for CS_2 .

The commercial manufacture of viscose rayon dates from 1904, when Courtaulds, Ltd., the great English firm, together with the German Glanzstoff, A. G., and French, Swiss, and Belgians began to produce it on a large scale. In 1910 they opened the first American plant in Marcus Hook, Pa. The Viscose Co., under which name they now operate, is still the largest in this country.

According to the latest published information, there are 25 rayon factories in the United States, employing something over 50,000 workers. These are in 14 States—19 use the viscose process, 4 the acetate, and 2 the cuprammonium. The Chardonnet process, with nitrocellulose, is no longer employed in this country.

There are two plants in Massachusetts, one in Rhode Island, one in Connecticut, two in New York, one in New Jersey, two in Pennsylvania, two in Ohio, four in Virginia, one in West Virginia, two in Tennessee, one in Georgia, one in North Carolina, with a question as to a second, and one in Delaware. Those plants use the viscose process. The safe plants, using the acetate process, are in Maryland, Virginia, Pennsylvania, and Tennessee. The other safe process, the cuprammonium, is used in Tennessee and New Jersey, although the New Jersey one, I hear, has been closed down. I hope this point will be brought out in the discussion, but I want to mention it. I think you will, perhaps, all have noticed that every authority I have cited is a foreign authority. I have not given anything from American sources, because I have been unable to find anything there, and yet I think we are the third country in production, and possibly the second. That seems to be a strange thing. American physicians, in my experience, do not know anything about carbon disulphide poisoning, and it is not to be expected that the industrial factory inspectors should know what the dangers are. I will tell you two experiences of mine.

A few years ago I had a telegram, sent to me at Harvard, not from a physician but from a registered nurse, saying: "Epidemic of insanity in artificial-silk mill. Doctors do not understand. Can you tell us anything?"

I wrote back voluminous information. Then I tried to find out what had happened; but it was shrouded in secrecy. I have never heard. There is no sequel to that story at all.

The second was a story told to me later by a young physician, just starting in practice, of what was happening in a town where this industry, making viscose silk, was the only industry. The physician wrote me that an appalling number of cases were being sent to the insane asylums from among the millworkers, and asked what was the matter. I wrote to the nearest insane asylum and asked whether they had any reason to think that the cases coming from this par-

ticular mill were cases of carbon disulphide poisoning. The answer was that the physician had never heard of carbon disulphide, did not know it was used in the silk industry, and had no idea what injury it would cause if it were used.

I think that is a strange and rather deplorable condition in this country, and I should be very glad if in some way we should begin to face this industry with our eyes open and discover what is actually going on. Long ago I had to give up the comforting feeling that things that happen in other countries do not happen in ours, that our workmen are so much better paid and live so much better, and our plants are so much more hygienic that we do not suffer from poisoning as the other countries do. I know that is not true, and I know that American workmen are made of the same flesh and blood and nerve fibers as foreign employees are, and the same things will injure both classes of workmen. I hope very much that this ignorance of ours would not be lasting, and we shall soon find out what is going on in our own industry.

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Chairman BROENING. Thank you, Dr. Hamilton, for your very interesting paper. Does the reading of this paper suggest any inquiry? If not, we will proceed to the next order of business. The next paper will be that by Mr. Voyta Wrabetz on the Progress of the National Silicosis Conference. Mr. Wrabetz, as you know, is the chairman of the Industrial Commission of Wisconsin.

Mr. WRABETZ (Wisconsin). Before presenting my report I want to express my appreciation to H. A. Nelson, of our compensation department of Wisconsin, and to R. Campbell Starr, of the Division of Labor Standards, United States Department of Labor, for assisting me in the preparation of this report, because I have not been able to attend the meetings of all the committees and subcommittees of this conference.

The Work of the National Silicosis Conference

By VOYTA WRABETZ, *Chairman, Wisconsin Industrial Commission*

Cooperation is the keynote of the work of the National Silicosis Conference, which convened in Washington this past spring at the invitation of the Secretary of Labor. At the conference some 200 representatives of industrial, labor, medical, engineering, insurance, and administrative groups agreed that much can be accomplished by the joint effort of all concerned in preventing this occupational hazard and in providing adequate compensation for those workers disabled by exposure to silica dust. Incidentally, this group is probably the largest and most representative body ever called together on this subject in the United States.

Secretary Perkins explained the interests of the Department of Labor in silicosis, pointing out that it was sponsoring the conference pursuant to the authority granted in its organic act to "improve industrial and working conditions and to create favorable opportunities for employment for the wage earners." She said there is on hand much knowledge of silicosis, which, evaluated and translated into definite programs of action, will go far toward controlling this industrial disease.

"The technique of silicosis prevention lies", she said, "in keeping the dust from getting into the air which the workers must breathe. This can be done by different types of ventilation, including specialized control and collection of the dust at the point of origin so that it does not escape into the workroom." Among the other effective methods of control cited by Secretary Perkins were employment of wetting-down processes, good housekeeping, and the use of positive pressure masks. The latter means, she declared, is satisfactory only for short periods of exposure.

Speaking on Silicosis as an Employer Problem, A. C. Hirth, of the Air Hygiene Foundation, said that—

a consideration of the many aspects of the silicosis problem clearly indicates that the interests therein of employees, employers, and the public proceed along parallel lines. The employers of the country can be counted upon to cooperate wholeheartedly with the United States Department of Labor, with the Public Health Service, with other pertinent public authorities, and with labor itself to reach the solution of this problem along sane, constructive, and effective lines.

John P. Frey, president of the metal-trades department of the American Federation of Labor, acting as spokesman for organized labor, pointed out the worker's need for adequate compensation insurance coverage for silicosis until such a time as prevention of the disease is an accomplished fact:

Mr. Frey said:

The purpose of this conference is to consider ways and means of its (silicosis) elimination fully as much as to determine what compensation should be given to the infected and afflicted workmen. Labor is primarily interested in having the cause removed, but is compelled in the meantime to actively engage itself in an effort to secure adequate compensation for the afflicted and their families. Labor is particularly interested in prevention, rather than compensation, for labor is convinced that once the danger of silica dust in industry has been eliminated, there will be no silicosis for which compensation is required.

He, too, stressed the need for cooperative action of all interests in order to carry out the conference's work.

Dr. R. R. Sayers, senior surgeon, United States Public Health Service, discussed at some length the medical aspects of silicosis and means of control. He described the disease and the chief causative factors, stressing the preventive phases, both from the medical and the engineering point of view, and emphasizing the need for close cooperation between medical and engineering personnel for economical and safe control of the dust hazard.

Immediately following the meeting Secretary Perkins announced the appointment of four committees composed of experts in their respective fields to undertake detailed study on the technical phases of the problem: (1) Prevention of silicosis through medical control; (2) prevention of silicosis through engineering control; (3) economic, legal, and insurance phases; (4) regulatory and administrative phases.

These committees, which have already begun their analysis of the problem, are expected to complete their work during the fall or early winter. It is hoped that as a result of their research, including an evaluation of the present status of medical and engineering control measures, certain broad recommendations can be made which are susceptible of immediate translation into preventive action by every industry confronted with a silicosis hazard. It is also hoped that the group studying the economic, legal, and insurance problems resulting from silicosis, as well as the regulatory and administrative committee, will be able to evolve a practical and effective set of principles which can be equitably and promptly applied by the several States to provide proper compensation for disabled silicotic workers until such a time as the disease, through adequate medical and engineering control measures, has been effectively controlled or entirely eliminated.

Emphasis is properly being given to prevention of the disease through medical and engineering control methods. For example, the following questions are among the more important problems faced by the medical committee: Effects of variations in particle size, composition, and concentration of dust; basis of diagnosis; silicosis with infection (especially tuberculosis); basis of establishing disability; medical supervision of employees; and management and employee responsibility.

The foregoing and other topics have been receiving careful study by the medical committee since its appointment on April 14. Two meetings of this entire group have been held thus far, and it is expected that out of this committee's report will come a set of recommendations dealing with the practical problems of medical control of the disease.

The engineering committee has held one meeting to date, at which eight subcommittees were appointed to study and report on an equal number of technical problems, chief among them being: Plant design and renovation; housekeeping and maintenance; general ventilation, local exhaust, and enclosed processes; wet methods; personal respiratory protective devices; and sampling and examination of industrial dusts.

Each of these subcommittees has continued its work throughout the summer and will present its report at a meeting of the entire engineering committee, to be held in Chicago, September 28 and 29. After discussion, it is expected that the subcommittee reports will be incorporated in the report of the full committee.

In this connection, it is noteworthy that all of the problems being considered by the medical and engineering committees are preventive in character and look toward effective control of the dust hazard, to the end that the number of workers contracting silicosis may be reduced to a minimum.

Realizing that, until such a time as the various medical and engineering control measures have eliminated silicosis as an occupational disease, adequate compensation must be given to the disabled worker, the economic, legal, and insurance committee and the regulatory and administrative group are considering both the preventive and compensation phases of the problem.

Although but little information is available as to the extent (both potential and actual) of the silicosis hazard, the group dealing with the economic phases is devoting considerable effort in this direction in an attempt accurately to appraise the magnitude of the problem. This subcommittee is also concerned with the economic effects of the disease upon industry, labor, and the public, as well as the comparative costs of preventive and compensatory measures. The question of differentials and competitive inequalities among industries and workers in various States, caused by widespread lack of uniformity in preventive and compensation legislation, is also being studied by this group, as well as the problem of economic protection for the worker.

An analytical summary of existing silicosis acts and a summary of the common-law and compensation-law rights of employees in all States is being undertaken by the legal subcommittee, which hopes to make specific recommendations as to provisions that should be included in State legislation on compensation for silicosis. Among the principal points to be covered are: (1) Preventive measures, (2) physical examination and autopsies, (3) medical boards, (4) accrued liability, (5) silicosis under general versus schedule coverage, (6) should silicosis compensation be elective? and (7) limitation as to time of filing claims.

The insurance group is studying a number of practical problems arising from the administration of compensation insurance acts and self-insurance for common-law liability in connection with silicosis. Among the principal questions being covered by this group are: (1) Rejected risks, (2) compulsory acceptance of assigned risks and premium rates therefor, (3) establishment of premium rates for silicosis coverage, (4) accrued liability, (5) medical examinations, (6) compensation benefits, (7) statutes of limitation, (8) medical treatment, and (9) determination of claims.

The entire economic, legal, and insurance committee has met twice to date, and each subcommittee has been studying its assignment during the summer. The full committee will meet on October 1 and 2 in order to study subcommittee reports and prepare its recommendations as to these phases of the silicosis problem.

Establishment of regulations dealing with the prevention of and compensation for silicosis and the administration of such regulations is the problem faced by the regulatory and administrative committee, which consists of two subgroups, one dealing with preventive regulation, the other with compensation regulation and administration. Each of these groups has met twice during the summer months, and it is expected that their reports will be ready some time during October.

The principal questions receiving the attention of these subcommittees are:

Prevention.—1. Responsibility of the State: (a) Surveys and studies, (b) determination of control measures, (c) enforcement, (d) reports and statistics, and (e) educational program.

2. Allocation of responsibility to specific State agencies: (a) Intra-state cooperation and (b) interstate cooperation.

Compensation.—1. Coverage by statute—schedule versus general: (a) Elective or compulsory and (b) insurance coverage for the employer: (1) Rejected risks, (2) self-insurers, (3) State funds, and (4) private carriers.

2. Relation of physical examination to compensation.

3. Essential features for inclusion in State silicosis legislation: (a) Medical board, (b) period of exposure, (c) date of injury, (d) definition of terms, (e) medical treatment, and (f) rehabilitation.

It should be borne in mind that the various topics listed herein are now being considered by the various committees. It is impossible at the present time to indicate how any of these questions will be answered, since all committee reports will receive full discussion at a joint meeting of all committees, to be followed by study and coordination by the correlating committee (consisting of the chairmen of the four committees).

Upon completion the consolidated report of the committees appointed by the Secretary of Labor will be presented to a large national conference, probably exceeding in size the initial group which met in Washington on April 14. It is expected that this conference can be held during November or early December, since it is likely that all committee work will be completed by that time. It is the hope of the United States Department of Labor and of the various groups which are cooperating in the work that out of these numerous meetings and extensive studies will come a set of principles which can readily be applied to the conditions in the various States and immediately translated into active and effective programs looking toward the elimination of silicosis as an occupational hazard. In the meantime it is hoped that the recommended principles of compensation can be put into effect in such a way as to adequately take care of the bona-fide silicotic who has been disabled through exposure to dust by virtue of his employment.

If these expectations and hopes materialize, the work of the National Silicosis Conference will, without doubt, constitute an outstanding accomplishment in the field of industrial cooperation—an undertaking

in which labor, management, the public, and all other interested groups have, through joint effort, assisted in the solution of a perplexing national problem.

Chairman BROENING. Thank you, Mr. Wrabetz. Does the paper just read suggest any inquiries?

Mr. McSHANE (Utah). May I inquire if anyone here knows whether or not the report of this committee will be published as a bulletin by the United States Department of Labor and immediately transmitted to the respective jurisdictions?

Mr. WRABETZ. I cannot speak officially for the Department of Labor, but I feel sure it will be.

Mr. McSHANE. It is very desirable and I would suggest that the authorities here make a request of the Department, because many authorities will meet early in January and perhaps, in the dark, will begin to deal with this problem.

Mr. DORSETT (North Carolina). In answer to Mr. McShane's question I might say that I happen to be the person selected to make the report for the legal subcommittee and I shall do my best to see that all of these reports, of course, are furnished to the various compensation officials throughout the Nation.

Chairman BROENING. Does anyone else desire to be heard? If not, we shall have the pleasure of hearing from George Wilkie, chairman of the Workmen's Compensation Board, Toronto, Ontario.

Mr. WILKIE (Ontario). I am on your program for a discussion of the paper that has just been read to you. The situation, however, demands a slight explanation on my part. It was suggested that we prepare a paper, giving the experience of the Province of Ontario, Canada, with silicosis. We did prepare such a paper, and multigraphed it and sent the multigraphed copies down by express, but they arrived only this morning. In the meantime I despaired of their arrival and thought it would perhaps serve better if, instead of reading the report, which will take some little time, of which there is very little to spare, I let you read the copies at your leisure and give you a brief résumé of it.

Silicosis Experience in Ontario

By GEORGE WILKIE, K. C.

Chairman, Workmen's Compensation Board, Ontario

and

T. NORMAN DEAN, F. S. S.

Statistician, Workmen's Compensation Board, Ontario

The Workmen's Compensation Act of Ontario came into operation on the 1st of January 1915. This act did not include silicosis in its schedule of industrial diseases, but set out that disability of workmen by industrial diseases should be compensated for as in the case of disability from accidents happening on the date when the disability from the industrial disease developed. By amendment (7

Geo. V, 1917, Cap. 34) miners' phthisis in the process of mining was then added. Regulation 94 of the workmen's compensation board, January 13, 1925, included stone workers' or grinders' phthisis in the quarrying, cutting, crushing, grinding, or polishing of stone or grinding or polishing of metal. April 8, 1926, silicosis in the process of mining was added by legislative enactment (16 Geo. V, Cap. 42) and regulation 94, as amended June 1, 1926, brought in pneumoconiosis in the same processes in which stone workers' and grinders' phthisis were compensable. As a prerequisite of compensation the Ontario act requires 5 years' exposure to silica dust.

The act was further amended in 1933 and under the act so amended compensation was at the same rate for silicosis as for accidents; that is to say, at the rate of 66 $\frac{2}{3}$ percent of the wages lost by the claimant, for medical aid and hospitalization, for burial, and for the widow of the deceased workman a pension for life of \$40 a month, with \$10 additional for each child under the age of 16 years. The act as so amended is still in operation.

The general plan of the Ontario act, so far as it relates to silicosis, is to levy a rate on the pay roll in each industry.

Under the Mines Act of Ontario all underground workmen in mines are to be examined by a qualified medical man and must present, before being employed, a certificate from the medical man that the applicant is free from pulmonary disease and fit for underground work. Nearly 90,000 examinations have been made. No such examination is required in other industries.

Mining in the Province is principally for gold, silver, nickel, copper, and platinum. There is little iron mining and no coal mining. The industry has been a rapidly growing one with steadily increasing pay rolls, and this fact has a bearing on the tables which follow.

When silicosis follows exposure to silica dust it follows at an interval varying from 2 to 20 or more years, the pay rolls which are assessed to meet the compensation for silicosis are greater than the pay rolls at the time when the exposure occurred. This would appear to diminish the rates, but there are two factors which operate in the opposite direction. Firstly, men enter the industry who have been exposed to silicosis, which exposure has not yet produced any evidence of silicosis, but which is a factor in the development of the condition; and, secondly, the industry has taken measures to reduce the silicosis hazard, which efforts appear to meet with some success.

We have set out our experience in four tables, of which table 1 shows the number of man-hours worked, number of cases of silicosis allowed, and the number of cases and deaths per 1,000,000 man-days worked and the number of deaths resulting. Table 2 deals with the ages and exposure, and table 3 sets out the costs of operating the act, and concludes with the cost per \$100 of pay roll in each industry or group of industries. The named industries other than mining are based on the classification similar to the standard classification, but for the purpose of brevity and also because the experience in many of the classes is small, several classes are grouped together for the purpose of brevity and accuracy.

The first column sets out the number of man-days on which rates have been collected by the board since silicosis became compensable

under the statute. Column 2 gives the number of cases which have been allowed in each of the industry groups, and column 3 gives the number of deaths. No column has been provided for the rejected claims, but it may be interesting to note that the rejections follow apparently for three reasons: (1) No diagnosis of silicosis, (2) insufficient exposure within the Province, (3) the failure to present claim before the expiry of the period of limitation fixed by the statute. The largest number of rejections are probably due to the first of these, the second largest to the second, and only a comparatively small number have been rejected under the limitation clauses. Column 4 shows the number of cases allowed each million man-days worked and column 5 the number of deaths on the same basis.

With this explanation, the table should not be difficult to understand, but it should be remembered that the table is a table having in mind the settling of questions as to rates, compensation, and so forth, and not with a view of furnishing adequate medical data. For example, take the mining industry and the number of days of exposure. That, of course, does not mean during all those days the workman is constantly exposed to silicosis hazard, but exposed to whatever hazard was present in the mine in which he is employed during those days. The intensity of the exposure; that is the number of dust particles per cubic foot of inspired air varies greatly from one mine to another, and varies greatly from time to time and from position to position. Our data cover the experience of individual mines and individual camps, and in actual operation the rates charged and collected vary from camp to camp, and, of course, to some extent from year to year. The table gives the net result for the industry as a whole and not for individual mines or individual camps.

In stonecutting the number of days of employment which ends in a case of silicosis is much greater than in mining, but again we have the condition that exposure varies from day to day according to the class of work the workman is engaged in and according to the nature of the stone on which he is working and according to the conditions in which the operations are carried on. The matter of the conditions will receive attention later.

The rates are rates covering the actual cost to the Workmen's Compensation Board of Ontario of the silicosis hazard in the different groups and classes. It covers all the cases in which awards have been made, including pensions where pensions have been awarded; and where there is a prospect of further medical aid and further hospitalization, it includes the estimated costs of these as well, and the cost of pensions to widows for life and pensions to the children until they have attained the age of 16 years. It also includes a share of the cost of a rehabilitation clinic and of administration expenses, and the cost of making the examinations required by the Mines Act.

Our experience up-to-date is that these rates are adequate, but whether they will continue adequate in the future depends on the experience of the future. There are causes which may lead to an increase.

The position in industrial diseases and accidents is not the same in regard to preventive measures. Of accidents, somewhere in the neighborhood of 80 percent are caused by persons and the remaining 20 percent by the plants and the machinery. In the case of indus-

trial diseases, and particularly silicosis, the conditions are reversed. The workman has little control over the conditions which produce the disease; and it probably would not be too much to say that 80 percent of the cause of silicosis is plant and process, controlled by the employer, and only 20 percent due to the workman. It is, therefore, apparent that it is a fertile field for the exercise of care and preventive measures, and is the field which we think deserves more attention than it has yet received. In the mining industry there has been considerable improvement in this respect. Wet drilling instead of dry drilling, better ventilation, and better conditions generally have undoubtedly reduced the period and the intensity of the exposure in mines generally, and there is still room for substantial further improvements in both respects. Many of the mine operators are well aware of the condition, and for monetary and humanity reasons are taking steps in the direction of improving operating conditions. In one mine after tour of duty is completed the workman puts his working clothes into a locker of which he has the key. He then takes a hot shower bath, followed by a cold spray, and rubs himself dry. Then he steps upon a moving platform, putting on a pair of goggles that are provided for him, and the moving platform carries him through a chamber where he is exposed for several minutes to a flood of light from solar lamps. At the end of this exposure he removes his goggles, puts them in a conveyor, which carries them back to the point of commencement. He puts on his street clothes and walks out of the mine as clean as the conscience of a bank president. When he has been exposed to this treatment for sometime, he acquires a tan; and when the mine manager sees the husky, bronzed man on the street he does not mistake him for a coast guard but recognizes him as one of the underground workers of the McIntyre Mine.

The result has been highly encouraging to the mine owners. A somewhat similar course is being followed in other mines.

The very best medical talent in the Province has been and is being employed by the mines in an endeavor to devise a means of alleviating, curing, combating, or preventing silicosis. So far no cure seems to have been disclosed. Once silicosis has advanced so as to make possible a definite diagnosis (i. e. ante-primary stage) there is no means of curing it, nor seemingly of arresting its progress.

For a time it was thought that where silicosis was in its ante-primary stage, removal from the industry would stay its progress; but while it may progress more slowly if the workman is removed from the hazard, yet it does progress, and the fact of taking a man out of his established industry and exposing him to the necessity of learning a new trade and establishing himself in it with the resulting disturbance to his habits and his mind, makes it doubtful if removal from the hazard of the industry is much more advantageous to the workman than to permit him to continue in the industry, if that industry is carefully conducted.

It has been noticed that the rate for stonecutting is the highest of all, and recently a survey has been made of the industry by the authorities of the Province, and they with some assistance from one of our accident-prevention associations have made a long series of experiments and have devised a method of carrying on the trade which will greatly reduce the intensity of the exposure, reducing dust count

by 97 percent. The apparatus by which this is done is comparatively inexpensive to install and to operate. The work was carried on by John Leitch, B. Sc., M. A., physicist and engineer of the department of health of Ontario. The apparatus is now in actual use and presents good hope of successful operation, but the time, of course, is too short to permit conclusions to be drawn and the precise measure of its efficiency. The article will be published at an early date in the *Journal of Industrial Hygiene*. If the hopes of the author of the article, who has designed the apparatus, are realized, the silicosis hazard in stonecutting will be reduced to a point where, from an industrial standpoint, it will be almost negligible.

Another industry in which the exposure is very severe is sandblasting, and experimental methods have now been started by which it is hoped to reduce the density of exposure as in the industry of stonecutting.

Not many silicotics die of silicosis direct. They are peculiarly susceptible to tuberculosis, and once the silicotic contracts tuberculosis the progress of the disease is rapid, and it is difficult to arrest its progress.

In conclusion, it would appear from the 19 years' experience of the Workmen's Compensation Board of Ontario with silicosis, that once the condition has been established, there is no means of removing it nor arresting its progress. Work is being done by the best medical men available to discover a means of cure for arresting the progress of the disease, but so far without much success. The means of attack which has produced best results with us is to reduce the severity and duration of exposure to silica dust, with the hope that the condition will not develop until after many years of exposure; and that when it does develop, the progress can be reduced to such an extent that the disability from silicosis will not occur in many instances, and that when it does occur, it will be at a period in the life of the workman nearly, if not quite, coincident with disability from old age. If industry will realize the importance of the condition, and without becoming panicky, will exert all its efforts in this direction, there is a reasonable hope that the condition will be so far reduced as to be a matter of only moderate peril to the workman and of no serious danger to the industry.

PROVINCE OF ONTARIO EXPERIENCE WITH PNEUMOCONIOSIS AND SILICOSIS

TABLE 1.—Cases and rates

Industry	Estimated man-days worked	No. of cases allowed	No. of deaths experienced	Rates per 1,000,000 man-days	
				Cases	Deaths
Mining.....	26, 529, 621	374	100	14. 09745	3. 76937
Porcelain and glass.....	16, 787, 852	6	4	. 35740	. 23827
Foundries.....	10, 065, 600	19	8	1. 18265	. 49796
Agricultural implements, autos, etc.....	54, 101, 295	13	5	. 24029	. 09242
Porcelain enamelware.....	88, 642, 312	10	5	. 11281	. 05641
Stonecutting.....	1, 365, 532	39	16	28. 56030	11. 71705
All other industries.....	104, 642, 214	11	9	. 10522	. 08609

TABLE 2.—Ages

Industry	Average age at entry	Average exposure (years)	Average age when first allowed	Average lifetime after compensation	Age at death
Mining.....	31.75	10.21	41.96	1.81	43.77
Porcelain and glass.....	35.19	9.14	44.33	1.83	46.16
Foundries.....	33.28	14.11	47.39	.87	48.26
Agricultural implements, autos, etc.....	34.32	15.03	49.35	1.26	50.61
Porcelain enamelware.....	34.56	18.83	53.39	1.33	54.72
Stonecutting.....	36.26	20.52	56.78	2.42	59.20
All other industries.....	42.09	11.77	53.86	1.31	55.17

TABLE 3.—Costs

Industry	Estimated cost	Rate per 1,000,000 man-days	Rate per \$100 pay roll
Mining.....	\$3,220,905.08	\$121,407.88	\$2.43
Porcelain and glass.....	52,307.27	3,115.78	.09
Foundries.....	190,062.42	11,830.84	.36
Agricultural implements, autos, etc.....	1,222,990.50	2,273.34	.07
Porcelain enamelware.....	98,262.97	1,108.53	.03
Stonecutting.....	354,605.73	259,683.21	3.50
All other industries.....	93,974.46	898.91	.02

In the mining industry only workmen are those subject to exposure to silica; in other industries, total pay roll of the industry has been taken.

Appended to the article you will find a number of tables, which set out very briefly, and yet I hope instructively, the result of our experience. Those tables were prepared by our statistician. While I had not the article itself yesterday, I had the tables, and I had an excellent opportunity to try them out, so I presented them to two of the brightest minds in this assembly, and I watched the reaction, and I could see that they understood the tables. They were statisticians—trained men. They understood the tables, but with an effort and perhaps a strain. So I thought I might perhaps present a table of my own for men like you and me, not trained statisticians, who find some difficulty in understanding a form in which statisticians put out the material.

The mining industry is the biggest industry we have in which there is a silicosis hazard, and it is in this position different from the other industries. In it alone the Workmen's Compensation Board of the Province of Ontario levies a rate applicable to payment for silicosis only, and it is separate and apart entirely from the ordinary industrial rate on mining. In all of the other industries the silicosis hazard is covered by a general assessment. So from what I have to say about mining you will see that it stands in a slightly different position from the other groups of industries with which we have to deal.

Turning to table 1, our experience is that we have had in the mining industry, in all, man-days worked and exposed to silica dust, 26,529,621. We have allowed 374 cases of silicosis. We have had 100 deaths.

If you work the man-days worked out into the number of cases, you will find that if you had a gang of 24 men working for 10 years you would expect, according to our experience, one case of silicosis. It is a matter of multiplication and division. That is expressing

perhaps in an understandable way just what is the frequency of silicosis.

In the porcelain and glass industry the situation is somewhat different. We have only six cases allowed in that on 16,787,851 man-days worked—pay-roll days worked. The result is that you could have a force of 933 men working for 10 years in order to get a silicosis case out of the porcelain and glass industry. In the foundries you would need an army of 282 men working 10 years to give you a silicosis case. In the agricultural implements, automobile manufacturing, it would be 1,370 men for 10 years; in the porcelain-enamelware industry, 2,950 men working 10 years; in stonecutting, 12 men. You see the immense variety of the incidence at once.

You will also find in table 2 that in mining 10.21 years of exposure are required to produce silicosis. That is the average number of years of exposure of the men whose cases we have allowed. The corresponding number of years of exposure in porcelain and glass is 9.14; foundries, 14.11; agricultural implements, autos, and so forth, 15.03; porcelain enamelware, 18.83; and stonecutting, 20.52 years.

In our mining experience we had 100 deaths from silicosis, and the average age of the patient at the date of death was 43.77 years. In porcelain and glass it was 46.16; foundries, 48.26; agricultural implements, autos, and so forth, 50.61; porcelain enamelware, 54.72 years; stonecutting, 59.20 years.

So much for the matter of vitality and statistics as to that, but those administering the act like to know what it all costs. The average cost per claim in the mining industry has been \$10,000. That is the actual money paid out or carried to reserve. There is still a residual of not definitely defined loss, which we estimate as carefully as we can to be about \$1,000, so that our experience, worked out as well as we can, is that a silicosis case in the mining industry costs us \$11,000 from first to last. In the porcelain and glass industry the cost per case is \$8,500; foundries, \$10,000; agricultural implements, \$9,400; porcelain enamelware, \$9,800; stonecutting, \$9,100.

As I pointed out to you, the rate to cover silicosis in the case of the mines is a separate rate, and our actual rate to carry the cost of the compensation, the cost of our clinic, and the various other costs of administration, amounts to \$2.43 per \$100 of pay roll. In porcelain and glass it is 9 cents; foundries, 36 cents; agricultural implements, 7 cents; porcelain enamelware, 3 cents; stonecutting, \$3.50.

DISCUSSION

Mr. McSHANE (Utah). Mr. Wilkie, is your rate of \$2.43 per \$100 of pay roll a surcharge on the regular mining rate, or is it a rate charged in the mining industry covering silicosis?

Mr. WILKIE. Covering silicosis only, and not the other hazards of mining.

Mr. McSHANE. You said, Mr. Wilkie, that you had succeeded in your preventive measures in reducing the dust content of the air 97 percent. Does that include microscopic dust or dust of a certain measurement?

Mr. WILKIE. It is a complete dust count.

Mr. McSHANE. Microscopic?

Mr. WILKIE. I do not know how they make the dust count. I think it is microscopic. It is the standard measurement.

Mr. McSHANE. If it is not microscopic, it is not very important, because it is the microscopic dust that does the damage.

Mr. WILKIE. There is no question about that, none whatever. The average diameter of the dust particles is something like 3 microns, which is quite below anything that is visible under even a high-powered microscope. The injurious ones are invisible to the ordinary microscope.

Mr. McSHANE. As to the period of exposure, do you expect a man after he works for 10 years in your mine to be affected by silicosis?

Mr. WILKIE. I would not like to answer that categorically. The fact is that these are average statements.

Mr. McSHANE. I am speaking of averages.

Mr. WILKIE. Some men will go on practically indefinitely and not get it and some get it comparatively quickly.

Mr. McSHANE. I come from one of the greatest mining States in the Union, and we realize that some fellows have a constitution that can carry on for 35 years without being affected, and other men may succumb, due to systemic and other conditions, in a very short period of time.

Mr. WILKIE. Our experience, exactly.

Mr. McSHANE. I wonder what period of time you have taken to arrive at those conclusions that 10 years would be the average for silicosis in your mines.

Mr. WILKIE. That is the result of our experience in administering the old act, but the present act of 1933 is not quite the same as that with which we began.

Mr. McSHANE. Is this an experience based on your 1933 act or your 1915 act?

Mr. WILKIE. It is the experience which began in 1917 and carried on under acts amended from time to time until the final amendment of 1933.

Mr. McSHANE. Do you find it possible when half the damage, perhaps, has been done, through X-rays and physical examination by competent doctors to really find the pathology, say after an exposure of 7 or 8 years, in your average man?

Mr. WILKIE. We are very fortunate. We have what is called a silicosis referee board, composed of three experts whose finding and diagnosis of silicosis is definite and final and who pass upon every case of silicosis that comes before us. We have no case in which those men do not diagnose it as silicosis. They tell us it is not by any means easy, and in the early stage it is not possible, and it is only with the aid of X-rays that they are able to get a picture of the lung so that they can say definitely that this man has or has not silicosis.

Mr. McSHANE. Did you experience a flood of compensable cases under your silicosis act shortly after it went into effect?

Mr. WILKIE. Yes; I have a graph here which I will be happy to show you. For the first year or so it was terrible. It ran then for a while fairly level, then there is a hump, then down again, and now it runs pretty steadily.

Mr. McSHANE. For years I have looked to Ontario and other jurisdictions for light. I feel that when a commissioner becomes pretty well satisfied with his own act he is no longer a fit administrator.

Mr. WILKIE. I shall be very happy to show you the graph.

Mr. McSHANE. Thirteen years ago we began in our State a system of wet drilling, and today there is not a ton of coal mined where water is not put on the cutter bar, killing the dust at its source, but we still feel that there is enough that gets through to do a lot of damage. We did the same thing by putting sprays on our drills, so there is not a ton of ore mined in Utah today that is not mined under those conditions, and yet we know that we have a positive silicosis hazard. Water will not stop it. It helps.

Mr. LORENZ (New Jersey). Mr. Wilkie, you state that "As a prerequisite of compensation the Ontario Act requires 5 years' exposure to silica dust." Is there a statutory limitation within which to file claim after exposure?

Mr. WILKIE. Yes.

Mr. LORENZ. What is that limitation?

Mr. WILKIE. It is the standard one of a single year after he has retired from the industry.

Mr. LORENZ. With reference to your statistics, they are entitled "Pneumoconiosis and silicosis." Do you distinguish between the two?

Mr. WILKIE. Not for this purpose. We do for some purposes. They are so intermingled that you could not distinguish for the data. Pneumoconiosis is a general term; pneumoconiosis, from the Greek, means "a dusty lung." It does not matter what the dust may be. Silicosis means a lung dusty from silica dust. One is the general and the other is the specific.

Mr. LORENZ. Do the rates differ?

Mr. WILKIE. No; the rates are the same.

Mr. JOY (Oregon). I should like to inquire of the speaker just exactly how you established your original rate, and is your act compulsory or can it be rejected? To go back to the first question, my intent is to find out upon what basis and what line of reasoning you determine, for instance, that the rate aside from the regular mining rate should be \$2.41, or whatever it was, for the purpose of covering the silicosis hazard.

Mr. WILKIE. I cannot tell you how the original rate was established, but it really is not, with us, a matter of any very grave importance, because we established a preliminary rate and levy on that. If it is too much, we levy a reduced rate, but if it is too small we make a definite rate and increase it until it meets the requirements of the losses of the year. We put on, in every year, two rates, one provisional for the year ahead and one permanent for the year that we have just closed, so that if the losses go up or down our rates can vary accordingly. We try, however, not to have too wide a swing in the rates.

Mr. JOY. Is it compulsory?

Mr. WILKIE. Yes; absolutely.

Mr. NELSON (Wisconsin). Have you found in your experience, Mr. Wilkie, that uncomplicated silicosis is ever a disabling condition?

Mr. WILKIE. Yes; we have.

Mr. NELSON. I noticed the extremely short time of life of those persons who received compensation. I think the maximum average lifetime is 2.42 years in the stonecutting trade. Does that indicate most of those persons do have a terminal tuberculosis?

Mr. WILKIE. Yes.

Mr. NELSON. Do you find any cases of terminal pneumonia?

Mr. WILKIE. Yes.

Mr. NELSON. Are there some cases of uncomplicated silicosis included in these deaths?

Mr. WILKIE. Yes.

Mr. NELSON. Have you any idea how many?

Mr. WILKIE. No.

Mr. LORENZ. May I ask a general question? What was the result of the congressional investigation of the silicosis deaths in West Virginia? Does anyone know?

Mr. MATHEWS (West Virginia). I cannot answer specifically as to the result, because I was not interested at all in the investigation at Washington. Representing West Virginia, I want to say this: Unfortunately, the statements in the press and the picture of the whole thing were very much overdrawn and were not true. This arose from the drilling of a tunnel in the mountains in West Virginia, which was intended to divert the water of the river from its course, and that tunnel was not to be less than 25 feet in diameter at any one place, and its length was a little more than 3 miles. Approximately one-third of that was through solid rock, and they tell us that that rock was composed of about 99 percent silica. They were only a little more than 18 months drilling it. I think that it is true that there was perhaps not much precaution taken by the contractors, Rinehart and Dennis, of Charlottesville, Va.; but anyone can know that in the short time they were at that not very many people died of silicosis. Of course, that was a rush job. Anyone that wanted to come there got jobs, and the story about so many people dying from silicosis was absolutely untrue, and also the statement that the little town of Gauley Bridge was the village of the living dead is untrue, because it is only 40 miles from the city of Charleston, where I now reside, and I go there every 10 days or 2 weeks, and I think I can say that there is not a single case of silicosis in the entire village, and so far as we know there is not a case of silicosis in that territory, because a great many of the people who worked there went away at the close of the operation.

It will be of interest to you to know that at the time that tunnel was drilled there was no silicosis statute in the State of West Virginia. We had no occupational disease statute at that time, and we have no occupational disease statute at this time except one covering silicosis. Of course I got a number of requests from people who were interested in the congressional investigation as to the certain facts relative to how many were awarded, and I saw a long article in the newspaper which condemned the workmen's-compensation ad-

ministration for not allowing cases. But we could not. There was no application made but we did make a report. The facts are that out of that grew a great deal of interest in silicosis, because of the press. I remember a picture of a woman that came down here. They said she hitchhiked from Charleston to Gauley Bridge, and she went in the role of a newspaper woman. She wrote a great many articles. A great many were not true, and still perhaps some good came of it, and following it came that silicosis act that we have now in West Virginia. I notice one of the things that happened was that Dr. Harless, who lives in Gauley Bridge, was summoned before that committee, and he did appear, but many of the things attributed to him were not true, and he wrote in his letter to the commission that there was nothing to it, and as a matter of fact there was nothing to the investigation by the congressional committee other than the fact that it created a lot of interest in silicosis, and I think out of it have grown a great deal of interest and a great many beneficial laws. The medical profession has taken it up, and Dr. Sayers, of Washington, has visited West Virginia many times, and he has been very useful to the commission in taking care of this matter.

There is one other thing, if I may be pardoned. In West Virginia the coal operators (and you will understand that West Virginia is one of the largest coal-mining States in the Union) are not interested in silicosis, and I want to ask Mr. McShane, of Utah, if the coal operators are interested over there, if they subscribe to his fund.

Mr. McSHANE. They all, because of a compulsory law, are required to take compensation insurance, but they are not interested in silicosis unless they are driving a rock tunnel to get to their coal. But there is a coal-dust condition, and I am sorry the doctors are not here. Perhaps Dr. Hamilton can tell us something about it. We have actually had information given to us by medical sources that a certain amount of coal dust has curative properties. I am somewhat surprised to hear that.

Mr. MATHEWS. That is what the doctors in West Virginia tell us. I am interested because our silicosis is separate from the rest of the compensation law and is not compulsory, and the coal people will not join in. I should like to get some money from the coal operators if I could. They are planning on sending these fellows that work in the glass plants and sand plants to see if we cannot put them into the coal mines and cure them.

Chairman BROENING. These conditions, I know, are exaggerated, but I know our friend from West Virginia welcomes the opportunity to present this matter for the protection of the fair name of West Virginia, and the record, of course, will show it. It has had the effect of concentrating public interest everywhere on the evils of silicosis and the effort to bring about some remedial condition. May we suggest this, as a study, to the medical conference, with the hope that some day there may be a serum that will make for immunity.

Are there any other questions of Mr. Wilkie?

Mr. HARBAUGH (Oklahoma). In your Ontario act, for 5 years of exposure to silica dust, do you have any specification as to the concentration of silica dust?

Mr. WILKIE. No.

Mr. HARBAUGH. As to the number of particles per cubic foot?

Mr. WILKIE. No.

Mr. HARBAUGH. A gentleman here made an observation, and I should like to answer so as not to have the table misunderstood. It was observed, very properly, that the period between the allowance of the claim and the death of the claimant was short. But you must recollect that under our act we do not hear from the claimant until he has become incapacitated, and in many cases we do not hear of the claimant until after the death.

Mr. GREGORY (Ohio). Have you settled the diagnosis problem in silicosis?

Mr. WILKIE. I may say yes. There are difficulties, but they are not serious. You see we are not relying on the ordinary medical practitioner. As someone observed today, a very great authority, on this platform the ordinary medical practitioner is not well equipped for the diagnosis.

Mr. GREGORY. Do you resort to special panels of medical doctors?

Mr. WILKIE. All of the silicosis diagnosis is made by our board of three experts, who diagnose nothing but that. It is quite common to have a man present himself as a claimant and have the referee board say, "We find no evidence of silicosis now but we will examine him again in 6 months", and they keep following it up until either he shows silicosis or he does not. But they take this position and take it constantly: "We can't say he hasn't got it, we can't say he has got it, and we will examine him again later when the thing, if it is there, will have further developed."

Mr. LORENZ. Is this provision of \$40 per month pension for life to the widow of the deceased workman the provision on all fatal cases under the act, or just silicosis?

Mr. WILKIE. All fatal cases.

Chairman BROENING. If there is no further discussion, we will now hear from Daniel D. Carmell, assistant attorney general of Illinois, who will discuss third party subrogation suits.

Third Party Subrogation Suits

By DANIEL D. CARMELL, *Assistant Attorney General, State of Illinois*

Prior to the passage of workmen's compensation acts an employee who was injured through the negligence of a third party had a right of action against such negligent third party, usually for unlimited damages in nonfatal cases, and in case of death his estate or his next of kin could sue and recover from the negligent third party causing the injury which resulted in death up to \$10,000.

Compensation acts attempted to deal primarily with the relation of employer and employee. They set aside the old common-law system of rights and liabilities and methods of recovery for injuries received in the course of the employment and intended only to avoid the costly and long-drawn-out litigation which caused antagonism and disrupted friendly feelings that existed between employers and employees.

By these acts the employee was relieved of the necessity of proving that the injury he received while working was occasioned by the negligence of his employer. In return for this the amount which the

employee could recover from his employer as compensation was limited to a partial percentage of his weekly wages. The purpose of this was to secure for the employee immediate medical services at the expense of the employer and the compensation to supply the employee or his family with a part of his earnings during the period of his illness when it would be most needed so that he would not become a charge upon the public.

This paper deals primarily with the liability for injuries which were occasioned by the negligence of a third party. The laws which permit a recovery against such negligent third party vary to such a great extent that they cannot be accurately detailed in summary form, but, generally speaking, as pointed out by Professor Dodd in his Administration of Workmen's Compensation, they may be roughly grouped as follows:

1. In Wyoming, where there is a legal liability to pay damages by some person other than the employer, "such employee shall be left to his remedy at law against such other person, and compensation shall not be payable under this chapter."

2. In Missouri the employer is under a duty to pay compensation to the employee and is subrogated to all rights of the injured employee or his dependents against the third party, and his recovery is not limited to the amount payable as compensation. Any amount recovered by the employer in excess of the compensation paid by the employer, after deducting expenses of making the recovery, is paid forthwith to the employee or his dependents as advance payments on account of future installments of compensation. North Carolina has a similar plan, except that the employer may retain such of the money as is chargeable to future compensation, and that the employee may bring an action against the third party if the employer does not do so within 6 months.

3. In a number of jurisdictions the injured employees may elect either to take the compensation or to sue the third party, but election to sue the third party relieves the employer of all liability.¹ If the employee elects to take compensation, then the employer is subrogated to the employee's rights against the third party, but must pay the employee any excess that may be recovered over the amount of compensation and expenses. In Massachusetts the employee may, upon notice to the insurer, discontinue an action and take compensation if such does not destroy the insurer's right to enforce liability. If the insurer then sues the third party, four-fifths of the excess goes to the employee and the insurance carrier may make no settlement with the third party by agreement without approval of the Industrial Accident Board.

4. In another group of States the provision as to suits by employer or employee is similar to those in the third class, with the exception that if the injured employee elects to sue, the employer remains liable for any deficiency between the amount of recovery and the compensation provided or estimated.²

5. In a number of States the acceptance of compensation does not affect the right of the injured employee to proceed against the third party to recover damages for such injury.³

As heretofore pointed out, workmen's compensation contemplates the immediate medical services for injured employees and the certainty and immediateness of the payment of his weekly compensation. Using this as a test, the provision of a statute with reference to

¹ Florida, Hawaii, Idaho, Maine, North Dakota, Texas, and Vermont. In Kansas the employee who does not elect within 90 days is limited to compensation. In North Carolina the employee may bring an action if the employer does not do so within 6 months. The Massachusetts, Michigan, and Delaware acts do not permit recovery against both insurance carrier (or employer) and the third party. See also the Maryland and the United States employees' acts. Under the South Carolina act of 1935 "the procurement and collection of a judgment in an action at law shall be a bar to proceeding further with the alternate remedy."

² See Arizona, Colorado, District of Columbia, Federal Longshoremen's and Harbor Workers' Act, Nevada, New York, Oregon, and Washington.

³ Alabama, Alaska, California, Connecticut, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Minnesota, Nebraska, New Mexico, Pennsylvania, Rhode Island, South Dakota, Tennessee, and Wisconsin. Amendments of 1913 to the Montana law also bring that State within this group.

third-party liability, which gives the employee a right only to sue for damages, as in Wyoming, or statutes which permit an election which relieves the employer of all liability to pay compensation, or relieve him of the liability until after the results of the suit are known, fail to accomplish this purpose.

Professor Dodd notes in his book that groups 1, 3, and 4 do not meet the first and most essential test of an adequate compensation statute, and that the States noted in groups 2 and 5 properly place an immediate duty upon the employer with respect to medical services and compensation payments, irrespective of third-party liability.

Many States provide that it shall be the duty of the employer to carry on the litigation against the third party and pay the excess to the employee. Strong objections to this plan have been voiced by those who contend that the employee, in all cases, should have the right to bring the suit against the third party, with adequate protection to the employer for the amount that he has paid, because they feel that settlements around the amount of money that the employer or the insurance carrier had expended, tempts them to want to end the litigation at that point, to the sacrifice of the employee's rights.

Incidentally, in Illinois it is the general understanding among companies that on the subrogation suits if they can settle for one-half the amount that they paid out in compensation without litigation, they think they are driving a pretty good deal.

Massachusetts has attempted to deal with this situation in that it prohibits settlements without the approval of the industrial accident board. Wisconsin has attempted a plan which roughly provides that the employee may sue and then the employer may join in the action, or the employer may sue. After paying a claim from the amount recovered, reasonable costs are first deducted. The employee then receives one-third of all that remains. Two-thirds is applied to reimburse the employer for compensation paid, or payable, if sufficient for that purpose, and if there is an excess, it goes to the employee. If the amount recovered is not sufficient to reimburse the employer from the two-thirds, the employer bears the loss. The purpose of this plan is stated to be that of giving the employee initial control of the third-party proceedings and to create an incentive in the employer so that he may aid in obtaining a greater recovery, if he is to obtain full reimbursement. Settlements of third-party claims, and distributions of proceeds therefrom, must have the approval of a court or the industrial commission.

In Illinois there is a curious situation in respect to third-party liability, in that there is a provision in the act that if the third party who causes the accident is also subject to the workmen's compensation act, the only recovery permitted is by the employer, for the amount of compensation and expenses that he paid the employee, and there can be no excess recovered above that amount.

On the other hand, if the third party is not subject to the act, or has not elected to come under it, the employee may sue for unlimited damages, but the employer has a lien upon the amount of compensation paid.

In dealing with third-party liabilities, before a recovery is permitted, negligence must be proven. The lack of necessity of proving such negligence which prompted employees to accept a smaller amount in compensation is not present. Why then should a third

party be permitted to have his damages limited, merely because he happens to be subject to the workmen's compensation act, when his negligence injures a person who is not in his employ but whose employer is also under the act? In such cases the employee is left without remedy to be reimbursed for his full wages for the pain and suffering, or for the permanent disability that might result from the accident, for which he is only partially compensated under the workmen's compensation act. The entire situation was well summarized by Professor Dodd, on page 615 of his book, when he said:

Third-party liability provisions have, on the whole, been based too much on the old theory of negligence, and have emphasized the liability of the third party at the expense of prompt and adequate compensation to the injured employee. Such emphasis causes the defeat of prompt and adequate compensation in many cases, sacrifices a large number of injured workmen to the few who may obtain large judgments, brings payment in many States at a time too late to meet the greatest need of the employee and his family, and brings such payment, if any, in a lump sum not as well adapted to the employee's need as the periodical payments normally provided by compensation laws. It is something of a travesty that the certainty of payment of compensation is in many States less where two parties—employer and third party—may be held liable than where the liability is limited to the employer alone.

DISCUSSION

Chairman BROENING. Thank you, Mr. Carmell. Does the paper suggest any inquiry?

Secretary ZIMMER. I should like to ask Mr. Carmell if he definitely recommends a statute whereby a worker injured through the negligence of a third party should retain in full his compensation rights as well as his liability rights against the third party.

Mr. CARMELL (Illinois). Yes. Primarily, the duty should be on the employer to pay the compensation in every instance where his employee is injured and is entitled to compensation under the State law. The contemplation of compensation legislation had not in mind, in my opinion, anything with reference to the right of the employee suing the third party other than to merely protect the employer for the amount that he has paid and to be entitled to be reimbursed therefor.

Secretary ZIMMER. Of course there would be circumstances like this: Suppose a clerk in this hotel were sent over to the bank to make a deposit. Going across the street, he was run down by an automobile. In that event, under your theory, the man would be entitled to both compensation benefits and to any liability action against that third party.

Mr. CARMELL. That is correct.

Secretary ZIMMER. If, however, when going to the same place on purely a private mission, he was hit by the same machine, he would then only have his rights as a part of the general public under liability.

Mr. CARMELL. That is right.

Secretary ZIMMER. I am not arguing against it, but from your résumé of the acts, your suggested type is very unusual, is it not?

Mr. CARMELL. It is unusual in one respect. Prior to the passage of the law there was no compensation act. As I pointed out in the paper, the intent of the act was to attempt to relieve the antagonism

between employers and employees that results from long-drawn-out litigation as the result of injuries received while working. If that was the primary intent of the purpose of passing these acts, and in return for limiting the amount of damages he was entitled to recover in any case he was hurt while working, that did not change in any respect the law which penalizes a negligent third party who injures a man. The incentive of damages against a man who strikes a third party with his automobile is to penalize him so that he will be more careful the next time. I cannot see the relation between compensation and the right of third parties, other than that the employee should be guaranteed his compensation in every case and that the employer should be guaranteed the amount that he has paid out if the third party is paying any money to the employee.

Mr. THARP (Kansas). What kind of a remedy would you suggest where the act provides that the acceptance of compensation by the employee automatically acts as an assignment of the cause of action against the negligent third party?

Mr. CARMELL. To the employer?

Mr. THARP. Yes.

Mr. CARMELL. I think the Kansas act provides that if he does not elect within 90 days, he takes compensation.

Mr. THARP. Then it goes ahead and says that the cause of action may be prosecuted, in the name of either of them.

Mr. CARMELL. That is right.

Mr. THARP. And the settlement shall be made as their interests may appear. Then the court of last resort holds that the assignment of the cause of action means just that. He assigned all interest; and any recovery, regardless of the amount, goes to the employee.

Mr. CARMELL. Take the situation in New Jersey, where they paid something like \$15,000 in compensation, and the worker then sued at law, and I believe recovered about \$23,000, and the high court of New Jersey held that the employee did not have to pay back the first \$15,000. Of course, we should not be held responsible for the fallacies of courts and their interpretation.

Mr. THARP. I was asking what you would suggest as a remedy.

Mr. CARMELL. My suggestion of a remedy is that the statute in all cases should provide that there shall not be an election as to whether the employee wants to sue or not, but he shall take compensation in every instance. If there is a right of action against the third party, whether the particular statute holds that the employer should sue or the employee should sue, of course, is a matter of local concern, but the right should be there, with adequate protection to the employer to recover the amount he has paid out. If settlements are to be permitted, they should be permitted only with the consent of the industrial commission, so that this body may determine whether an adequate amount is being paid, and the proper fees may be fixed by the commission.

Chairman BROENING. In any instance, the employer should have a lien to the amount of his payment?

Mr. CARMELL. Yes.

Mr. McSHANE. I understood you to say that your judgment was that the employee, by the fact that he accepted compensation, should not be barred from suing at law and getting and keeping the entire amount of the judgment. That is what I understood you to say to Mr. Zimmer.

Mr. CARMELL. No; I said that the employer should be protected for the amount that he paid out, and the excess should go to the employee.

Chairman BROENING. He merely cited an instance in New Jersey where that happened.

Mr. McSHANE. Have you incidents of this kind? It has become a practice in Utah, when a man is injured by the negligence of a third party, that he assigns or subrogates his right of action to the party who has to pay, be that a self-insurer, an insurance carrier, or the employer. We have now this practice, that on an agreement between the employer and the one who has to pay, there is a reassignment, and they permit the employee to sue and then split a recovery. We have a case in court now involving \$30,000.

Mr. LORENZ. Since Mr. Carmell referred to the New Jersey statute and the decision, I should like to refer to the digest of State and Federal labor legislation, the section under New Jersey, which has an amendment to the law which was approved June 22, 1936, allowing the employer, now the carrier, to get back what they pay.

Mr. CARMELL. I did not intend to say that was the law today but cited a case that happened.

Mr. LORENZ. I wanted to say that carriers and lawyers have attempted several times to get this law across in order to cure the situation, which I will say in the minds of those interested was a bit unfair. After all the employee was entitled to his compensation, and if he succeeded in getting that, he should not be allowed to keep the excess in the way of the common-law recovery.

Mr. HEATON (Florida). What would happen in a case where the employee elects, and recovers in such an action, and then neglects to pay the medical or hospital bills incurred because of his injury?

Mr. CARMELL. Do I understand that the obligation is on the employee to secure the medical aid in your State?

Mr. HEATON. I am asking what would be the correct procedure in that case. We have had occasions, by way of explanation, where the employee recovers against the third party, and the hospital and doctors have had some trouble in getting payments for their services from the employee after recovery.

Mr. CARMELL. The reason I asked that was not to be personal, but most acts provide that the employer shall furnish the necessary medical service and pay the compensation so that the two costs are included in the one, but in those States where the employee is permitted to choose his own doctor, whether at the expense of the employer or at his own expense, if that doctor is not paid, I think the act should take that before a release of judgment can be had, or before settlement can be had. Adequate proof should be presented to the commission that those bills are paid or will be paid out of the settlement.

Secretary ZIMMER. I am glad Mr. Heaton brought that up. That was a very serious problem in New York a few years back. The big hospitals in New York City were complaining that they were "gypped" out of many thousands of dollars because of the fact that injured workers were brought in for care and subsequently decided to sue, instead of collecting compensation. Unfortunately, in New York, if the injured elects to sue, he has no rights under the Compensation Act, including medical rights. So the hospitals, I believe, now have persuaded the legislature to pass an amendment to the Civil Practice Act, which gives them a lien on any judgment that may be obtained in the civil suit to protect themselves. I think that is the only way you can do it in those States that provide for an election to sue.

Mr. HEATON. Does that apply to doctors as well?

Secretary ZIMMER. I believe it does not apply to medical practitioners but only to institutions. I was in New York when they wanted to include a similar estoppel against the industrial commission to award compensation unless it cleared with them as to the payment of those bills. There was a practical difficulty in attempting to do any such thing as that, since it would mean endless delay in getting compensation payments. We opposed it, so far as there was any reference to compensation payments.

Mr. CARMELL. As to the first statement I made, that the employee must take compensation in every instance, and that the excess recovered from the employer is then distributed in accordance with the statute under approval of the industrial commission, at that time the question of outstanding bills could be taken up before any approval is given to any settlement.

Mr. HEATON. I realize that is probably the right way, but it is not always possible. The fact is that our law is drawn in such a way that the election against a third party relieves the employer from any liability, and in some cases the employee fails to recover. Then we have this situation: The doctors and the hospital complain to the commission, saying their services were obtained by order of the employer, yet the election relieves the employer of liability. I am wondering what is probably the best solution for such a problem.

Mr. CARMELL. You will also find when it comes to the question of how much a doctor is entitled to that he charges a much larger fee if there is a common-law recovery in a larger amount than there is on compensation, and that rather complicates the picture in those States where they are permitted, after they lose against the third party and come back to the commission many years afterward, when the witnesses are gone, and they attempt to prove their case at that time.

Chairman BROENING. That is not confined to the doctors.

Mr. CARMELL. Of course, the lawyers are all right. I am here speaking in defense of the legal profession.

Chairman BROENING. That is very commendable. The laborer is worthy of his hire. Are there any other inquiries? Of course, the compensation law is simply for the purpose of protecting the servant. The servant, of course, becoming disabled in and about his

master's business, is entitled to receive compensation during the period of his disability, if he conferred no benefit or rights on a third party. The surrendering of certain rights upon the employee, in order to accept compensation provided by the statute, to be paid by the employer or the insurer, certainly did not mean the surrender of any right that he might have against third parties not occupying any privilege of relation either between the employee or the employer. In our State (Maryland) the employee must make his election, either to proceed under common law against the third party or to file his claim with the commission. After having filed the claim, the employer has a period, within 2 months after the award by the commission, in which to institute suit against the third party. And if there is any recovery, he is entitled to retain the amount of such compensation as might have been awarded for the benefit of the employee, together with any costs, and any excess, of course, is paid over to the employee. If the suit should be instituted by the employer and there is a settlement out of court, it cannot be approved without the action of the employee. There have been instances where the injured employee has refused to approve a settlement unless he took the greater portion of the whole amount, sometimes requiring the employer to lose a part of the amount of money that he might be justly entitled to by way of reimbursement.

[Meeting recessed.]

September 23—Afternoon Session

F. W. Armstrong, Chairman, Nova Scotia Workmen's Compensation Board, Presiding

President BAKER. We are trying an experiment here this afternoon, in that we are having a "question box" period. It seems as if the medical meeting has stolen a good many of the delegates to this convention. Last year and the year before I heard a number of delegates to these conventions make the statement that they thought we ought to have more opportunity for a general discussion of topics that the members themselves would like to see discussed. Of course, we try to accomplish that in constituting a program for these conventions, but in order to be sure to answer that demand we have saved one full half day here for a question-box period, and I have been asking for questions and we have a few, but I must confess a very few questions in the question box for discussion here this afternoon. I was in hopes that we could make a very fruitful afternoon session out of this, and take the opportunity to discuss matters which we might have found that we had not been able to go into thoroughly at the previous sessions. I am happy to call upon Fred W. Armstrong, of Nova Scotia, to preside at this meeting and to extract the questions from this question box and evoke such discussion as you gentlemen feel would be beneficial in the way of a contribution to this session.

Chairman ARMSTRONG (Nova Scotia). There is really nothing for me to say at the present time. I am very sorry that such a small number are present, but what we lack in quantity we will make up in quality. Here is the first question:

"What practical methods have been developed for locating and dealing with the claimant who alleges an accident he did not receive or who alleges disability far beyond that which actually exists? This class is the greatest threat to the honest claimant; an unjust and very real cost to the employer and society; and probably the greatest source of difficulty for administrative boards." That is a pretty big question.

What I understand from this is that there are cases that come up, and the commission members are of the opinion that this man did not meet with this accident, and the commission have in their power to make all inquiries. If they do make inquiries, and the doctor finds that the man has an injury, and the man swears that he was injured on the work, I take it that that is the question. What are you going to do in a case of that kind? All I can say, as far as the jurisdiction I come from is concerned, is that we put them under oath, on the stand, and we try to break down the story they are telling if we think they are incorrect. I do not believe, if a man comes before the commission and swears under oath that he did meet with an accident, that we should always accept his word. I think it is largely a matter of intuition as to what weight you will attach to the sworn testimony of a man who alleges he met with an injury.

Mr. GREGORY (Ohio). There are two questions there. Does that really relate to what measures should be resorted to in prosecuting one who makes a false or a fraudulent claim?

Chairman ARMSTRONG. We are discussing now the question of a man who alleges an accident that he did not receive. The other part of the question relates to a malingerer. Do you want to speak to the first question, Mr. Gregory?

Mr. GREGORY. I suppose the first question resolves itself into what measures States or Provinces resort to, in cases where the claimant endeavors to present and have allowed an amount on a fraudulent claim. I would be very glad to learn what is the practice in other jurisdictions. We have some laws in Ohio whereby we can prosecute anyone who endeavors to obtain money from the fund fraudulently.

Mr. LANGLEY (Idaho). Have you ever prosecuted a man for making a false claim?

Mr. GREGORY. We have not as yet. Our law in that respect is comparatively new. Originally we did not have any law unless it was under the general provisions as to their obtaining money under false pretenses. There has been no prosecution so far.

Secretary ZIMMER. I think there are three questions here rather than two. The first question refers to locating the claimant. Speaking first on what to do in cases of fraudulent claims, a few years ago an insurance company was faced with a claim for an accident that developed in the course of a hearing to be a fake. They are not very frequent, but they do occur. They wanted the department of labor to initiate a perjury charge against this man. I talked to the district attorney about that and gave him our position. The department of labor was willing to collaborate with the carrier, furnish all the records, and go before the grand jury for the insurance carrier. In the first place, as we all here know, perjury is a crime that is almost impossible of conviction. Next to arson, I believe they get the fewest convictions for perjury. That is what the district attorneys have told me. We were willing to join in but were not willing to start a criminal action for perjury, because if conviction failed, what position would that leave the State in?

The same thing happened in a subsequent instance, and when we suggested that the carrier proceed, they said, "No, we don't want to do it." When I asked why, they said, "Just as soon as the jury knows an insurance company is prosecuting a man for a fake claim, it gives us a bad reputation, and out the window goes the possibility of conviction." Within my own recollection no companies have joined in presenting a perjury charge. I have always thought that a department should guard the good name of its administration by doing everything it can legitimately do to discourage false claims, short of instituting criminal proceedings.

That is a thing apart from the exaggeration that is referred to in the question, is it not? What are you going to do with the claimant who exaggerates? I have a definite thought upon that. In the first place, my own judgment is that the assertions by insurance carriers and employers that a great proportion of compensation claimants are malingering, or simulating disabilities, are not true. I do not think that anybody here who has been long in this work will conclude that more than 5 percent of cases that you have before you are actually malingering cases. It is easy to draw that conclusion,

because of some conspicuous individual case that prejudiced you against the whole system, but I am convinced of this, that there is but little more exaggeration in the ordinary compensation claimant than there is in the ordinary patient who goes to a doctor. Many people when they go to a doctor exaggerate their complaints. All doctors know that. It is perfectly natural, therefore, when there is any money at issue to go a little beyond the ordinary tendency to overemphasize our aches and pains. But I never sympathize with the wail of insurance companies—and I have been listening to it for 15 years—that practically every claim they get is a fake. I do not believe it at all, and I do not believe most administrators feel that way, either.

Mr. McSHANE (Utah). I think that the type of case referred to here, about which inquiry is made, would be properly styled if it were called a "stale" case, one that comes in at a considerable time after an accident, which it is now alleged results in disability. I also agree with Mr. Zimmer that very few of the cases are really cases wherein the claimant is dishonestly alleging a disability greater than that which he has actually suffered. I have found claimants quite fair in my years as an administrator, but occasionally we find one who is really bad. But when those cases come up, a hasty judgment is not indicated, because no matter what our first impressions of the case may be, subsequent developments may cause us to change those impressions, and that is the kind of case, I believe, where the most painstaking investigation and the greatest amount of charity are needed.

I want to refer to one case in my experience that convinced me as to the soundness of the position which I have just stated. There was a Greek boy in our State who received an injury to his knee. That is the largest joint in the body. There was no doubt about his accident, no doubt about a healing period. There was no doubt about some degree of permanent partial disability following the healing period. He was examined by three orthopedic surgeons and was found by them to be suffering a disability of approximately 15 percent. This he was paid for.

When he first came to us he was above the type of his nationals. There never was a time that he was not considerate about everything that we did to him. He was wearing an \$80 suit of clothes when he came in. That man came back after he had received his 15 percent and said, "Gentlemen, I can't work on this leg."

We had him examined at least five different times, with the result practically the same as that following the time he went to the orthopedist who examined him.

It was 2 years after his injury that he came in, in the same suit of clothes, threadbare, his shoes run down at the heels; and when he came in and told his story, which was the sixth time that he told it, appealing for help and aid, I had no more doubt up to that minute that that man was faking a disability than I have that I am here today. But when I saw how he had run down it started some mental processes working that had not been disturbed before, and I sent him to a man who was also an orthopedist, who had never seen him, and I said: "Dr. Allen, I don't know, but I am afraid in this case an error has been committed. I am afraid the commissioner is

wrong. I am afraid that nine distinguished doctors, members of your profession, are wrong. I wish you would give him a very careful and painstaking examination, make such X-rays as you deem advisable; and if you wish to put him in the hospital for a few days of observation, do so; but we want to know what is the matter with him. We want him compensated."

He made the examination, and in 2 days he reported back: "There is a definite fatty tumor in the popliteal space under the knee that is disabling and ought to be removed. I suspect pathology in the knee itself and recommend exploratory examination."

I attended the operation, and he took out of that man's knee joint a mass that resembled, on a small scale, a bunch of tangled barbed wire, and he took out a fatty tumor as large as an egg from the popliteal space. The operating surgeon said: "That is enough to cripple any man. I am surprised he was able to go on that leg without crutches."

What happened? That man, after those 3 years of suffering and 2 years without receiving any compensation, went crazy while he was in the hospital, got up and ran away, and now he is in the mental hospital of our State, and it is the commission's fault and the medical men's fault.

Now, that is one case. I want to tell you it shocked me, and I had no more doubt in my mind for a period of 2 years that that man was faking his claim than I have that I am here today. I can enumerate other cases, but I will not; but I will say this: We cannot be too critical in our judgment and too cocksure that we are right about this, and those cases are cases that require the best thought, best study, and best judgment that we have to give as administrating agencies.

We have a case now pending. I do not know whether we can make it stick, but we have reason to believe that a man has lied deliberately in his allegations as set forth in his claim. He is not required under our law, and I assume under yours, to keep his evidence within the pleadings. That case was heard. It was run down, and we have reason to believe that the man deliberately perjured himself. They did this: The attorney for the defendants, in examining him, the first thing, read to him and his witnesses our statute on perjury. I do not know whether that would be permissible in some of your States, but we permitted it in this case. I cannot say that I am heartily in favor if it. At the conclusion of his story there was a continuance granted, and that continued case will be heard sometime; and if we have been properly advised, they will almost be able to show that the defendant was not there at the time claimed, that the witnesses were not there. So whether we will be able to get away with a perjury charge in order to throw the brakes out on other cases of this kind, I do not know.

I am going to relate another case. I was not on the board at that time, in the early days, about 19 years ago, when a man was killed. A woman rushed in, her face bathed in tears, her body shaking with emotion. Her John had been killed. I think some fake marriage certificate was produced, and then, without any experience and with mighty poor judgment, she was granted a lump-sum settlement and she disappeared. She got about \$2,500 in a lump sum, and it developed that she never even knew the man.

So we have got to watch cases of that kind. These "framed cases" are something that are always a challenge to make us give the best that is in us and not be too quick on the trigger in passing judgment.

Mr. BROENING (Maryland). The question, I understand, is merely what to do with the fraudulent claim. I believe that the commission, if it is satisfied from the evidence that the claim is not well founded, and that it is based on falsehood, should merely submit the matter to the States attorney or the district attorney for such action as that office might deem the evidence in the case warrants. I think then it discharges its duty. Beyond that I do not think it should go.

Mr. MATHEWS (West Virginia). In West Virginia to secure, or attempt to secure, compensation fraudulently is a misdemeanor under our act. The penalty is a fine not exceeding \$500 or imprisonment not exceeding 12 months, or both, at the discretion of the court; and if the person so convicted is receiving compensation from and after such conviction, his compensation should cease. We also have the same general criminal statutes relative to perjury, obtaining money by false pretenses, and so forth, as are enforced in other States. It is our policy to furnish the facts in case of violation to the proper prosecuting officers in the county wherein the crime is committed and leave the matter of procedure and the responsibility of the prosecution with those officers. If we are asked to suggest, we usually request a prosecution under the Compensation Act. We take the position that it is not the purpose of the commission to prosecute crime but to administer the compensation law, and that when we have furnished to the proper authorities the facts we have fully discharged our duties in that regard.

We had a case of a widow who remarried. Under our procedure we require these widows each month to send in a card, and on that card they state that they are not married. We discovered recently that this widow had been married a long time. This was the procedure: A commissioner sent his representative to the county seat wherein this widow lives, with all of the facts, to discuss it with what we call the prosecuting attorney, in many States called the State's attorney. The prosecuting attorney asked us what we wanted to do about it. The representative of the commissioner was instructed to say to him that it was purely a violation of the criminal statutes, that he was a representative of the State, and the commissioner desired to give him the facts and let him proceed as he chose in the matter. After he had received these facts he asked under what statute the commissioner preferred that this prosecution should be had. Under the instruction of the commissioner, he was told if there was any choice in the matter, as far as we were concerned, we were more interested in the prosecution under the statute that provided a penalty for obtaining compensation under false pretenses. He had the evidence that this woman was guilty of perjury.

The same thing is true in another county, where a pleading was brought in to the commissioner a few days ago, stating that a man was permanently and totally disabled. Shortly after that was filed (it was signed by the attorney and, I think, the attorney's brother and the claimant) word came to the commissioner that this man had been employed for 2 years. Of course, that also went back to the prosecuting attorney of that county with the information, also with

the information that it was up to the lawyers to do what they chose with the attorney who had made this false representation, and that all we were interested in doing was to furnish them the facts.

I merely make that statement to show that is the way we operate in West Virginia. We do all we can to get a report of these accidents as soon as possible after their occurrence. While we do not try to penalize the claimants too much about it, we give them to understand they must report to us.

Mr. McSHANE. Do you furnish the attorney a transcript of your proceedings in the matter?

Mr. MATHEWS: Yes.

Mr. McSHANE. We follow, so far as we are concerned, doing what West Virginia does, except that we transmit all the record to the county attorney, saying, "Here are the facts."

Secretary ZIMMER. I am glad you brought that up, Mr. Mathews, because I think in most of the State statutes they have the same provision that you have in yours and exists in New York, namely, that a fraudulent or false statement in support of a claim renders the person guilty of misdemeanor. Only 3 or 4 years ago a carrier came to me to proceed against a claimant who had made a gross misstatement. He said, "You enforce all of the provisions under the Workmen's Compensation Act, do you not? That is your job."

I said, "Yes; that is right."

"Why is it not your job to enforce the section against false statements?"

I said, "There is a lot of logic to that, and I am willing to proceed. You go up and talk to the deputy attorney general who is assigned to our department to prosecute it."

"All right", he said.

The deputy attorney general called me and said, "That is all right, Mr. Zimmer, I will take this case over to the court and prosecute this fellow for a misdemeanor, but you will have to sign the information."

I said, "Is that so? Well, I am not going to sign the information."

They had a lot of shrewd lawyers in that town. If the court acquitted the defendant, who thereupon sued me for malicious prosecution, who would pay the damages?

Mr. BROENING. You would have to employ counsel.

Secretary ZIMMER. Yes; and that would be my own responsibility and personal cost, both for lawyer and judgment.

Mr. MATHEWS. I want to tell you another experience we had in West Virginia, quite a recent one. We discovered that a widow had been married for some time and was still collecting compensation, and I think we had paid her about \$200 or \$250 after she was not entitled to it. A representative of the commissioner got this information, and the commissioner sent out an inspector, and, of course, he got the instructions before he went. He said, "What do you want? Do you want this turned over to the prosecuting attorney?"

I said, "No; I want you to go and talk to this woman and her husband and tell them we want that money back, and see what they do, and make arrangements. If the prosecuting attorney wants to handle it, that is up to him." I did not think about their having the

money ready, and I said, "Do not be too hard on them. Give them time to pay it."

He came back in 2 or 3 days and said, "I have your money."

I said, "How did you get it?"

He told me that the man said to him, "Well, we will get your money. How long will you give me to get your money?"

The representative said, "A reasonable time."

"Would 6 hours be long enough?"

"Plenty."

The fellow came back in an hour and a half and had the greenbacks, and we were paid off. It was an interesting thing to me. Of course, it was, perhaps, too liberal, but I did not say any more about it.

Chairman ARMSTRONG. In Ohio and West Virginia and Nova Scotia we have no carriers. We have a State fund. That alters the question that you bring up. I do not think that with the State fund the commissioner can get out from under by saying they will not prosecute.

Secretary ZIMMER. Do you prosecute?

Chairman ARMSTRONG. No; we have not. I think the duty there is for us to prosecute. In your case the commission had paid over no money. You were not injured in any way. But in the case of West Virginia or Ohio or Nova Scotia we had the money and our obligation would be much stronger than yours.

Secretary ZIMMER. The fact that you do not prosecute indicates you are a little bit careful about making it criminal.

Chairman ARMSTRONG. Yes; we are very careful. It is something to be hesitant about doing, but for a different reason than yours.

Mr. McSHANE. I think this is important. I should like to find out how the other jurisdictions handle this matter. In 1924 we had an explosion in one of our mines in which 171 lives were lost. We had about 10 cases that we believed to be "phony." The cases were pretty well bolstered up by testimony taken by deposition. We did not believe that those depositions were genuine. We denied those 10 claims, and they all hung on this one point: "There is positive evidence here in deposition form that the claimant was a relative, a mother, or sister, or aged father, to whom the deceased was making contributions and from whom the claimant expected those contributions and upon whom he relied for his maintenance and support." There was nothing to contradict that evidence, but we denied the cases. It went to our supreme court, and Judge Frick, who was then chief justice, since deceased, wrote an opinion in which he held against the present chief justice, who was the attorney. He pressed the claim, and the attorney replied: "There is no evidence to the contrary, and you have some evidence supporting the claim. As a matter of law you must support."

Judge Frick said, and it was the unanimous opinion, that "we do not have to believe the testimony, though there is no contradictory testimony, if from our examination of the record there appear to be sufficient infirmities in the record itself."

That is the law in Utah at this time, and I am wondering if that particular point has been raised in your jurisdictions and what the rulings of your courts have been.

Judge Wolf, the now justice of our supreme court, rested on the point: "Here is positive evidence of dependents' relationship. As a matter of law you must award it." And he asked the court to direct us to do so. The court held with us on it.

I am just wondering what the situation is in your jurisdiction.

Mr. Joy. Mr. Chairman, I think this is about the best answered question I ever heard asked, so there probably should not be much more reply made, but I should like to make this suggestion to those asking the question, that if they would follow the principle of studying that case to the best of their ability and coming to their own conclusion and then standing pat, they will have done all that is within the power of the commission to do. I know that is the principle upon which we operate, that regardless of what may be said or done or thought in the privacy of our own office, we sit down and consider the case from all angles, to the extent of our ability, and if we make up our minds that the case is fraudulent we deny it, and that is that. The claimant can go just as far as he wants to, and that is still that. He may beat us in court, but he seldom does.

We also have a State fund, by the way. You failed to mention the State of Oregon. In the matter of repaying to the commission any fund paid out on fraudulent claims, it is within the power of our commission to collect by due process of law. There is also a provision in our act that provides for the prosecution and imprisonment of those guilty of causing self-inflicted injuries, of which there is one case on record. We have a case right now, quite similar, wherein I am convinced from evidence at hand, without going into detail on it, that it is a self-inflicted injury, the severance of a thumb. We have denied the claim and stopped payment. This claimant had received some \$300 or \$400 already before we became convinced and had evidence submitted that proved to us, to our satisfaction, at least, that it was a self-inflicted injury. We immediately stopped payment. Incidentally, there is no chance of recovery. Therefore, there will probably be no prosecution. In that case the man decided, after a long wait, to go to court and sue the commission for the balance of the presumed compensation fund due him.

Rounding up a general answer to that question, use your good judgment, study well your own conscience, and you will know in your own mind and your own heart whether they are on the square or not. Nobody else can tell you that. If you are satisfied in your own mind that you are right, stay with it, and let the future take care of itself. If the evidence has convinced you to believe one way and convinces the jury in another way, there is nothing you can do about it.

Chairman ARMSTRONG. Have we pretty nearly exhausted that question? These are the comments of the person asking the question: "This class is the greatest threat to the honest claimant; an unjust and very real cost to the employer and society; and probably the greatest source of difficulty for administrative boards." I guess we all agree with that. There is a problem there, but, as Mr. Joy, from Oregon, said, we have to hear the evidence and decide the point ourselves, and stick to it. If we are wrong, it is up to them to show us.

Mr. GREGORY. Just by way of suggestion, there is this difficulty about entangling ourselves in personal liabilities. I do not know

how it is in other jurisdictions, but to avoid that question coming up in Ohio, where we have a case of that character, we refer it to a grand jury for indictment or for the prosecuting officer of the county to file an information on, on the part of the officer. That obviates in most instances the danger of one raising the question, who is a representative of the commission or board, and having to assume any private obligation in the event of any adverse decision when the case is tried. That is the plan we are using in Ohio.

Mr. BROENING. Mr. Chairman, I cannot see much difficulty here, no more so than a judge in a court of equity. We had that experience where, during the trial of a domestic case in which the claimant was claiming a divorce, the judge felt that somebody was committing perjury, and he submitted the evidence to the prosecuting officer, which in our State is called the State's attorney, whereupon the State's attorney said, "Do you initiate this prosecution?"

"No; I am not initiating anything. I am merely submitting to you as the prosecuting officer of the State the facts that were presented in our court for such investigation, because if there has been a violation of the law, and there has been an offense against the peace and dignity of the State, it is your duty to ascertain, and if the facts justify it, to set up in operation the necessary machinery."

That is all we have to do. We submit the facts. After all, we are convinced. It is not against the commission, it is not personal in its nature, but a violation against the law of the State, against the peace and dignity of the State, and it is up to the officer charged with that responsibility to investigate and determine whether the peace and dignity of the State has been disturbed to such an extent as to warrant the prosecution of the individual guilty of it.

Mr. HEATON (Florida). I have been very much interested because of the fact that our first year's experience brought into Florida an influx of professional compensation claims. We had a number of minor cases, but finally one came along alleging that an injury had been suffered in the course of employment as a cement finisher. The man had two trick knees that seemed to lock on him at certain times, convenient times, by a misplaced piece of cartilage, in some manner or other, and we spent about \$500 in medical aid for this fellow, and the improvement was very slight, if any at all. I personally investigated the case and recommended that an operation be performed on both of these knees. He absolutely refused to undergo such an operation, necessitating, of course, further investigation, and, to make a long story short, we found that this same man had been paid compensation for these same knees in 1931 in Illinois, 1933 in Indiana, 1934 in Tennessee, and he was making this claim in Florida during the past year. It was little wonder that he refused to undergo the operation. He possibly made more out of those two knees than he made as a cement finisher.

Our solution was this: I personally prosecuted the man for fraudulent claim, and he is now doing 12 months' time in our State penitentiary. I, perhaps because of my inexperience, did wrong. But I took the chance of having suit brought against me had I failed in my prosecution. Luckily, I did not fail; but that has been a great benefit in Florida, and it is interesting to note that during the week following the verdict a total of six claims were withdrawn. We in-

investigated those claims, and all six of them were men who had come, strangely, to the city of Miami, and had filed claim under almost exactly the same conditions as this first claimant had, and most of them, strangely too, were from the State of New York. I believe that the fact that the commission itself personally prosecuted and had this fraudulent claimant convicted has had a great part in solving that problem in our State. I believe if I had turned the thing over to the county commissioner and had it handled in the ordinary way the effect would not have been nearly so desirable.

Mr. MONTANER (Puerto Rico). I have been following very closely the discussion on this matter, because Puerto Rico has the same problems that you have in the States. But it would be interesting for you to know that we proceed against the employer. If an employer reports a claim, and it is proven that the claim is fraudulent, he is penalized by having to pay compensation and the expenses incurred in that claim. There is no provision with respect to the workman, but we also have this situation in Puerto Rico: As we cover farm work, we have a great number of small employers in the country, and one of them would get insurance in the fund, and he would report claims belonging to other employers who had farms around that place as accidents occurring on his farm. We have taken care of that also. If it is proven that one of those claims has been reported in that manner, the employer is penalized with from 6 months to 2 years in jail or a fine of from \$200 to \$4,000.

Secretary ZIMMER. I have one more comment to make. Why pick on compensation claims as examples of perjury? Everybody knows that in every court in every State, in every city of this country, every day perjury is committed, and the judge behind the bench knows they are committing perjury, and how many times does a judge order a prosecution for perjury?

Chairman ARMSTRONG. I think we have pretty well exhausted that subject, and I think we have a better idea now how this is being handled in the different jurisdictions. The next question is this: "What power should be given a commission or its agents to compel a hostile witness to testify?"

Mr. MATHEWS. I would say they ought to have the same power as a court has, whether they are hostile or not. I know in our jurisdiction we have that power, and I am assuming that would be true in all the States.

Mr. McSHANE. Do you punish for contempt?

Mr. MATHEWS. Yes; upon application to a circuit judge.

Chairman ARMSTRONG. We have like powers of the supreme court in Nova Scotia. We can subpoena witnesses to come to our office, and we have never had anybody refuse as yet on a subpoena. If we write and ask them to come and they refuse, and if we still want them to come, we make out a subpoena and have it delivered by a constable. They have always come with that and have never refused to testify. When I speak of that I am speaking more particularly of the employers and not so much in regard to the workmen. If the workman is putting in a claim, when he comes before the board for oral examination and is sworn, if he then refuses to give evidence his claim is thrown out. That is all there is to it. But in dealing with employers it is a different matter altogether, because we have to get information

from them in regard to their pay rolls or the amount of work they did. Wherever we have sent subpoenas they have always appeared.

Mr. LANGLEY (Idaho). As a matter of information I want to say that in my State the industrial accident board does not have the power to punish for contempt, but by statute the board does have the authority to certify the facts to the district court, who may then punish for it. There has never yet arisen any case where we had to certify the facts.

Mr. McSHANE. What would you do in a case of this kind? I would not be so much concerned with an employer and employee, but you may have some doctor who has knowledge of the case. It may be testimony that he would call expert, and he comes in and says, "I will not testify unless you pay me an expert's fee."

Mr. SHARKEY (Washington, D. C.). In the North Carolina case in which the industrial commissioner prosecuted a doctor for refusing to testify, I believe it was finally decided in the court that he had a right to testify, that the commissioner had a right to force this particular doctor to testify, under the laws of their State.

Secretary ZIMMER. The practical difficulty there is that in bringing in a hostile witness, as we found in New York, we cannot make him give an opinion. We can bring him in, that is true, and he must relate precisely his diagnosis and treatment, but on the all-important question, "Is this disability, in your opinion, due to this accident?", he does not have to answer. That is an opinion. I personally cannot see why anybody would want to bring in a hostile witness. I have had many claimants come to me and say, "The doctor won't come in here for me. Won't you give us a subpoena?"

"Certainly we will, but if he is against you, what do you want to bring him in here for? He would not do you any good, and he will positively refuse to give his opinion in support of your claims, and it is not going to do you any good."

Mr. McLOGAN (Wisconsin). I think the hand of justice sometimes requires the bringing in of a witness who is reluctant to come in. In Wisconsin we recently had a case before the commission, where the doctor who performed the operation, a doctor who had had years of experience in the practice of medicine, just said that he did not want to come in. The claimant brought in a young doctor who was just admitted to practice 6 months before, who testified as to what took place. There was not very much evidence there, but the commission was not clear. In fact, the commission felt that it ought to be given the opportunity of having the testimony of the physician who performed the operation. We subpoenaed him, brought him in, for the benefit of the commission, not for the claimant or the respondent, but to get at what the facts were, and in that case this doctor was a hostile witness to the claimant, but he was a very good witness to serve the ends of justice.

Chairman ARMSTRONG. "May a doctor withhold as confidential and privileged, information secured during the treatment of a beneficiary of compensation when such information may be the controlling element in a proper disposition of the case?"

That is something along the lines, I would judge, that Mr. McLogan has just spoken of.

Secretary ZIMMER. Speaking again of our own jurisdiction, a number of years ago that question came up fairly frequently. I do not believe we ever had a court decision on it. Yet this principle became recognized, that when a claimant filed a claim for an injury under the compensation law, he automatically waived any right that he might have to restrain a doctor from giving information as to his physical condition on the plea of privileged or confidential relation. I do not believe that the higher courts ever passed upon that theory, but it is now accepted universally.

Mr. McSHANE. It is accepted in our State, but I do not know whether there has been any case on it.

Chairman ARMSTRONG. Does anybody else wish to speak on this point? If not, the next question is: "What is the best method of reporting seriously and permanently injured cases to the State vocational rehabilitation department?" We do not have that, so I do not know.

Mr. BROENING. By a letter or personal visit.

Mr. McSHANE. In Utah we take all men who, in our opinion, are susceptible of rehabilitation, right down to the director of rehabilitation, introduce him, tell him how much money he has coming, ask him to go into the matter and see what he can do about returning him to remunerative employment by educating him.

Mr. MATHEWS. By statute in West Virginia we were authorized to spend \$8,000 for a rehabilitation loan. We just ask the rehabilitation department man to come to see us.

Mr. WILCOX. In this country it is customary to have the educational forces in charge of rehabilitation, whereas in Canada, as I understand it, the workmen's compensation board itself has charge of the rehabilitation, so that the point of this question has a slightly different slant in this country from what it would have in Canada.

Secretary ZIMMER. I think that is a very good question, Mr. Armstrong. It seems to me we ought to get some further expressions from some of the States.

Again, to come back to our own experience, I realize we have a much easier situation in New York than exists in most of the States, for the reason that no scheduled loss is ever adjudicated unless it is examined in our office by our own doctor. Therefore, he dictates complete reports for the referee. For the last 10 years we have been giving to the rehabilitation bureau a carbon copy of each dictated report. I can understand that in the other States where they do not have that system it may be worth while to figure out a better system of getting those cases to the rehabilitation bureau. I believe Mr. Stanton pointed out that in many of the States they are not getting the information at all.

Mr. JOY. I suggest this system, the only one I know anything about, of advising the claimant of his rights by pamphlet form, setting forth the work that is carried on in the rehabilitation activities, provided he is injured to the extent that the commission figures that he is eligible to receive rehabilitation work. In our jurisdiction I believe our rating is based on a degree basis, and I believe it is 40 degrees. He must approach very closely 40 degrees of disability before he is eligible, and then he is advised of his rights. Otherwise

he would not know whether he had any rights or not, under the premise.

Mr. GREGORY. I should like to know what has been the experience of the other States. In Ohio we have had some success with the rehabilitation work and then we have had quite a number of unfavorable results. Rehabilitation, as a rule, in our experience, has not made great progress except where the claimants are young. I do not know what course the rehabilitation department takes in other States. Early in the experience they recommended the purchase of a lot of chicken farms, which turned out very badly. I think we have claimants that originally had, if they have not been disposed of, a lot of chicken farms for sale. I do feel that if there is a close cooperation between the industrial commissions and representatives of the rehabilitation department a great deal of good can come from it. But I think there should be a common understanding between the commissions and the representatives of the rehabilitation department, so that there will not be a conflict of views as to what claimants are entitled to in the way of compensation.

We have had this experience: Sometimes the rehabilitation representative comes in and lays out a program that will run into hundreds of thousands of dollars, without regard as to where the money is coming from. Many times they thoughtlessly suggest very glittering plans to a claimant, but these cannot be carried out, for the reason that the money is not available from any source.

I should like to see some plan either suggested or worked out, whereby there will be very close cooperation. I know it would facilitate things in our State. I do not know whether you are bothered in other States so much or not. Some of the States, as I understand it, have a specific fund for that purpose. We do not have in Ohio, outside of what is appropriated to the rehabilitation department, but we do endeavor many times, where the injury results in an impairment of a member of the body, to advance compensation reduced to a lump sum in some form, with a view of promoting the rehabilitation of the claimant.

We have a long way to go in Ohio, we feel. If any of you gentlemen have a better way than we have, we would be delighted to hear about it. Maybe we do not go to the extent that our friend Mr. McShane stated, but we do take considerable interest in referring particularly young claimants to the rehabilitation department.

Mr. ANDREWS (New York). I should like to have some idea about how service is obtained through aftercare bureaus set up for taking care of these men.

Secretary ZIMMER. The commissioner is referring to the New York office, where they have in the department—and have had for a number of years—what they term “an aftercare division”, which functions by taking into hand these people and putting them in touch not only with the rehabilitation bureau but with the social-welfare agencies that may have to come to their rescue because of the denial of the claim or the delay in getting their money, performing what is known over the country as social service. It is true if the commissions generally had those aftercare departments that would be a good medium, but I doubt whether that would be practicable in most instances. I think some other plan might well be devised, however, and whatever might be the effectiveness of the work of the rehabilitation bureau—

and it has the weakness that Mr. Gregory has pointed out, and I guess admitted by Mr. Stanton—I believe it is pretty much the duty of the commissions to go out of their way to see that the information is given to the rehabilitation bureau to let them do the best they can.

We found, before we hit upon the idea of turning over these medical reports, that in practice somebody is always overlooking the matter. Maybe a man will have his case adjudicated and we find that the clerk or examiner neglected to send his name to the rehabilitation service. It seems to me that it has to be set up so it is an absolutely routine thing, so it is somebody's specific job to do it, or it is not going to be done. We have found the referee is too busy a man to do it. When he has his nose in 50 or 60 cases a day, he cannot be thinking about such details. It seems to me it ought to be turned over to some one person. Mr. Dorsett is here and I think he said the other day that his is one of the States that has a close contact.

Mr. DORSETT (North Carolina). The gentleman who gave the report for the rehabilitation committee is a former rehabilitation officer of the State of North Carolina and is now in Washington, I understand. We do work as closely as possible with the rehabilitation bureau in our State. Our claims department, including our medical director, use their discretion in deciding which of the many reports coming over their desks every day the rehabilitation department of the State of North Carolina probably would be interested in, and we send a copy of the accident report to the rehabilitation department when we receive it. When we finally close the case we also send to the rehabilitation department a proper notification calling attention to the original report that we furnished when we got a report of the accident and telling the rehabilitation department the award that has been made, so that they make the proper investigation.

We also call upon that department in every case, without any exception, when we have received applications for lump-sum settlement. If the rehabilitation department does not recommend a lump-sum settlement, either wholly or in part, we do not entertain the application at all. That department has learned that we rely upon the judgment of the investigators and they have proceeded cautiously. As we work it out, we find the situation a very happy one, and we have had no reason to regret the establishment of that relationship between the two departments.

Chairman ARMSTRONG. Has anyone else anything further to say? This appears to be all the questions that are here, but I should like the members to feel free to bring up any point on which they would like to get the opinion of some of the other jurisdictions. If anyone has a problem that he wishes discussed, now is the time to bring it forward.

Mr. GLESSING (Oklahoma). I am not on the side of the industrial commission, but rather on the side of the fellow who is paying the bill. I have been interested since the first day of this convention. I believe first we should exonerate Mr. McShane. He convicted himself for failing to give a man an award in a knee case. He went to 9 doctors, and I do not know how he could have done better unless he had gone to 90 and 9. I think that is one of the cases that is the exception and not the rule. Any commission has my sympathy, because I know they are human as the rest of us are, and medical testimony and one's own good judgment must be relied upon.

I do believe that a good many insurance carriers and a good many self-insurers are prone to deny liability. I do not believe our company denies liability in one-half of 1 percent of its cases. I do not remember but one case in 2 years on which we have denied liability, and certainly never if a man has any evidence of the injury, whether it be a mark or a bruise, or a scratch or an abrasion, or what-not. We do not question it. We send him to the doctor. In many cases, though, we become discouraged, such cases as where a man has no physical disability as the result of our physician's examination. We become discouraged when the man fails to return to work after weeks or months. In some of those cases I believe men become neurotic. We had a case recently where a man last year alleged a strained back (we are in the mining industry) from lifting what we call the tailings spout, which weighs about 60 pounds, on top of a tailings pile. That was his report of the injury at first. We paid this man compensation for some 8 or 10 weeks. We asked for a hearing before the commission in his case. We asked that he be examined by a neutral physician. He was examined, and he was ordered operated on. We paid for the operation. The neutral physician operated on the man and his testimony was that he had a ruptured spleen. I presume most of you know what that is, or what the effects of a ruptured spleen would be. My information is that he would die in 2 or 3 days or get well in 2 or 3 weeks after he was operated on.

We continued this man's compensation and had another hearing on him not more than a month ago. The doctor that testified stated that the man had a fractured rib. He had examined him recently. This injury occurred more than a year ago. The plaintiff's physician in the beginning, who operated on the man and whom we asked to again examine him and give us a report of his examination, said when he operated on the man he did not have a fractured rib.

The commission awarded this man 300 weeks at \$8 a week. I am not going to criticize any commission for an award they make, because I believe their awards are based upon the medical testimony, and that is their guiding star. However, there is no question but what this man is neurotic. The doctor that operated on him said if he had any disability at this time it was neurosis, and he had no disability as the result of any injury. Our doctor testified that he probably had neurosis, that his neurosis was not the result of his injury but it was the result of wanting a lump-sum settlement. He had that in his mind so long that he developed neurosis on that point.

We had one more case, where a man had a hand injury. This man closed the hand, and we could not find any doctors or laymen who could open it. I presume you could have broken his fingers—they did not go to that extent. But they could not open that man's hand. The doctor testified that if the man would subject himself to an anesthetic he could open his hand. The commission agreed to it. I think that is very fair. They placed this man under an anesthetic and immediately his hand came open, just as if he had no injury. Those are actual facts. I do not think this man had had his hand shut, and I would not call him a malingerer. I think he was a neurotic. But I think he was so firmly convinced that he could not open his hand that actually neither he nor anyone else could open it.

I have been interested in the rehabilitation program. The gentleman from Ohio, I believe, said something about lump-sum settle-

ments. We have had, in the past 12 months, four specific cases in which men were awarded 300 weeks' compensation, and I think in the beginning justly so. After paying them from 175 to 225 weeks—I do not remember the exact amounts—we approached these men for a settlement. We realize that when the man goes 300 weeks, if he is still in the same condition that he was in, he can be awarded 200 weeks additional, which makes a total of 500. We effected a joint petition settlement in four cases in the last year. I observed personally each one of these cases. They had been going on canes, walking in stooped positions, for from 1 to 2½ years. Without exception, when those men were paid, in 24 hours they straightened up, and I defy anybody to say that they apparently had any disability. In a good many cases, when a man gets what he knows is going to be all, a final and complete settlement in his case, after he has been neurotic, or partially so, I think that is one of the good methods of rehabilitation.

Chairman ARMSTRONG. Has any other member anything further to say?

Mr. ANDREWS (New York). May I get an opinion on whether the claimant has the right of free choice of a physician, rather than using the physician of the employer or the carrier?

Secretary ZIMMER. In other words, how many States here represented, you would like to know, have in their jurisdictions the requirement that the claimant has a right to secure his own physician?

Mr. ANDREWS. I would not suggest an operation for neurosis, but has the claimant a right to secure his own physician?

Secretary ZIMMER. Oklahoma has that arrangement, has it not?

Mr. GLESSING. He has to accept the physician of the employer.

Mr. ANDREWS. Is that right or wrong? Should the claimant have a right to choose his own physician?

Mr. GLESSING. He does not have the right in Oklahoma, unless he goes to his own physician at his own expense.

Mr. McSHANE. In Utah a man has a right to select his own doctor. If my opinion on that subject is worth anything, it is recorded in the bulletin of proceedings of this convention at Atlanta. Mr. Storey said, in commenting on it, "It seemed to me McShane was mad when he talked on it, and the longer he talked the madder he got."

It is the man's body being experimented on, and when a doctor comes in who has the same credentials that another doctor has, I still believe the man should have the right of election, and I set forth my reasons for it, and I believe they are sound. I know that I am almost butting against a stone wall, but I think I am right.

Secretary ZIMMER. In Utah, as a matter of fact and practice, do a large percentage of the workers make a free selection? In other words, do the employers permit it?

Mr. McSHANE. In a great majority of the cases, and I believe it is because of the position the commission has taken; the employee will almost invariably go to the employer's choice, but it is a fact that when he has the right to go to somebody else it makes him a good patient when he goes to the employer's doctor.

Mr. GLESSING. Of course, we have our own physicians and clinic and hospital, and when we go into court we have our doctors and

the claimant has his doctors. When there is too much discrepancy in the opinion of the doctors we invariably ask the commission to appoint a neutral physician of its own choice to render an opinion.

Mr. McSHANE. Yes; and that reminds me of a case of irony that is reported in the supreme court decision of our State written by Judge Thurman, in which he made this comment:

The commission finds that this man has but 40 percent permanent partial disability of the shoulder, notwithstanding the fact that he has been examined by 13 different physicians.

Mr. MATHEWS. By act of the legislature in West Virginia in 1935 it is mandatory that the commission permit the claimant to go to his own doctor or his own hospital. Yet it does give a commissioner a certain discretion in the matter if the opinion of the commission is that the doctor is not qualified or the hospital is not equipped properly to take care of him. Then the commissioner can take up with the employer and can, where they do not agree, name somebody else. That has not gone to the courts, and I do not know how far it will go, but it has been the policy of the commission always to allow the employee to go to his own doctor and the hospital of his choice, and that has not been contested by the employers. We have had no trouble about it, except in a very, very few instances. I have had two cases since 1935 where I had to settle the difficulty, and not long ago I had a letter from a lawyer, which was one of the meanest letters that I had ever received up to that time, accusing the commission of acting very unfairly toward his client by not permitting him to go to the physician of his choice. The next day I had a letter from the employer that was worse. I knew nothing to do but call them, and they both came in and we talked it over. We found the physician had not had much experience in that type of case, and the hospital this man wanted to go to was not at all equipped to take care of it. We got an agreement with the lawyer, and he apologized to the commissioner for the language of the letter. The employer's representative also apologized, and the commission named the hospital and the doctor.

Mr. BROENING. In Maryland the employer is required to name the physician for the disabled employee. If this is not done, the employee may select a physician of his own choice. If the employer furnishes a physician and the worker is not satisfied, of course he can employ his own physician. Then it is a matter for final determination as to whether or not that physician is to be paid by the employer or by the insurer. As frequently happens, the physician of the employer and the personally selected physician of the employee are not in agreement, and if we have a doubt, we then refer the case to the medical director of the commission to make an examination. He has before him such X-rays as may have been taken, the reports of all of the physicians who have testified in the case, whether for the employer or for the claimant, and then he submits a report to the commission. He is not subjected to any cross-examination. He is merely the medical arm of the commission in order to probe for the real condition, and after a final determination the commission makes such allowance as the facts justify.

Mr. DAWSON. I have found what seems to me a rather interesting experiment, and it might be that some of you gentlemen would have an interesting reaction to it. Occasionally at meetings of the

I. A. I. A. B. C. the statement has been made that there should be more doctors on workmen's compensation boards; and if there were, then some things might be done differently.

I happened to visit a jurisdiction where a physician had just been made chairman of the workmen's compensation board, and he had this idea that he wanted to try out: He said that it seemed advisable to have a complete medical examination made of an injured workman at the time of his injury, instead of getting the report from the physician simply in regard to the injury itself. Such an examination would be as complete as an examination for life insurance, and it might, he thought, be of value to the board later on, in cases where a claimant really tries to get health insurance instead of compensation for an accident.

An experienced commissioner in another jurisdiction did not like that idea at all. I wonder if such an idea would appeal to any of the commissioners who are here, having an agreement put into practice so that instead of getting in your original medical report simply the physician's reaction to the injury itself you would get a complete medical examination of the man also.

Secretary ZIMMER. By whom? Of whom?

Mr. DAWSON. By the examining physician. The physician examining the injured workman is to send in a complete examination report on the man, on the complete condition of the man.

Chairman ARMSTRONG. For every injury?

Mr. DAWSON. Yes.

Chairman ARMSTRONG. Would not the expense be very heavy if done in every case?

Mr. DAWSON. It is \$2 more than the regular report on the injury itself.

Mr. McSHANE. I would not give much for the report.

Mr. ANDREWS (New York). The chairman of the New York board is against that.

Secretary ZIMMER. If a man had an eye injury, they would make a complete physical examination of the heart, lungs, and so on?

Mr. DAWSON. I so understand.

Secretary ZIMMER. For \$2?

Mr. DAWSON. Yes.

Secretary ZIMMER. I agree with Mr. McShane that it would be worth less than \$2 for that kind of examination.

Chairman ARMSTRONG. I think the discussion this afternoon has been of great value, and if it had not been for the medical meeting which took place at the same time we might have had a much more extended discussion and perhaps more helpful. I think this should be taken into consideration by the executive committee at their next meeting and see if subjects cannot come up for discussion following the paper and not put them in the question box. Or if you continue the question box, put down certain things that can be discussed. I think a lot of benefit can come from meetings of this kind, but I think the executive committee should not schedule another meeting for the same time as the meeting of this kind.

[The session adjourned.]

Medical Program

General Chairman, Dr. J. F. Hassig, Kansas City, Kansas

September 23—Morning Session

Dr. J. F. Gsell, Wichita, Kansas, Presiding

[The meeting was called to order at 10 o'clock by Dr. J. F. Hassig, of Kansas City, Kans., general chairman.]

Chairman HASSIG (Kansas). The medical committee is gratified to see so many doctors here, and we feel it is an endorsement of the program that there are so many in attendance.

It is my pleasure to present at this time our commissioner of workmen's compensation and the president of this organization, Mr. G. Clay Baker, of Topeka.

Mr. BAKER. Although listed on your program to do so, I shall not attempt to deliver an address. I prefer simply to make a few remarks by way of introduction of this type of meeting as a part of the proceedings of the I. A. I. A. B. C. Remarks which should be included in an address to you gentlemen will no doubt be included in the paper to be delivered here by Mr. Voyta Wrabetz of the Wisconsin commission, one well qualified for the purpose. Because of Mr. Wrabetz's broad experience with workmen's compensation, he can ably give you the viewpoint of the administrator and the duties of the medical profession in effecting efficient and fair administration. Further, you have a full program for the day, and I shall not trespass upon your needed time.

I do thank you for the honor of including me on your program.

Before the advent of workmen's compensation those disabled in industry in the vast majority of cases became objects of charity, and medical attention had to be contributed by the medical profession, or by society, or by both. This was indeed an unfair and an unjust situation. Not only has workmen's compensation provided a certain security for the injured workmen; it has as well provided security of payment to the medical profession for its services in the care of those disabled individuals.

It is estimated that the annual medical expense, including hospital and surgical fees, for those industrially disabled amounts to \$40,000,000 a year. This is something of which the medical profession should take cognizance, and in doing so realize that it owes a duty in the field of workmen's compensation.

There are those who severely criticize the medical profession and the charges made by it for services rendered in the field of workmen's compensation. The statement has been made that "the workmen's compensation law has turned out to be a doctors' compensation law and not a workmen's compensation law, in that such a vast proportion of the cost goes to medical expense." Most compensation laws provide, however, that the fees charged by the medical profession

shall be fair and reasonable, taking into account similar treatment of individuals of a like standard of living. Such a provision is contained in our Kansas law.

In my jurisdiction it has been my personal experience that the doctors generally have endeavored to be fair and reasonable in their charges and have not attempted to overdo the matter of attendance for the mere purpose of running up an account with an insurance carrier or employer. The cases where charges have been unfair and unreasonable have been found to be exceptions.

In Kansas, before establishing a fee schedule for medical work, we asked for a meeting with the Kansas Medical Society, and as a result of that conference I believe we have a fair schedule and one that does not provide for exorbitant medical fees.

While on the part of doctors in my jurisdiction, there has been a general willingness to cooperate, yet there has been the experience that there are those who persist in being delinquent in making their reports and who evidence a lack of clear understanding of their duties as implied by law. If this situation can be cleared up, much will have been done to improve the administration of our law.

In the hope that the doctors may come to think more in terms of the relationship of their practice to workmen's compensation and in terms of their duties to the administrators of compensation laws, this special medical program has been set up in connection with the convention of the I. A. I. A. B. C. This matter of giving special recognition to the medical profession is an innovation, so far as these convention programs are concerned. I hope it will prove a success.

I hope that in addition to the discussion of the topics set forth on your program here today you will mingle with the administrators of the compensation laws in attendance and glean from them their attitude regarding your profession, what they think with reference to your cooperation, and what you can do in the matter of making for better administration of workmen's compensation laws.

Some time ago I was conducting a hearing at Wichita, Kans., in which a colored workman testified that he was working on a scaffold 5 or 6 feet in height; that he fell from this scaffold and bumped his head upon the cement floor; and, as he testified, it "knocked me conscious." His attorney thereupon queried, "what", and he repeated, "It knocked me conscious."

His doctor said, "What do you mean, 'it knocked you conscious'?"

"Ah means just what Ah said—it knocked me conscious and Ah stayed conscious for 2 or 3 minutes!"

Our hope in these meetings is that we may become fully conscious of our duties and come to have better understanding of our relationship, one with another, in this work.

I think you have a splendid medical program provided for you. Dr. Hassig, the chairman of the medical committee of the association, has been very cooperative and has worked diligently to make this meeting a success. I want to commend him, as well as the members of his committee, for their efforts. I want to express our appreciation for their cooperation, the cooperation of the Kansas Medical Society, and the Shawnee County Medical Society.

I want to take this opportunity to welcome you here and to say that I am mighty happy over your interest in this program, and wish you a most beneficial meeting. Thank you.

Chairman HASSIG. Thank you very much, Mr. Baker. We are glad to have had you with us.

I shall now turn the meeting over to the chairman of the morning session, who comes from Wichita. He is an ophthalmologist of that city and is president-elect of the Kansas Medical Society, Dr. J. F. Gsell.

Chairman GSELL (Kansas). Dr. Hassig has most generously asked some of his Kansas colleagues to share today's honor of being chairman with him. It is a pleasure to contribute the small part I have in this meeting. With the other Kansas doctors I appreciate Dr. Hassig's courtesy in this matter.

The first paper to be presented in our medical program is one by Dr. J. A. Britton, of Chicago, who will be introduced by Dr. L. B. Gloyne, of Kansas City, Kans., a hard-working member of the Kansas Medical Society.

Dr. GLOYNE (Kansas). In my experience, one of the most difficult things a doctor has to do is to examine an apparently healthy or normal individual. Whether it is in industry, or in military service, or in annual examination of a layman who wants a check-up on himself, the same condition applies. I think the subject of preoccupational examinations is one in which we are all interested, whether or not we are in industrial work.

It gives me great pleasure to introduce Dr. J. A. Britton, our next speaker, who is associate professor in charge of industrial diseases at Northwestern University Medical School. For the last 25 years he has been supervisor of the medical service of the International Harvester Co.

Preoccupational Examinations

By DR. JAMES A. BRITTON, *Chicago, Illinois*

Preoccupational or preemployment examination is not a new idea or a new practice; it has been a generally accepted requirement in determining fitness for service in the Army and Navy for at least the last 100 years. With the development of the present industrial era it became evident that physical standards were necessary if one was to operate a steam locomotive. It became perfectly evident that visual acuity and color perception were essential physical characteristics in an engineer. Without them an engineer would constantly endanger many lives, even his own life, and much valuable property.

From these limited beginnings in preoccupational physical examinations the practice has now become quite general in industrial establishments. It has followed closely the development of power machines of all kinds. It is just as evident that the operator of a "shop mule", as an industrial tractor is sometimes called, when he drives down the aisles of a busy shop floor should be able to see and act as promptly as the operator of a railway locomotive.

One of the outstanding places where preoccupational examinations are not required is on the public highways. At the present time anyone who can make a "first payment" and buy a license plate may drive an automobile any time in almost any place in this progressive country of ours. He does not have to see very much; he may be stone deaf;

he may not even be sane. A private industrial concern would be driven out of existence if through the incompetence or carelessness of its employees men were killed or maimed in anything like a similar proportion to the men, women, and children of the community.

Because a man is perfectly fit when he is 20 years of age and is physically able to do any sort of work does not mean that in 5, 10, or 20 years he will still be able. Human machines, just like other machines, change with age. Fortunate for him, for the industry in which he is employed, and the community in which he lives, his youth, muscular strength, and agility are replaced by something much more valuable. He will no longer be able to do the stunt of standing on the seat of a speeding motorcycle—he will have developed sense enough to know that such a stunt is dangerous and serves no useful purpose—but he will have developed the mechanical skill that makes it possible for him to build a perfectly balanced cycle, which for ordinary purposes makes for safety, durability, and efficiency.

From a preventive standpoint, it does little good to examine a man after he has become disabled. When a machine breaks down it is taken apart and the worn-out or broken parts are replaced by new ones, but there is no "spare parts" department for the human machine; there is no such thing as "replacement" for the sons of Adam. The answer is: Watch the human machines by periodic physical examination. When there are signs of organic wear or damage, study the job and the environment and make such adjustments and set up such safeguards as careful study may indicate. If the job requires too great muscular effort, relieve this strain by mechanical aids. If there are occupational health hazards incident to the job, control or eliminate the hazards. Adjustments are always possible where conditions are known and are understood by intelligent management.

No one questions the justice of the idea that accidental injury is as much a part of the cost of manufacture as the breaking of a tool. Most countries and most of the States of this country have enacted laws and set up legal machinery for determining the cost of accidental injuries through a regular system of compensation; and it is likewise becoming generally accepted that loss due to illness or death of a workman, where the disability or death is due to an illness peculiar to his occupation, is chargeable to the job.

In the administration of the compensation plan for disability due to accidental injury it seems only fair that there should be a knowledge of physical defects at the time of employment. In view of the fact that in our middle-aged male population, irrespective of occupation, there is a hernia incidence of at least 4 percent, it cannot be considered just to consider all such physical defects as accidental and chargeable to any particular job. Surely preexisting hernias should not be so charged. It does not seem unreasonable, then, to think that preemployment examination for the purpose of recording such physical defects is important and necessary.

Likewise, in the application of occupational-disease laws, the present job cannot be assessed justly for disability due entirely to exposure on some previous job. Disability due to occupational disease is not as simple or direct a problem as disability due to accidental injury, but again the only possibility of reaching anything like a just conclusion is through a knowledge of physical condition,

not after disability has occurred, but at the time of employment and at intervals during the period of employment.

This makes industrial medical service an extremely important function. If this work is done with the proper understanding and in the proper spirit, it can be a real and valuable service to the individual applicant or employee, to the industry for which he hopes to work or is working, and to the community. On the other hand, if this job of physical examination is done badly for any reason, it can result in injustice and misunderstanding, misery, and trouble for all—the man, the industry, and the community.

Medical service in industry began about 40 years ago. At first it was surgical only, and most of that was simple first aid. Health service as distinct from surgical came later, but because the problem of sickness was complicated and difficult this part was mostly without definite plan. Even physical examinations were hurried and superficial; they were really little more than inspections. It soon became evident, however, that the care of the injured must be good care if the length of temporary disability and the degree of permanent impairment were to be controlled.

From this step the adoption of the present standard was easy—the best of whatever care is necessary as long as needed. Undoubtedly compensation laws have had a lot to do with establishing this practice. Compensation is determined by the severity of the injury, the length of the disability, and the amount of permanent disability. It is perfectly evident that compensation is increased or decreased by the quality of this service. Hence only the best pays.

Health service, or medical as distinct from surgical, which heretofore has been of relatively less importance than service for the injured, is rapidly becoming of greater importance economically. In a well-supervised factory the lost time on account of injury is less than 1 day per man per year. Sickness, however, still causes from 8 to 10 days lost time per year. Of course, by no stretch of the imagination could one charge industry with all lost time due to sickness, but the time has come when workmen, management, and compensation boards must be able to determine what and how much of the disability due to sickness is definitely occupational in origin.

This problem is not simple and never will be anything but difficult and complicated. A practical and fairly satisfactory solution can be reached, however, if the economic importance is appreciated, the necessary equipment provided and properly trained personnel assigned to the job.

The equipment of the plant doctor's office must include all that is thought necessary for any first-class doctor's office, not forgetting an X-ray machine capable of taking reasonably good chest plates. The doctor must be well trained in the conventional way and be acceptable to the best community hospitals; in addition, he must have good judgment and a well-controlled temper. He must be blessed with that which all doctors are supposed to have but unfortunately some do not—a sincere and evident interest in his job and a real liking for plain, ordinary human people.

This sounds like a lot of needless specifications, but a physician who is going to give good industrial service not only must have the respect of management but, most of all, must be able to convince

workmen that he is not only qualified for his job but is sincerely interested in their health problems. While the plant doctor will not disregard the best interests of all concerned, his primary duty is that of counsel and friend of the workmen. If for any reason this relation of doctor and workmen changes, the usefulness of the doctor is over.

Physical examination can no longer be a matter of superficial inspection. In fairness to the man and in fairness to his employer, the job of examination must be done well and accurately.

Does all this mean that only the man with a reasonably normal physique will be given employment? No; but it does mean that the old idea of "fitting the man to the job" will be supplemented by "fitting the job to the man." Physical capacity must no longer be thought of in terms of brawn, but it must be measured by intelligence, skill, judgment, and loyalty. Charles P. Steinmetz made the world more comfortable in spite of a crooked spine; Robert Louis Stevenson suffered long from tuberculosis and died of it, but in spite of that he made and continues to make glad the hearts of millions of children, both young and old.

We have to take men as they are; there are few indeed who can be rated as perfect physical specimens. There is plenty of work for all if we get out of the habit of thinking in terms of some conventional standard. We must fit jobs to human capacity—not the capacity of a perfect physique but the capacity of the great mass, both perfect and handicapped.

There may be a few men in the world who can and do discard their automobiles as soon as they show a few fender scratches, in spite of the fact that the machines are really more efficient mechanically than the new ones, but their neighbors—and even those who sell them the new cars—are not impressed thereby.

The wise management of an industrial establishment learns to see behind the obscuring camouflage of crooked fingers, thick eyeglasses, and dulled hearing of the old tool designer. When a foundry superintendent has a sudden rush of orders and needs an additional crew, does he want to bunch of young college athletes? No; he wants experienced molders—the more experienced the better. Of course, an old foundryman has a few scars and may have even a moderate fibrosis of his lungs; but in spite of these scars of toil he is the kind of soldier who makes it possible for management to win the battle of industrial competition.

I do not need to list the common defects that are found in any group of men applying for jobs, and I think I have made it clear that the knowledge of these defects is not for the purpose of keeping men from employment. Occasionally an applicant is found to be suffering from some contagious or infectious disease, and, of course, he should not be working at any job; he is sick, and working would be dangerous for him and his fellow employees.

The great occupational bugbear today is dust disease, particularly silicosis. Widespread publicity of all kinds—newspapers, radio, even the movies—has frightened great numbers of people, workmen, employers, and even the doctors. The only group who have not been frightened are lawyers of a certain kind.

Far be it from me to minimize the importance of dust exposure, particularly the type of dust that is known to produce disability or

death in less than an average lifetime. I regret the current impression, however, that because a half million men in the United States at some time or other have had an exposure of some degree to silica dust, therefore all these men, or even a considerable percentage of them, are doomed to disability or death because of silicosis. If this were true, how about the farmers from the Texas Panhandle to North Dakota when, as occasionally happens, there is a short dry spell and the prairie zephyrs begin to "zyph"?

Seriously, routine physical examinations, both of applicants and employees, together with the occupational history, point the way to the danger spots in occupation. If the hazard is relatively important, *fit the job to the man—make it safe*. This can and will be done. If for no other reason, compensation for industrial disease will force the issue. No longer is it necessary to grind on sandstone; emery grinding can be, and usually is, done without serious hazard. With modern equipment, sand blasting can be made as safe as any other shop job; jackhammers in quarries and mines can be run with water or equipped with effective dust exhausts, and so on down the list. It seems evident that sufficient medical and engineering talent can solve any of the occupational health hazards.

The modern concept of industrial relations is based on fairness, frankness, and honesty. Industrial management can understand the relative importance of any occupational health hazard only through the reports of its medical department, and the knowledge thus gained must be used for the benefit of the workmen—not to their disadvantage. Their benefit means better and safer working conditions—control or elimination of hazards—and just compensation where there is actual occupational-disease disability. All experienced managers know that the poorest and worst industrial-relations policy is to allow some workman to lose his job because he is about to become disabled because of some occupational health hazard.

Records of the physical condition of employees must be kept, tabulated, and studied. It is only by such records that accurate and convincing data can be accumulated about any health hazard. It rarely happens that an occupational health hazard is conclusive and positive because of a single spectacular case; these hazards are usually evident without this case for demonstration. It is the type of hazard that has a cumulative effect over a long period, that is less evident, more subtle, but none the less serious, that requires long and accurate study. Again, industry through its medical advisers must not forget that the use of such records can serve to improve the relation of management and workmen, but if used to the disadvantage of the workers may spoil these relations.

In the last few years this country has seen a remarkable development in the legal machinery for determining and applying compensation for industrial injury. Many of our present industrial boards are no longer content to sit and listen to what is presented at a set hearing. They have felt the urge and real necessity of studying the common problems outside the board rooms. They are rapidly becoming better arbiters, not so much because of what they have learned to glean from a maze of evidence but because of their personal knowledge of factory hazards and the effects of industrial exposure. They know the value of independent and unbiased investigations, the help

of a board's own medical advisers, and the value of scientific data from a recognized fact-finding institution.

Some day all such arbiters will be appointed only when they can qualify in accordance with a legally determined set of standards and when once appointed they will continue for life, their removal being possible only for some very important cause. Such a board should be supplied regularly with the facilities for study and investigation of the industrial accident and health problems in the community they serve.

All those who have had industrial-board experience know the fundamental importance of reliable and exact knowledge of the physical condition of an applicant for compensation, not only at the time of the hearing but for a preceding period—the longer the better. Records of reliable previous examinations are of the greatest importance. If even a fairly just decision is to be rendered in the type of disability due to long years of exposure, detailed history of employment and physical changes is necessary.

The management of a modern, progressive industrial organization expects and wishes to pay its just obligations. Frequently it seeks the help of an industrial board to determine the amount of its obligation to an injured employee. There is rarely any doubt as to the justness of a decision where all the facts, particularly the fact of physical condition, are available.

It has been said before that this is an industrial age; most of our principal cities are largely industrial; directly or indirectly the greater part of the population of this country and its institutions of learning are supported by industry. Even those who think of themselves as entirely separate from industry depend on industry for their present standard of living, for what are now considered ordinary conveniences and comforts—food, clothing, heating, air conditioning, refrigeration, telephones, radios, transportation, and many others. Nothing less than an unspeakable catastrophe could change this. The trend is toward more rather than less industrialization.

It follows, then, that we all—the entire Nation—must of necessity be interested in the problems of industry, in the unfortunate things incident to present industrial practice, in those who are injured or otherwise become disabled because of the hazards of their industrial occupation. It is our job to collect the facts and interpret them as best we can by every means at our command, to develop out of these interpretations practicable plans for solving our industrial problems, particularly those in which life and health are involved, and to make them available for all industrial establishments, regardless of size.

To summarize, and in conclusion then, it is believed it can be successfully contended that the safety of the man in his working place and at his occupation, the economic safety of the industry and the ability of compensation boards to judge fairly in cases of injury or illness claimed by a workman depend largely upon (1) the physical condition of the man when he entered his employment; (2) the physical exposures during his service at this occupation, as interpreted by periodic physical examination; and (3) the physical condition of the applicant at the time disability is claimed.

We cannot change present trends in industrialization. We can, however, solve the problems of safety and health of occupation in industry. The wise course, then, is for us to accept and acknowledge

the problem, study intensively all these places where health is excessively or needlessly endangered, and through careful analysis of the facts of physical condition and physical exposure, work together for longer, happier, and more productive lives. We should not forget the military axiom that the great general is not he who leads the largest number into battle but he who sacrifices the least number to win.

DISCUSSION

Dr. PHARES (Kansas). Dr. Britton very kindly sent his paper to me to read so that I might have some idea of its contents. I read it a number of times, and I am convinced that it does not make so much difference what a man says as the way he says it, the manner in which he emphasizes his points. After hearing him present his paper, things occurred to me in regard to the subject and the paper which I entirely overlooked when I read it.

The things I am about to say are things with which I have had experience during my lifetime, and I truly believe it is well said that opinions based upon facts are much more valuable than opinions based on theory.

This paper lends itself to a wide discussion. As stated by the essayist, the idea of preoccupational or preemployment examinations, to determine the fitness of jobs to men in order to save their lives, and to benefit the employer, is not a new one.

I agree most heartily with what has been said about the promiscuous driving of automobiles, and think the time is not far distant when people who are allowed to drive an automobile will be required to take tests regarding sight, hearing, coordination, and mentality—and while not an occupation, it is the most hazardous of all acts performed by human beings—something must be done—the death rate is too high.

As the doctor says, "From a preventive standpoint, it does little good to examine a man after he has been disabled"—and often that is the first time he has really been examined; unfortunate for him, and often tough on the employer. Down deep in my heart I want to believe that 90 percent of all people are inherently honest—leaving out 10 percent for professional crooks. I believe that most people are sincere when an injury occurs accidentally, or sickness by reason of occupational surroundings, and want to be fair in their settlement of claims that are just, and more would be so, if some shrewd lawyer did not advise them to be mercenary in the settlement of their claim.

I believe it only fair to cite some instances why I believe in pre-occupational examinations. Quite often I am asked to appear as an expert witness; in that particular case, after having examined the patient carefully, I tell the counsel that I cannot appear for him as I do not believe the injury of which he or she complains was caused by the accident. To me there is vast difference between medical opinion and medical testimony. For instance, I was asked to appear in a case for the plaintiff who had been working in a plant handling building materials and cement. This man had developed pulmonary tuberculosis. It developed that I had treated this man for a chronic bronchitis 10 years before. Had he been examined before this, he would not have been put in this occupation. Counsel

for the plaintiff made it very plain that I would not be called on the case, also that the defendant did not use me. He wanted medical testimony.

Another instance: Recently we saw a man who complained of an accident during a fall, in which he claimed dislocation of a shoulder. It was very evident on the X-ray, however, in taking a picture of the other shoulder which was not hurt, the same dislocation was apparent. This man had a congenital dislocation of both shoulders, and the injury of which he complained was not due to this fall.

Another case, in which a man complained he had broken his ankle while working in a plant. He was a shrewd individual, knew that he had an ununited fracture of the small bone in his leg, at the ankle, and had been wearing a leather band for some 2 or 3 years. He, of course, attributed this to the fall; however, on close observation, the X-ray disclosed an ununited fracture, also a callous where the band had been worn. When confronted with these facts, he admitted that the injury was not due to the fall. A lot of time and trouble could have been saved had this man been examined before taking the job.

One more case to prove one point, in which a shrewd lawyer almost won a suit. This man complained of total deafness in one ear, due to having been struck by a belt on the side of the head. He was instructed to put his finger in the ear canal of the good ear, so as to obstruct all chance of hearing, and then trying to discover sounds in the bad ear. He was unable to hear the ordinary voice at 1 foot. Shouting he could barely hear. I was sure this man was a malingerer. I asked for an instrument with which to probe his internal ear, also to get some cotton ready in case we should make the ear bleed. All this time, mind you, he had his finger in his good ear canal, and was watching me intently. Finally I turned to him and said, "Close your eyes, and keep them closed", in an ordinary tone of voice. This he did at once. I then rattled the instruments, told him to open his mouth, which he did, and he partially opened his eyes to see what was going on. I said, "Keep your eyes closed", in an ordinary tone of voice. He shut them tight. It was unnecessary to proceed farther. It was very evident that he could hear ordinary conversation, as he had done this by commands in an ordinary tone of voice, and I was working from the deaf side. It saved a big lawsuit.

These are given as some of my reasons why examinations are so necessary—to fit the man to the job. Going a little farther, I am thoroughly convinced that the best cooperation can be obtained by the proper medical supervision and shops in large industrial plants, paying particular attention to the importance of fresh air, lights, heat, dust, and safety to the employee. I think it necessary that the physician should, with the foreman, go over the plant quite often and together talk over suggestions—how these conditions can be bettered and how accidents can be avoided, particular attention being paid to metallic poisons, either by inhalation, or from hand to mouth. An X-ray examination of the chest should be made before anyone is employed in mines or where dust is in evidence, no matter how healthy the individual appears. We have often found apparently healthy farmer boys with aspergillus fungi in lungs that simulated miliary tuberculosis, which are very difficult to diagnose, unless one

is familiar with its picture, and it is often diagnosed as silicosis or actinimycosis. Also, wherever it is possible, especially if any heavy lifting is to be done, the applicant's vertebrae should be X-rayed. It is surprising how many have six lumbar vertebrae, and, of course, these are potentially weak backs; also, so often the fifth lumbar is not fully developed, or it is displaced forward. A careful check-up on hearts, not so much for valvular lesions as for muscular reserve.

This brings me to the point of the medical man employed in these plants. In my opinion, he is a very important cog in the smooth working of the industry. Choosing the man for the place should be done very carefully. He should not be too young, so that the employees will not have confidence and blame lack of experience for certain happenings; neither should he be so old that he is lazy and careless. He must have had special training in diagnosis, X-ray, and minor surgery; have a pleasant disposition that inspires confidence of the employees, keeps accurate records, and, above all, be neat and cleanly. He must not show favoritism to either the employee or the employer but be honest with himself in all his dealings. Many lawsuits would be prevented, insurance rates would be lowered, and a much happier condition prevail in general.

I am glad that I have had the opportunity to say these words before this body of doctors in defense of preemployment examinations, and if time allowed had not expired would be glad to offer a few suggestions which, if carried out, would relieve some of the problems that now confront us.

Chairman GSELL. Dr. Britton's paper is full of thought, and it is now open for general discussion. I shall not call upon any one in particular, so please feel free to proceed with any remarks or questions.

Mr. MURPHY (New York). I wonder if in recommending pre-employment and periodical physical examination we are not, in an effort to correct one condition, creating a more serious one. I think everyone will agree that industry is in business for profit. If they find they are employing a man who is potentially a liability, they deny him employment. What is going to happen to those men? Are we going to create an army of unemployed cripples, men who can probably do the job but who will be denied it because of some physical handicap?

I do not worry so much about the large employer. I think the large employer, as a rule, will take rather good care of his men, particularly if they have been employed for any length of time. I think the small employer, however, becomes particularly worried when he receives a copy of the physician's report of the examination which has been submitted to the insurance carrier, and the insurance carrier informs the employer of the liability he is carrying. If the employer did not know it, he would not be worried about it. It is not my idea to keep anything from them, but I think there is no use worrying them unduly.

I should like to know what the general opinion is as to whether or not it is better to have these preemployment examinations, with the possibility of keeping men from jobs they might otherwise have, and thus creating this army of unemployed who will be unable to secure employment. Has anyone a suggestion or recommendation

as to a means whereby these men can be employed? What will be done with them?

Mr. SWIM (Oklahoma). The gentleman who just spoke has raised a very real problem, one that confronts all of us who have any regard for our fellow man. I am with a large oil company, and I have thought about this matter a great deal.

By and large, industry is perfectly willing to pay for that which happens to the worker while he is in the employ of that particular employer. The question is, what to do with the employee who has something the matter that was not the result of his employment in that company. I am wondering if this is not the answer—if there is a better one, I should like to hear it: Some arrangement in the compensation laws of the various States so that the man who is handicapped can get a job, and when he has suffered a subsequent injury his then employer pays all that he ought to pay for that injury, and any disability that results after that injury as a consequence of what he then sustained, plus what he had, to be compensated for in some special way.

To my way of thinking, his previously existing disability is an obligation of society as a whole, not an obligation of that particular employer. I cannot see any other solution for it. If industry can employ a man who is handicapped, pay for anything that happens to him while he is there, but not have to pay for what he already had when he came to work there, these handicapped men who in many cases do in large measure as much as the fully able-bodied men, will have a chance to get work.

Mr. DORSETT (North Carolina). I rise not so much to discuss Dr. Britton's paper as to compliment him on it. At the many sessions of this association which I have attended, I have never heard a paper which was so full of sound reasoning as this paper by Dr. Britton.

In North Carolina we believe in preemployment examination, not for the purpose of enabling any ruthless industrialist in our State to displace his men but merely to enable the industrialist who so desires to realize his full responsibility of fitting the job to the man.

I certainly want to commend Dr. Britton for his very able paper.

Dr. CALLAHAN (Kansas). The problem that occurs to me in connection with the preexamination of these men is that if the insurance carrier is to accept men who have disability of some type that perhaps does not interfere with the particular job they are going to do in a particular place, the task that will devolve upon the medical profession of sorting out these men is going to be a large one, for it is going to mean much more thorough examination.

The ordinary examination which is made now for preemployment is not absolutely thorough. Dr. Phares brought out the fact that these men with bronchitis ought to be X-rayed. It is easy for a doctor not to detect arthritis. Often a man sustains an injury and subsequently arthritis sets in, for which compensation has to be paid. If the insurance carriers are going to accept men with disabilities, it is going to mean the doctors are going to have to make much more thorough examinations.

Chairman GSELL. Unless there is some special discussion, we will ask Dr. Britton to close the discussion, as the time is getting short.

Dr. BRITTON (Illinois). First, I want to thank you for the gracious way you have received me today.

I should like to supplement what Dr. Callahan has said. I have a group of men working for me. We have new doctors coming along all the time. We have a good many different units, and we have to have a whole class of them. The greatest trouble that I have is that their lack of experience will cause them to safeguard themselves without sufficient reason.

I am perfectly willing to understand, or try to understand, the hazards of this plan which we are undertaking, which the gentleman from New York has intimated. Personally, I see no other way out. I think the doctors will agree without question that if we are ever going to know the relative hazards of a given exposure, the medical department of that industry has to study the men who are being exposed. A doctor cannot just walk in and see an exposure. He cannot visualize or understand it. He has to have facts. Physical examination is the only way I know to accomplish that.

We have men coming along all the time who are apparently all right, who actually have some major difficulty. It might interest you to know how many men are rejected. That is an important question. I knew of one large industrial establishment that rejected 33½ percent. I think that is criminal. I think it is short-sighted to throw one-third of the working population on the community as continued and everlasting incompetents.

I had occasion a short time ago to study the records of 100,000 consecutive examinations for employment. The average rejection was 1½ percent. This included infectious diseases and venereal diseases in the active stage. We pay no attention if a man has syphilis if it is not in the infectious stage. We pay no attention to hernias unless they are very bad. If they can be retained, and we know about them, all right.

If you examine 100 men, at least one-half of 1 percent will have something infectious. That leaves 1 percent for the heart cripples and those suffering from other conditions. We are able to use the other men if we know what is the matter with them, and we reject only 1½ percent.

We never get anywhere by side-stepping an issue. We have to face it and know what we are doing, and the only way we can know what we are dealing with is to examine the men.

I was in Washington a short time ago in a conference with Secretary Perkins and some of the public health men who are here today. A man from Pennsylvania said, "We believe in physical examination, but those rascals in the coal mines do this: If they see a fellow whom they think is a bad actor, they tell him to go to the doctor; they give the doctor a wink and the doctor tells the man he has this or that the matter with him." Tricks like that are reprehensible under any conditions or circumstances. One cannot get anywhere unless he is at least fairly honest with himself.

I have been at this game for a good many years, and I hope I have learned a few things. What I have told you today I believe in sincerely. There is the greatest chance to mishandle the job. Doctors must be ready to shoulder their full responsibility in the matter. They should no more be dishonest with a man who is sick on the

job than they would with someone who came to them as a private patient.

As to Mr. Swim's suggestion—it might be theoretically possible to have some plan of physical examination whereby you could write a man a certificate saying that he has so and so, and that the industry is not to be charged for this and that; but if there are any lawyers here they will bear me out when I say that the first point that is made is, "He had this, but working for you aggravated the condition." There have been decisions in the courts all over the country about aggravating existing conditions.

For instance, in Massachusetts there was a case of a man who had an aortic aneurism due to syphilis. He did a little extra lifting, and pop went the aneurism. The company paid \$10,000 for having aggravated his syphilis. That may be legally correct, but it is not quite square to our way of thinking.

Chairman GSELL. The next paper which we shall be privileged to hear is Prompt Reporting and Cooperation With Commissions, by Voyta Wrabetz. It gives me pleasure to call on Dr. Forrest L. Loveland, of Topeka, one of the hard workers in our Kansas Medical Society, who will introduce Mr. Wrabetz.

Dr. LOVELAND (Kansas). The gentleman I am about to introduce is a Wisconsin product of rather recent vintage. Insofar as I have been able to learn, he has been continually interested in many worthwhile things. He has been mathematically, legally, athletically, and industrially minded during the years of his life. Since July 1919 he has been associated with the Industrial Commission of Wisconsin, being its chairman since 1933.

In this capacity he has been outstanding. He has especially interested himself in the economic, legal, and insurance aspects of the silicosis problem, and has made valuable contributions to our knowledge of occupational diseases. He is now a member of the National Silicosis Conference, an organization which is contributing much to the preventive and legislative phases of the problem. He is especially fitted as such a representative, inasmuch as the law he administers covers occupational diseases.

It is a great pleasure and privilege to introduce Mr. Voyta Wrabetz, of Wisconsin, who will talk to us on Prompt Reporting and Cooperation With Commissions.

Prompt Reporting and Cooperation With Commissions

By VOYTA WRABETZ, *Chairman, Industrial Commission of Wisconsin*

The major part of the burden caused by industrial accidents is an obligation which must be borne by industry. This fact is no longer seriously questioned. Upon this principle, benefits for disability or death because of accidents (and in some States because of occupational diseases) which arise out of and in the course of employment are the inherent right of workmen and are not philanthropy or charity to be doled out by a benevolent employer.

As an assurance that such benefits shall be adequately provided, workmen's compensation laws were enacted. To carry out the underlying theory of the laws completely and at the same time to stay

within the law, the proper and reasonable administration of the law by industrial accident boards or commissions, by employers, by insurance carriers, and especially by the medical profession is absolutely necessary.

The workmen's compensation act of any State provides twofold benefits: First, competent and reasonably necessary medical, surgical, and hospital treatment; and, second, compensation to the disabled employee or death benefits to the dependents of a deceased employee. While the payment of compensation is the most apparent purpose of the law, the primary effect of the law is that by the burden of its obligations it supplies the urge to prevent industrial accidents and to avoid those conditions of employment which cause industrial diseases.

A second primary purpose of the compensation law and one that is also more important than the payment of compensation, is the physical restoration of the disabled employee. The return to a self-sustaining, and when possible, full earning capacity, is of tremendously greater value to a worker than any amount of compensation benefits that might be paid. It is, therefore, self-evident that the medical profession is a controlling factor in a compensation case, because proper and sufficient medical treatment is of first importance in the process of rehabilitation. The speed with which medical treatment is rendered and the more proficient and skillful the medical attendance which is furnished, the more complete will be the attained rehabilitation.

Workmen's compensation laws usually place the cost of medical attendance and treatment upon the employer. In many States, because of this obligation, the employer is granted the right to name a panel of doctors from which the employee may select the physician or surgeon who shall treat and attend him. This provision operates, at least to some extent, to take from the injured employee the age-old privilege of selecting the physician who is to attend him and, to the same degree, to give to the employer the choice of the physician in whose care the employee is placing not only the repair of broken limbs but of life itself.

There are certain well-founded reasons for giving to the employer and placing upon him the responsibility of furnishing proper medical attendance for the care of the injured. First, the employer, for purely selfish reasons, is interested in the speedy recovery of the employee with the least possible permanent disability in order to reduce compensation costs. For this reason, if for no other, the employer is more likely to provide the best available medical treatment. Second, the injured man sustains a disabling injury usually not more than once in his lifetime, and because of this lack of contact does not possess knowledge as to the qualifications of physicians or surgeons. On the other hand, the employer of even as few as from 15 to 50 workers generally has better knowledge of the specialties and qualifications of available physicians and surgeons. Consequently, he is in a position not only to furnish medical treatment promptly but, because of experience, is able to obtain the care and treatment which each particular case demands.

While, as indicated, the employer has much to do with the selection of the physician or surgeon for the care of an industrial injury

or disease, in these States there still remains some choice on the part of the employee. He need not accept the service of one doctor if that doctor is the only one offered unless no other is available in the community. The employer is required to present the employee with a panel of names from which a choice may be made.

Because of the progress which has been made in industrial surgery and because more and more doctors have given much of their time and study to a better understanding of the problems involved, this provision of the compensation law is being invoked less than formerly. Today it is the rule rather than the exception, that the employee is permitted to engage the services of any doctor without the intervening tender of a panel.

Because of these various considerations and even in States in which the employee may freely choose his doctor, the position of the physician under the workmen's compensation law is unique. The relationship of a physician to his patient is one of the most confidential of relationships in human life and has always been treated as an exclusive privilege. In cases of sickness or injury, in order to obtain the best results, a person must place himself in a position of complete dependence upon his physician. Therefore, the physician assumes a position of great responsibility; he has been selected, or is paid for his services, by one (the employer) to undertake the care of another (the employee). His duty is twofold: One to the injured, who places in him all his hope and faith, and the other to the employer, who pays him for his services. In view of this dual relationship, the physician is placed in a most unusual position and enjoys a privilege not possessed by any other class of men or profession. It is well, therefore, for the doctor to remember that although he is paid for his services by the employer, he nevertheless is the employee's physician, because it is the employee who is to be adequately treated and adequately and fairly compensated.

The first consideration which the attending physician should give in the treatment of his case is to give that treatment which is most likely to result in the best possible physical restoration. To this end the old adage that two heads are better than one has special application. In serious cases where there is question as to what ought to be done or when the case may be out of the field of the experience of the attending physician, consultation is desirable. Under such circumstances the advice of another physician and, more particularly, of a specialist, should be sought, and when tendered by the employer or insurance carrier should be welcomed without any thought of the attending physician being subordinated in the case.

As a definite part of treatment, in order to accomplish speedier and more complete rehabilitation, the facilities of curative workshops may be valuable. It is my experience that these workshops have materially reduced the periods of temporary total disability and have also lowered the amount of ultimate permanent impairment. Of course physiotherapy should always be done under the direction of a physician. Under such proper direction the physician should make use of any well-equipped workshop if reasonably available.

The attending physician plays a most important role and has a very important duty to perform at the end of the healing period. In view of the fact that compensation benefits are only a fraction of the actual wages of an injured man, it is extremely important to the

injured man himself that he return to work as soon as possible to stop the daily loss represented by the difference between his full wage earnings and what he gets as compensation. The early return to work is likewise important to the employer who is meeting the compensation liability. It is this point over which there arises considerable controversy between the injured employee and the employer or the employer's insurance carrier.

The surgeon should always have this crucial time in mind in the treatment of his case. The injured has up to this time not only suffered the pains of his injury but has himself suffered from the loss of a full pay envelope, sometimes resulting in the curtailment of even the necessities of life, not only for himself but for his entire family. At this moment in his life he is not particularly happy because he is thinking of a return to work with his new handicap and with many limitations. In order to meet this crisis in the care and treatment of the injured man, it is tremendously important that the attending physician truly gain the confidence of his patient—that confidence which a patient gives to a private surgeon. It becomes, therefore, apparent that in the handling of a case the surgeon must convince the employee of his complete fairness and impartiality. If he has shown in his conduct that his interest is in his patient, the employee will ordinarily take his advice, and the return to work will be accomplished as an incident of treatment.

When an injured employee returns to work, the physician owes two definite obligations. The first is to the injured employee. The worker should be definitely advised not only as to the class of work he is able to do for wage-earning purposes, but, more particularly, the kinds of work it will be well for him to refrain from, and also the kinds of work actively to engage in, in order to bring about the best possible rehabilitation. The physician's second duty is to give the same instructions most emphatically to the employer, either directly or through a representative of the insurance carrier. In this respect the foreman in whose charge the injured employee's work is done should be impressed with the fact that a man who has been injured and who consequently has some handicaps and limitations is now back at work, and that he must do everything necessary to complete the treatment of the case under the supervision of the attending physician. The injured employee should not be required, upon return to work, to fight his battle alone, not only with his own aches and pains but with the foreman, who may not be entirely in sympathy with him and who does not want him, a physically unfit man, in the plant. Too often the attending physician makes a report at the end of the healing period to the agency which pays compensation and leaves the adjustment of the injured to employment to the hazard of misunderstanding, both from the standpoint of the injured and the foreman. It frequently occurs that an injured man is not told by his attending physician that he is able to return to work, nor is any report made to the employer or insurance company of the kind of work which the injured can do. The situation then becomes ripe for an argument and a subsequent contested case. Much can be done to bring about not only a harmonious relationship between the injured and his employer but also a proper termination of the period of tempo-

rary total disability and a proper adjustment of compensation for such disability by a frank expression both to the injured employee and to the employer.

Under all compensation laws an injured employee is required to resume some suitable form of work as soon as he can. The mere healing of wounds does not terminate the so-called "healing period", and before the physician leaves his case he should be able to convince his patient that he is able to resume the form of work available to him, taking into account the kinds of work he was able to do before his injury. If he has maintained that proper attitude which the ethics of his profession toward the sick and infirm requires, he will be able to accomplish this end. In most cases, of course, the injured has been away from work for a long period of time, and it is difficult for him to resume work even aside from the disability that results directly from the injury. This, together with the actual physical defects, makes it doubly hard for the injured to return to work, and in such cases it is usually well to advise lengthening the period of temporary total disability for several weeks and sometimes, as a rehabilitation measure, even when the employee has actually returned to work.

I trust it may not be out of place at this point for a layman to give a word of caution as to the handling of certain cases, namely, the possibility of neurosis following an injury. Needless to say, a true neurosis, while it is a result of some quirk of mental reaction, is nevertheless real. This condition almost always presents a difficult and pitiable case for solution. A sad feature of the case is the fact that often the condition is brought about by some indiscreet suggestion from those who have the injured employee's interest most at heart, and, yes, even by attending or examining physicians. Doctors, knowing the possibilities of the development of a neurosis, can do much in their contacts with the injured and with members of his family to reduce the toll in this regard. Here again the building up of complete confidence in the ability and, especially, in the integrity of the attending physician plays an important role.

The compensation law provides for the payment of compensation not only during the period of temporary total disability but also for permanent disability. In the determination of such permanent disability, all interested parties must depend upon the opinion of the physician. While it may be true that laymen, and particularly members of an accident board or commission and those who have to do with the administration of compensation laws, acquire some knowledge as to the kinds of disabilities that follow from certain injuries, in the last analysis the determination of just what disabilities are sustained is peculiarly in the field of the medical profession.

The purpose of the compensation law is to give to the injured employee such benefits that he shall be adequately compensated for the disability occasioned by injury. The man who has been injured is not in a position to face the world in a happy mood and particularly so if compensation paid to him does not in a reasonably degree compensate for the disability sustained. When this important question to the employee is being considered, the surgeon should not forget that he is still the physician of a particular patient and in estimating disabilities should never take into account the fact that he is being paid for his services by another agency.

Human beings are usually fairly optimistic, and particularly so when it comes to judging the results of their own acts. If we have pride in our work, and we ought to have, we are apt to think that our work probably could not be improved upon. Therefore, may I add a word of caution and suggest that the surgeon should not be too sanguine in judging the results of his own work. The results may have been the best obtainable, but because they are the best obtainable, it does not follow that an injured member has been restored to perfect normality. Therefore, the surgeon should be particularly alert to be impartial and fair in rating or appraising the disability, so as to give the injured man everything to which he is entitled.

It is always well for the medical men to become thoroughly familiar with the compensation law of the State in which they practice, and particularly with its administration, so that their reports and opinions may have meaning. But in estimating disabilities, the surgeon should never take into account the amount of money which is to be paid, but rather should give his estimate of disability and "let the chips fall where they may." Estimates of disability should always be based upon the ultimate result attained after the return to work.

At this point it might be of interest to point to other facts which show that the medical aspect of any workmen's compensation act is very important. These facts are of particular interest and importance to physicians and surgeons as participants in this phase of the law.

As I have already stated, in the administration of the law all compensable cases in Wisconsin are reported to the industrial commission. These reports include a statement of the entire medical costs involved. From September 1, 1911, to December 31, 1935, in the 396,379 cases reported, employers have paid \$18,779,395 for medical, surgical, and hospital treatment. These figures do not include the many thousands of cases which involved less than 3 days' disability but which required medical treatment. While we do not have a record of such cases, the medical costs were undoubtedly large.

I have heard that employers have criticized the medical profession, feeling that some doctors step up their bills under the system where payment is made by an insurance company. Medical bills have increased per case for a number of years, as shown by the fact that in 1920 the average per case was \$35; in 1925 it was \$52; in 1930, \$70; while in 1935 it was \$50. The drop in 1935 is probably due to the fact that there was a decline in employment in the heavy industries during that period and consequently a reduction in the number of more serious accidents. While in some isolated cases the complaints may be well-founded, I believe that the criticisms generally are not warranted, and that the increase is due to the fact that better medical service is being given, resulting in shorter periods of total disability and in more nearly complete restoration of injured employees.

I now wish to discuss briefly compensation payable under the schedules contained in some compensation laws, as in Kansas and Wisconsin. These schedules usually include amputations of various members or their parts and the loss of vision and hearing. Any injury short of amputation is compensated for on the basis of a relative loss. This means that the loss is estimated as being a certain percentage of the allowance as contained in the schedule for the next greater rated disability. For instance, a disability which is limited entirely to the

function of the forearm from the elbow to the tips of the fingers is one comparable to the loss of an arm at the elbow and not to the loss of an arm at the shoulder.

While no general rules can be laid down for the estimating of the loss of function, there are certain injuries, or rather conditions, which are more or less classical, such as the ankylosis of a knee joint or a definite shortening of a leg. But even such conditions in different persons result in some variation in the percent of loss of function, depending upon the adaptability of the patient. It is clear that some men with an inch shortening of one leg are unable to overcome the handicap, while others go about their work without any apparent increase of effort whatsoever.

Within limitations, it is possible to establish by custom or rule the related disability applicable to a given handicap. The Industrial Commission of Wisconsin, after many hearings with physicians and in cooperation with the State medical society, adopted a schedule of related disabilities to serve as a guide in rating disabilities. For example, a loss of function represented by a limitation of active elevation of the arm in all directions to 90 degrees, but otherwise normal, is a loss of 20 percent of the arm at the shoulder. If other conditions exist, the percentage of disability varies more or less as the disability varies from this standard.

This schedule has served a very useful purpose and has resulted in a better common understanding of what is meant by relative losses. It has resulted in a more uniform approach to the rating or evaluation of disabilities.

Less than 15 percent of all cases under compensation in Wisconsin are actually heard by the industrial commission; that is, less than 15 percent result in disagreement as to the causal relationship between working conditions and disability or in the estimating of disability. In the remaining 85 percent, the cases are closed upon the reports filed with the commission. When an injury occurs the employer is required to file with the commission a report which contains answers to questions relating to the injury. When the case is finally closed a final report must be filed by the employer, together with a receipt signed by the employee. If the disability extends beyond 3 weeks, a physician's report showing the character of the injury and the disability sustained, both temporary and permanent, must also be filed. With these reports before it, the commission determines whether the injured is properly compensated. If all four documents are in agreement, the case is closed. The practice in many States is somewhat similar. In this plan of administration you will readily see the importance of proper physicians' reports. The whole question of whether injured men are being properly compensated rests almost exclusively upon the judgment of physicians and therefore it is extremely important that such reports be carefully prepared so that by complete and competent reports the beneficent purposes of compensation laws may be fully carried out.

One of the principal reasons for the enactment of a compensation law was to provide for the speedy payment of compensation. Since an employer or insurance carrier cannot be expected to pay compensation unless they are reasonably sure that compensation is due, it is extremely important that the attending physician make immediate report to the employer or insurance company after first being called

on the case, setting forth the nature of the injury and the probable period of disability. The record of prompt payment of compensation in Wisconsin is good, but it certainly can be improved upon. A frequent reply to an inquiry made to an insurance company as to why compensation payments are not made promptly is that it has not received and cannot get a report from the attending physician. I am sure that if attending physicians realize the importance of prompt and complete reports, they will cooperate in the plan of administration, so that the injured man, in addition to the suffering occasioned by injury, will not at the same time suffer from worry due to shutting off his income. For this very obvious and beneficent purpose I cannot plead too forcefully or urgently to attending physicians to report their cases to proper agencies completely and understandingly.

Contested cases, which usually number about 15 percent of all cases, naturally give boards or commissions the greatest worry and concern. The bulk of these cases can be classified into two divisions, the first covering the determination of temporary or permanent disabilities when injury definitely occurs and the second the determination of the question of whether or not the disability complained of is either the result of injury accidentally sustained or of occupational disease. In the determination of either of these questions the determining body must depend almost entirely upon the testimony of the medical profession.

The first of these questions is not so difficult and becomes difficult only when physicians will not use good judgment either as the result of bias or other cause. When in a given case one physician estimates that a permanent disability is 10 percent loss of function of a leg at the hip and another estimates the identical disability at 80 percent of loss of the leg at the hip someone or maybe both are wrong. A leg cannot be disabled both 10 and 80 percent at the same time.

Workmen have complained that doctors whose bills are paid by employers or insurance companies have discriminated unfairly against the workmen in underestimating the degree of disabilities. Opposite complaints are made by employers against doctors who are employed by workers. There are doctors who apparently are influenced by the side for which they are reporting or testifying. Such "influenced" reports or testimony do not confer a favor upon anyone and least of all upon the insurance carrier, which must be guided only by the real facts in the case.

After some years of experience and after seeing probably as many if not more actual cases than any one physician may see, it would be strange indeed if those who administer compensation laws did not have a fairly good idea as to how disabilities should be measured. It is soon discovered whether or not a physician is giving to the case that unbiased thought and study which enables him to estimate disabilities properly and fairly. Physicians who do not, soon lose the confidence of the board or commission which must decide cases upon their testimony, and ultimately the confidence of their clients. Happily, it can be said that members of the medical profession usually give honest judgments as to disabilities, and that their estimates of disabilities are usually very close indeed.

The second field of controversy, which involves the question of whether or not the disability is the result of accident or occupational

disease, offers more difficulty. As in the former class, boards or commissions must here likewise depend upon the medical profession. While medicine and surgery have made tremendous strides and particularly in the last half century, there is still much which medicine and surgery have not solved and which they do not know so far as cause and effect are concerned. In the determination of such questions it is important that the physician, who is called as an expert, give the scientific knowledge on the subject under investigation. Opinions based purely on conjecture have no probative force, whether they be on the one side or the other. The fair and unbiased scientist in any given set of facts will always give the reasonable probabilities from which a determination can be made. Boards or commissions are no more justified in arriving at a conclusion based upon the remote conjecture in the face of scientific probability in the case of a medical question, than they would be in arriving at a conclusion based upon conjectural inferences as to any other fact. Fanciful theories, on the one hand, that a condition is not the result of a definite injury in the face of a definite chain of events, or, on the other hand, that a disability may be due to injury when more reasonable causative factors are present, are of no particular value in the determination of medical questions.

It must be recognized that in the present state of medical knowledge there is bound to be a difference of opinion when the etiology and character of the disability is obscure. It is this very feature that renders some industrial cases peculiarly fascinating. However, this difference of opinion should never degenerate into partisanship. When it does, the physician ceases to be an impartial professional man and becomes an advocate, so that the value of his service to the administration of workmen's compensation laws becomes practically nil. For the purpose of determining medical issues, whether as a witness or when appointed to make an independent examination, it ought to be expected as a matter of course that the members of an old and honored profession will always give opinions really independent of their source of employment—fairly and impartially—and purely on the reasonable scientific probabilities applicable to the given situation.

If the foregoing analysis is correct, it must be apparent to all concerned in the administration of the compensation law that its proper functioning depends largely upon the members of the medical profession. Because of the method of his selection, because the determination of compensation rights depends upon him, and because he is exclusively responsible for the physical restoration and rehabilitation of the injured employee, the physician who engages in industrial surgery must be continually on the alert to maintain an absolutely unbiased and impartial attitude. The whole success of the compensation law depends upon him, and the whole future of many thousands of injured men each year depends not only on his skill but upon his good judgment. It is to the great credit of the medical profession that compensation laws have generally worked out as successfully as they have. But "lest we forget", it is highly desirable that the medical profession shall steadily weed out its obnoxious members, and that it shall ever be on the alert to keep its standards on a high level and, so far as the compensation laws are

concerned, give to their administration that quality of judgment and attitude that will gain the fullest confidence of injured men and at the same time render to employers and to the public that impartial service to which they are entitled.

Chairman GSELL. We will have to stop at this time so that the convention picture may be taken in this room. The discussion by Dr. Growney and the general discussion on Mr. Wrabetz's paper will be heard when we reconvene at 2 o'clock.

[The session adjourned.]

Medical Program

September 23—Afternoon Session

Dr. W. F. Bowen, Topeka, Kansas, Presiding

[The meeting was called to order at 2 o'clock by Dr. Gsell.]

Chairman GSELL. Continuing from the point where we left off before adjournment of the morning session, we will have the discussion of Mr. Wrabetz's paper by Dr. Lawrence Growney, of Kansas City, Kans.

DISCUSSION

Dr. GROWNEY (Kansas). In dealing with industrial accidents we are no doubt dealing with one of our major national problems. When we stop to consider that in industry, out of every million man-hours worked, we have over 15 accidents, we can realize that an accident is more or less to an industry what a plague or a drought is to a farmer.

Accidents are no doubt industry's greatest annual loss. It has been conservatively estimated that taken from a financial standpoint only, the loss resulting from industrial accidents is approximately 1 billion dollars per year. To me this is far below the actual cost to industry, for it merely represents the money paid for the death, the permanent disability, or the temporary disability plus the loss in wages suffered by the employee. I am of the opinion that the temporary or permanent loss to industry of the services of a tried, true, and skilled worker is in the end a result of far greater significance to industry than the actual financial loss incident to the accident in question. About 16,000 people lose their lives every year as the result of industrial accidents and approximately 4 times this number are in one way or another permanently disabled and 1 out of every 100 people in the United States suffer temporary disability as the result of an industrial accident.

We can only guess what, in the final analysis, is the loss to industry and to society at large resulting from industrial accidents.

Mr. Wrabetz in his paper clearly outlines what in my opinion are some of the major reasons accountable for and influencing this great loss to industry and society at large. As he says, "The medical profession must realize its responsibility in treating industrial accidents." The doctor must realize that his duty is threefold. First, the doctor owes to the employee a personal, capable, and sufficient treatment so as to enable him to return to his regular work as soon as possible, or, in case of permanent disability, he owes him not only the best of his services but also the care of those in our profession who are in a special manner more properly fitted to treat the disability in question, so that in the end the result of the disability existing as a permanent nature will be as far as possible minimized. Second, he owes to the employer his honest efforts

toward an early return to work of the employee and a fair charge for his services. Third, he owes to society a return of the injured to normal or as near normal as is humanly and physically possible.

These responsibilities, one can readily see, are more or less governed by the care and professional skill of the doctor and, while applying to all industrial accidents, yet represent more strictly speaking the professional care of the injured employee.

Now, we doctors must go a step farther. Our duty is only half done if we stop here. We must cooperate in helping to prevent the employee from getting injured and, furthermore, in case of an injury, we must aid those whose duty it is to award the injured employee the compensation to which he is entitled. We can do this by reporting as soon as possible the accident, how and when it occurred, and by so doing we will aid the employer in preventing as far as possible a recurrence of accidents of a like nature, and providing we give an accurate description of the injury and the approximate length of disability, we can materially aid the commissioner in awarding the correct amount of compensation.

As we all know, and as Mr. Wrabetz has said, industrial accidents are more or less governed by the laws of the individual States. In some the employee is forced to accept the services of one doctor, in others he may choose from a panel, while in some he may choose his own doctor. I am not qualified to say which is the more nearly ideal. I do know, however, that each has its faults. The employer often from purely selfish or personal reasons employs a physician not especially qualified to treat an injured employee. A panel may be set up in more or less the same manner, and when the employee is left free to make his own choice he often engages the family doctor, who, from the nature of his work, is not particularly qualified to care for the more serious industrial accidents. I do know that the branch of medicine known as "industrial surgery" is rapidly forging ahead, and that in the near future we will have specialists in industrial surgery just as we have eye, ear, or nose specialists today.

Now a word in regard to the cooperation with the labor or compensation commission. I certainly agree with Mr. Wrabetz in that the physician or surgeon should cooperate wholeheartedly with the labor commissioner. All of us know that at times the labor or compensation commissioner is appointed to office for special or political favors and is not specially qualified for the work, yet taken as a whole, I am sure that these gentlemen are more fair, unbiased, and honest in their judgments than many of those connected with industrial accidents.

Here in our own State I am happy to say our labor commissioners are and have been above reproach. I have yet to hear of any criticism of their work. They have proven themselves intelligent, honest, and fair to the employee, employer, and to the physician.

From my own personal experience I do know that a fair award or decision by the commissioner is at times almost humanly impossible to make, especially after testimony and so-called expert witnesses testify to opposite facts concerning how and when the injury occurred, the compensability of the condition found, and to the amount of disability resulting.

However, industry and all concerned in the handling of industrial accidents have reason to be proud of the record they have made in recent years. Education, safety devices, and so forth, have no doubt materially helped in the 61 percent reduction in the frequency rate during the past 10 years, and yet while these same factors have a direct bearing on the severity rate, I am of the opinion that a large part of the credit for the 43 percent reduction in the severity rate is due to the correct handling of these cases by our commissions and doctors cooperating with them.

In conclusion, I wish to congratulate Mr. Wrabetz for his thorough handling of the subject and to agree with him in that there are three main things for us doctors to consider in the handling of industrial accidents.

1. Prompt reporting of the accident.
2. Accurate description or diagnosis and treatment of the accident in question.
3. The prognosis, that is, the length of the disability, temporary or permanent, or both.

These cardinal points, I am sure, providing they are strictly adhered to, will in a great measure help to cure many of the ills of the industrial accidents of today.

President BAKER. We have our secretary-treasurer, Mr. Verne A. Zimmer, with us, who is Director of the Division of Labor Standards at Washington, D. C., and whose efforts have played, necessarily, a major part in making this convention a success. More especially due to the fact that the medical section has proved such a success, but because I would want him to meet you anyhow, I want to intrude upon your session for just a few moments so that you might meet him and ask him to make a few remarks. I want you to know our secretary-treasurer, Verne A. Zimmer.

Mr. ZIMMER. This is not the first time I have been with doctors in sessions of this kind. In New York, when I was concerned with the compensation administration, the then commissioner, Miss Perkins, used to insist upon my going about the State attending medical meetings and talking to the doctors about their part in compensation administration.

None of us needs to be told that doctors are the keystone of compensation administration. In our State, and I suppose it is true in any State, no compensation award can be made unless some doctor gives the disability and testifies as to the causal relation. Therefore, the doctors of this country are primary factors in the administration of compensation, which amounts to millions of dollars of assessment upon industry and millions of dollars of benefits to the workers.

I realize, of course, that the advent of compensation has brought new responsibilities to the doctors. In the old days, a doctor's job was to diagnose the ailment and to cure it if he could. Now he is called upon not only to diagnose the case, but to pass upon these extremely difficult matters of causal relation with the accident. That is a most difficult task, and he is put in a tough spot by reason of the necessity of appearing before the commissions and testifying and being subject to annoying cross-examination.

In any event, the doctor's task in connection with compensation administration is not altogether agreeable and you have frequently

justification for complaint. On the other hand, the laymen also have a difficult job in any adjudication. I know that later today a very able and long-experienced compensation administrator is going to talk to you along the lines, I assume, of what compensation administrators expect of doctors.

I have given vent to peevishness, myself, occasionally; first, because doctors are notoriously poor bookkeepers—and, I am told, they are also rather poor collectors—and they are irked by the necessity for keeping exact records and for submitting detailed bills, but particularly in the matter of complete reports to the adjusters and the workmen's compensation officials.

In the course of 15 years I have examined many thousands of reports, and it is astounding how frequently there will be omitted the most important questions, not because the doctors have a desire to evade them but because they do not recognize their importance.

I am glad to know of the splendid results from this innovation in our own organization of having the doctors get together in one group to discuss the involved and difficult subjects in connection with industrial medicine and adjudication of cases. I think there is no question but that this idea should be continued at our future meetings, although I have some doubt as to whether we shall be able to get as enthusiastic response in every part of the country. I am really surprised that doctors would come the distances that some of you have to attend this meeting and participate in it and give the benefit of your experience to the group.

I want to say to you, the association appreciates what you are doing and what you are going to do. Thank you very much.

[Dr. Hassig, general chairman of the section, took the chair at this point.]

Chairman HASSIG. This ends the program which was scheduled for the morning session. We shall start now on the program for the afternoon session.

Our next chairman is a doctor from Topeka, a surgeon and a former president of the Kansas Medical Society. I take pleasure in asking Dr. W. F. Bowen to take charge of the meeting.

[Dr. Bowen took the chair.]

Chairman BOWEN (Kansas). Dr. M. J. Owens, of Kansas City, will introduce the next speaker.

Dr. OWENS (Missouri). To those of you resident in this territory, the next speaker needs no introduction. To those of you who do not know him so well, I may say that he hails from Nebraska, just across the line north of us, from which point he migrated to Chicago, where, by an unusual amount of industry and application, he has made marked success in the field of medicine and surgery. He is at present associate professor of surgery at Northwestern University Medical School. He is attending orthopedic surgeon of the Cook County Hospital, and medical director of the Illinois State Industrial Commission.

I am sure you will agree with me when you have heard him, that he is unusually well qualified for the presentation he is going to make. I should like to introduce Dr. Philip H. Kreuzscher, who will speak to us on the subject of Low Back Pain.

Low Back Pain—Its Significance in Industry

By Dr. PHILIP H. KREUSCHER, *Chicago, Illinois*

Backache is the cause of much disability. With the exception of painful and deformed feet, there is probably no other condition more disabling to the man who must stand, walk, stoop, and lift. Even sitting sometimes becomes unbearable under the nagging of a persistent "lumbago."

Backache is a symptom-complex which is seen in a large percentage of men in industry. It is so often transitory that in a great many instances the symptoms come and go without the patient's having had a thorough examination or any specific treatment. Because of this, too many of our industrial workers do not seek relief in the early stages and only after many recurrences and after a loss of much time and efficiency do they come under the care of the doctor.

Too often we, as surgeons in industry, by reason of haste, ignorance, or inefficiency, fail to recognize early signs of what may later prove to be a serious malady. Much too often a tablet of aspirin or a mustard plaster is substituted for a thorough examination. When a worker complains of pain in his back of sufficient severity to consult a physician, nothing short of a thorough investigation of its cause could possibly be indicated.

Among industrial workers as well as those not employed in industry there are a large number of causative factors. I like to divide the subject into three headings:

1. Backache which is due to disease or misplacement of abdominal or pelvic organs.
2. Backache which has its origin in derangements or diseased conditions of the soft structures surrounding and supporting the spine.
3. Backache which is due to injuries or diseases of the bony framework—the vertebrae and sacroiliac and sacrolumbar joints.

Pain is often referred to the lower back in cases of pendulous abdomen, enteroptosis, gastropptosis, prostatic disease, and seminal vesiculitis. Inflammation or tumor of the lower bowel frequently causes pain in the region of the sacroiliac and sacrolumbar joints. Varicosities and other circulatory disturbances in the pelvis as well as displacements and inflammations of the uterus and adnexa all may cause low back pain.

In severe injuries there is often serious damage to the ligamentous and capsular structures surrounding the lumbar vertebrae and the sacroiliac joints. Hemorrhage takes place into the tissues, certain lacerations occur, and pain and incapacity result. Naturally, the effects of these injuries, although often very severe, are not evidenced in the X-ray film.

Backache coming from injuries or diseases of the bony structures proper furnishes us with the greatest number of cases with serious symptoms. All of these conditions will be discussed under the heading of X-ray examination of the back.

With this brief outline in mind one should then proceed to the examination and ultimately the diagnosis and differential diagnosis of the existing condition.

The examination of a patient divides itself into three parts: (1) The clinical history, (2) the physical examination, and (3) the

laboratory examination. The taking of a careful clinical story includes data as to the beginning and progress of symptoms, a tabulation in chronological order of the sequence of events which led up to the partial or complete incapacity. It is regrettable that in many clinics and hospitals history writing has become a lost art.

What was the patient doing when the pain began? Was he stooping, standing, or lifting? Was the pain of sudden or insidious onset? Did it follow a direct or indirect trauma? Was it a sharp pain, or was it dull or lancinating? Was it localized, or was it transmitted to other parts of the back, into the hips, or even down the extremities? Was the pain transitory or persistent? Had the patient recently been exposed to cold or wet? Had he recently suffered from an infected tooth, a sore throat, or some other local or general infection?

The questions enumerated above are too frequently not answered, and information gained from such a story is entirely lacking. The clinical history is often worth more than the physical, X-ray, and laboratory examinations combined. Too often we depend upon the laboratory to make our diagnosis for us. We take a short cut, an easier and lazier way to make a diagnosis, by simply ordering an X-ray picture and then feel that by so doing we have done our part in the making of a diagnosis. My preceptor often said, "Diagnoses are made, not with your hands, but with cortical cells."

The physical examination of the patient is the next important step after one has obtained the story of the onset and progress of symptoms. Physical findings are ascertained with greater expediency when the clinical history is clearly in mind.

No patient, man or woman, should be examined until full exposure is made of the back and lower extremities. Full inspection reveals visible deformities, abnormalities, and deviations. Further inspection and palpation shows the presence or absence of muscle spasm and the range and character of active and passive motion of the lower back and the hips. For the determination of the true range of motion, active and passive flexion, extension and lateral bending, as well as rotary motion, must be observed and evaluated. Subjective sensitiveness or painful areas must be determined. All these movements should be observed while the patient is standing.

Then the patient is placed in a recumbent position face down upon a firm examining table. The position of the torso, hips, and pelvis is carefully noted. Pressure over the various areas of the spine and pelvis reveals findings not previously determined. Deep fist percussion over the spinous processes and over the sacrolumbar and sacroiliac joints should always be made. Elevation of the legs—that is, hyperextension of the thighs at the hips—often gives useful information. External and internal rotation of the hips informs us of the presence or absence of hip-joint disease.

With the patient lying on his side, firm pressure over the iliac crests causes pain in acute or subacute sacroiliac disease. With the patient lying in a recumbent position on his back, flexion of the thighs on the abdomen and extension of the legs on the thighs will elicit sciatic pain when there is any sensitiveness along the course of the sciatic nerve. By this means we can also determine shortening of the fascial or ligamentous structures about the hips, pelvis, and spine. Full and free rotation, abduction, and adduction of the hips

are possible where there is no pathology about the hip joints, but even these movements may elicit pain in the sacroiliac or sacrolumbar joints when those parts are acutely inflamed.

I mention all of these elementary points in the physical examination, since they are important in arriving at a true diagnosis and because I know that they are often neglected.

After a full history has been obtained and the physical findings have been determined, then we are ready for the X-ray examination. Necessary for the diagnosis are the anteroposterior and postero-anterior flat or stereoscopic plates. Next in importance is the lateral projection of the spine and sacrolumbar joints in the X-ray film. The X-ray observations should reveal the presence or absence of:

1. Congenital deformities or malformations.
2. Fractures or dislocations.
3. Evidence of acquired malformations of the bodies of the vertebrae, laminae, and spinous processes.
4. Evidence of arthritic changes.
5. Evidence of actual bone disease, destructive tumors, or bone inflammations.

Among congenital deformities, one often finds a congenital hemivertebra, and whenever this condition prevails it is often possible to locate the counterpart or the opposite hemivertebra somewhere else in the spine.

There are those patients who, instead of having the normal five lumbar vertebrae, have six lumbar vertebral bodies. These persons are usually long-waisted and slender, and because of this condition very frequently have weak backs. It has been my experience that in 90 percent of those cases backache will sooner or later develop if the heavier occupations are undertaken.

Another commonly found congenital condition is the presence of four lumbar vertebrae instead of five. These people are short-waisted and the stocky type of individual. They should be employed in the more difficult labors where much standing and heavy lifting is necessary.

This condition of an abnormal number of vertebrae is often a familial one. I have seen a father, son, and daughter in one family, each with four lumbar vertebrae. I have also seen a mother and two daughters, each with six lumbar vertebrae.

Other congenital deformities include spina bifida occulta where complete fusion of the neural arch has not taken place. The laminae frequently are malformed and in a bad position and may or may not be properly attached to the spinous process. Such a condition necessarily interferes with the proper bracing or rafting and with the proper and normal attachment of the ligamentous structures.

Another serious congenital condition is the lack of fusion of the lamina to the body of the vertebra. This may be unilateral or bilateral. Very frequently it involves the fourth and fifth lumbar vertebrae. It is not easily diagnosed, and often a number of X-ray films are required to bring out this lack of fusion; but it is very important that this finding or the absence of it should be observed in all cases of low back pain where there seems to be no other reason for the symptoms.

Congenital malformations of the body of the vertebra are not rare. There may be lateral wedging or anteroposterior wedging, all of

which should be easily diagnosed in the proper type of X-ray film in the lateral projection.

Congenital anomalies in connection with the fifth transverse process include the bat-winged process or unusually narrow long lateral process, as well as those which are congenitally sacralized or, even though not firmly attached to the sacrum, may impinge upon the ilium, thus causing a weakened condition and an unstable one in the sacroiliac joint. This may be bilateral or unilateral, and the exact extent may be determined best from an anteroposterior stereoscopic film.

Another condition which is occasionally seen and which often leads to errors in diagnosis, is the congenital failure of union of the transverse process to the body of the vertebra. I have seen such a case in which all of the transverse processes of the lumbar vertebrae were completely detached on one side. It would have been very easy to mistake this for a traumatic fracture of all of these transverse processes.

A congenital displacement, usually forward, of the fifth lumbar vertebra, known as spondylolisthesis, is occasionally observed. It is a difficult proposition to determine whether a given case of forward displacement of the vertebra is congenital or acquired. If congenital, there must be an absence of the proper facets or a malformation of the lamina before the body of the vertebra can be displaced forward. In the case of severe injury, these structures must be fractured, partially or completely, before the displacement can take place. I have seen a case in which the entire body of the fifth lumbar vertebra lay in a line anterior to the front of the sacrum. I have also seen instances in which the third or fourth lumbar vertebra was displaced forward, the fifth remaining in its normal relationship. Inasmuch as this condition of spondylolisthesis is often found accidentally during the search for some other spine condition, and in the absence of a history of trauma, we must not immediately jump to the conclusion that the industrial worker has sustained a serious injury to his spine when this condition is shown on the film. We are mindful, however, of the fact that an existing partial spondylolisthesis may be greatly aggravated by a direct or indirect injury to the lower back.

Fractures and dislocations of the various portions of the body and supporting structures should be easily determined from the examination of well-made films in the various projections described above. The most common fracture is that which is known as the compression fracture. This consists of a wedging, usually of the anterior portion of the vertebra, but may also involve the lateral portion, thus giving not only forward but also lateral deviation of the spine. A complete fracture through the body of the vertebra is rare, while, on the other hand transverse process, lamina, and spinous process injuries are frequently seen in industrial cases. Traumatic dislocations are occasionally found, especially in the heavier industries, and may include a partial or complete crushing of any vertebral body with displacement of portions of the bony substance forward or laterally or both, with or without injury to the spinal cord or cauda. Dislocations forward have already been alluded to under congenital malformations.

Evidence of acquired malformations of the bodies of the vertebrae, laminae, and spinous processes usually is found in connection with severe injuries and fractures, although a long-continued occupation which requires stooping and heavy lifting may cause, especially in young individuals, a partial narrowing of the anterior or lateral part of the vertebra which closely simulates a compression fracture. Acquired malformations are also found and must always be thought of, especially in the young, in connection with an injury to or rupture of the nucleus pulposus.

Arthritic changes are probably the most common of the pathologic entities seen in the X-ray films of adults, especially those past middle age. Arthritis of the spine, and especially of the lower lumbar spine, is seen in many cases independent of any history of arthritis in any other part of the body. In routine X-ray film examination of the spine approximately 40 percent of males above 45 years of age who have followed the industrial occupations show arthritic changes, lipping, or spur formation. These arthritic changes are seen in the anteroposterior or lateral projections or both. They are usually located in the anterior portion of the body but frequently in the lateral aspect as well. In more recent years much has been said of arthritis involving the facets of the vertebral bodies. This is not easily diagnosed by X-ray unless the facet has been clearly brought into view on the film. It is not an uncommon condition and may be the source of a great deal of pain, in the lower part of the back especially, even though the film of the bodies themselves may show no pathologic changes.

When speaking of arthritis of the spine, it must be remembered that three distinct varieties are commonly recognized. First, traumatic arthritis; second, infectious or atrophic arthritis; and finally, the hypertrophic changes often seen in individuals over 40. The first type is as its name implies, due to actual injury to the body of the vertebra from excessive stooping, bending, or rotary motion of the spine. The second type, usually seen in the young, is of infectious origin, the foci of infection usually being found in the tonsils, teeth, and sinuses, and in connection with Neisserian and other local or general infections. It is important that these various types be differentiated, and here again we must depend upon the clinical story of the patient, the progress of the disease, and the X-ray findings. There is a definite reason for trying to make this differential diagnosis; the fact that traumatic arthritis nearly always gets well with rest and the proper type of immobilization and that atrophic arthritis, with immobilization and the eradication of the focus of infection, heals after a certain length of time, while in the hypertrophic type where there is marked lipping and spur formation there is very little hope of a healing or a cessation of symptoms except as a generalized hypertrophic arthritis in other parts of the body may reach a stationary status.

Dr. Papek, of Chicago, told me that in his 40 years' experience he had encountered only three or four cases which were pure sciatica. I have seen many cases of low back pain which extended into the thigh and even down into the outside of the ankle.

Traumatic arthritis is always due to injury, occasionally plus infection, where the atrophic and hypertrophic types of arthritis are not of necessity caused by the hazards which the industrial

worker must undergo but are frequently aggravated and become partially or completely incapacitating. In other words, it is my firm belief that too often industry is being charged with the production of an arthritis when this condition might, and probably would, have developed in this same individual no matter what occupation or profession he had followed.

Tumors and inflammatory processes of the vertebral bodies and the sacroiliac joints, although not common findings, must be kept in mind in the course of a general X-ray examination. Syphilitic bone disease, metastatic carcinoma, sarcoma, myeloma, osteomyelitis, tuberculosis, and many other conditions may be overlooked in the early stages unless the examiner is constantly on the lookout for their presence. The relationship of bone tumors, osteomyelitis, and especially sarcoma to trauma has been a much discussed question. It is a known fact that a single injury may precipitate the localization of tuberculosis and sarcoma, and for that reason it is so necessary to differentiate these lesions from others in the production of which trauma plays no important role so far as we know.

Having before us, then, the clinical story of the onset and progress of a given disease, the physical and laboratory examinations, together with the X-ray findings, we should be in a position to make a diagnosis and differential diagnosis of a given lesion causing low back pain.

I said in the beginning that low back pain is a disabling lesion to the industrial worker because there is scarcely any position in industry which does not require the use of the spine in walking, bending, and lifting. Much has been said in connection with preemployment examinations. I know of at least one large corporation which has for years made X-ray films of the spines of all prospective laborers.

This brings us to the point of the significance of low back pain to industry. Should a patient who has a congenital deformity or an existing arthritis or some other acquired malformation be admitted to industry and subjected to the hazards and traumas of the work which is necessary in connection with an industrial occupation? It is a well-known fact that a patient with such a predisposition is more subject to injury and is much more easily incapacitated than the patient with a normal spine. Arthritis, as an economic problem, has played such an important role in industry in the various nations that medical and lay groups have been organized to study this subject with the hope of finding the cause and the cure.

I have some very definite convictions in connection with the treatment of backache. We have too much humbug and hocus-pocus in the treatment of industrial cases, especially those of the backache group. We have too much worthless physical therapy glassware and machinery. We have too much of "infraviolet and ultrared", and I confuse the terms advisedly; too many switches which can be turned on without physical or mental effort. We have in industry too many indifferent, incompetent, and lazy medical men to whom the management of each case becomes so stereotyped and so routine that the use of cortical cells is unnecessary. I make a plea for the unfortunate army of backache cases in industry. I make a plea for a thorough examination and a diagnosis of the true condition and then the application of rational, common-sense treatment—methods based upon the existing pathology.

It is my belief that complete rest in a recumbent position in any given case of back injury or strain, whether bony structures are involved or not, is the most important part of the treatment right from the start. This immobilization on a firm mattress, on a fracture bed, in a plaster mold, or in a body brace, with or without extension on the pelvic girdle and on the head, must be kept up sufficiently long to permit of the repair of the structures, the protestations of the claim department notwithstanding. The time required for the restoration of tissues depends entirely upon the damage done and upon the amount of lowering of the threshold of fatigue in a given case. It is my belief that in the more severe back injuries we will continue to produce fusions in the lumbar spine, sacrolumbar, and sacroiliac joints. In this way the period of disability can be greatly lessened and the patient relieved of much unnecessary suffering.

There is a place for physical therapy in the treatment of low-back cases, but again its application must be carried on with the rationale based on tissue histopathology and not in accordance with the extravagant claims of the manufacturer.

Let us not forget that all our interest and effort must concentrate upon the injured man. Our aim must be to bring him back to health physically and mentally, to again make a producer of him who would otherwise be a burden to society.

Our attitude is that the patient is always right until we have been able to prove he is wrong. There are malingerers. Among the men I have been asked to examine in the last 4 years I have estimated that of the American-born there are less than one-half of 1 percent who are real malingerers. Among the foreign-born the percentage runs up to about 2 percent.

As to evaluation of disability in backache, how is one to do it? If a man has a leg cut off, it is easy to evaluate his disability. If he has one finger cut off, you have no discretion in the matter; the law tells you exactly what to do. The same is true if he has one eye, or one testicle, or one ear cut off. But what is the disability in a backache case? What are you going to do about that? The law does not tell you what to do about that, and there again you must use your own experience and judgment as to what this arthritic has suffered. You know the bump on his back or the cave-in of his back did not cause the arthritis, because that accident occurred only a few months ago, and his arthritis is of years standing. You know that the injury aggravated the condition, but you must consider this: How long does it take an arthritic who has had an injury to come back to the status or condition before the injury was sustained? That is something that is rather hard to evaluate; yet we know that unless a man has had an actual fracture or very severe injury, with cord findings, and so forth, that man under proper treatment and with the proper rest should at the end of 6, 8, or 10 weeks at most be back to the normal status he was before he had the injury, arthritis and all.

Of course, these arthritics are much more susceptible to injury than the normal person, but at Hines Hospital, where we examine hundreds of men each week and make X-rays of all sizes, shapes, and projections, we find in cases of patients who have never complained of backache, arthritic spurs here and there, and lippings

everywhere. If they were employed in industry, I suppose that would be the cause of their disability.

Let us try to determine the amount of injury this patient had. Let us try to determine, if we can, how long, under ordinary conditions, it is going to take him to get well. Let us evaluate the man's mental attitude. Let us throw out the malingerers, and then we can estimate rather well as to when the patient should be back on the job.

Chairman BOWEN. This paper will be opened for discussion by Dr. W. H. Hines, of Kansas City, Mo.

DISCUSSION

Dr. HINES (Missouri). In discussing this excellent paper of Dr. Kreuzschers', I readily agree with him that most of the lower back pain centers around the lumbosacral joint, and it is the opinion of most orthopedic surgeons today as well, that this joint has to do with the real weightbearing of the back, and, as a result, we find a greater number of back complaints.

Also, much importance is being placed on the articular facets which, together with the lumbosacral joint, have to do with the functioning of the spinal column. If we take a skeleton and study it carefully we can then see the articular facets and appreciate the work they really have to do. Many of the pains that we call backaches are only pains in these joints, and the least extra exertion brought about in this region gives a severe aching pain at once.

It is the consensus among orthopedic surgeons that to diagnose a low-back pain, one must be able to recognize the normal back and have a clear understanding of its anatomy before he makes an attempt to diagnose the abnormal back.

The abnormal back covers a broad field. Such a condition as spondylolisthesis, which is the slipping forward of the fifth lumbar vertebra, can easily be diagnosed with a lateral X-ray of the spine. Curvatures of the dorsal and lumbar spine, and also a condition where there are four or six lumbar vertebrae present instead of five, can be detected with the X-ray. The last abnormality is not a common occurrence but does occur. When you find this condition of four or six vertebrae, you at once know that the patient has a weak back and that it does not have the proper support. The muscles and ligaments are called upon to do extra work, and the back has lowered resistance to offset this extra burden. There is also lack of proper weightbearing.

Other abnormal conditions are: Old fractures, hypertrophic arthritis, sacralized spinous, and transverse processes of the lumbar vertebrae, and spina bifida occulta. We must also consider neoplastic growths on the cord, inflammatory processes in the pelvis, of the bladder, and of the prostate gland. At times backache may be caused from changes in the abdominal organs; such as, enlargement of the kidneys, liver, or pancreas, or it may be caused by enteroptosis, gastropptosis, any form of hernia, large hydroceles and varicoceles.

I should like to emphasize the importance of X-rays. All pictures of the spine should be taken on a Bucky diaphragm or stereo. By so

doing you will be able to get a better and clearer X-ray and be able to bring out all the fine details of the bone; whether it is normal or abnormal; whether there is a curvature, fracture, postural, or some bone pathology. In our office it is not customary to take X-ray pictures of a back unless history of the accident makes it advisable. However, in many cases that have not recovered as promptly as they should have, we have taken pictures which have revealed conditions we may have suspected, but had nothing definite to go on. The X-ray findings have helped immeasurably in subsequent treatment.

It is true that many times we go before the compensation boards and are given X-rays to interpret which have been so poorly taken that one could not possibly tell if the injured person had an abnormal back or a fracture. I hope our commissioners, in dealing with such cases, will order other X-rays taken so that the orthopedic surgeon or the doctor testifying will be able to give a thorough interpretation of the plates. By so doing greater justice will be done to the injured person and to the insurance carrier as well. Many times in examining an X-ray picture we have lengthy discussions on the sacroiliac joints and the tipping up or down of the pelvis, which condition really was due to the position of the patient on the table when the X-ray was taken, or perhaps to the ray being focused over one of the sacroiliac joints, bringing out the details of it more than of the one the ray was not focused over. This produces an illusion on the picture which looks like a distortion. In taking X-rays of the pelvis there should be oblique as well as antero-posterior and lateral views. X-ray films may also be over or under developed and as a result, give a poor picture.

My time is very limited in this discussion, but I would like to mention some of the treatments carried out for low-back pain.

Most cases that the average orthopedic surgeon sees in his office are ambulatory and continue to work, coming to the office for treatment. These patients require only strapping of the lumbar and lower dorsal regions with adhesive strips extending across the back and well around the crest of the ilium on both sides. We also give these cases large doses of salicylates and codeine, as many times we have arthritic conditions to deal with, and the heavy doses of salicylates will hasten their recovery.

Most severe cases we send to the hospital, put extension traction on the head and Buck's extension on the legs, with 10 to 12 pounds of weight, applying heat continuously to the back. This treatment is to be continued for 10 days. By that time most of the muscle spasm has subsided and physiotherapy treatment can be used until inflammation and soreness disappear.

The matter of physiotherapy treatment is frequently a question of debate. It is undoubtedly true that massage is inadvisable in many back cases. However, there are also many cases where I believe heat and massage to be extremely helpful. In this matter, as in practically everything, intelligent treatment gives the best results. I firmly believe that massage should be given only by a physiotherapist who has been college trained and has had considerable hospital experience. These people have a knowledge of anatomy and understand thoroughly the locations and functions of the muscles, ligaments, and nerve supply. Results obtained by graduate

physiotherapists are far more satisfactory than those obtained by the average masseuse or masseur.

I agree with Dr. Kreuzscher that promiscuous use of various types of lamp treatments for injured backs is highly questionable. I do believe, however, that in cases where there are no complications involving bones or joints, and the injury is confined to the muscles and ligaments, the use of heat lamps, together with physiotherapy properly administered, is very satisfactory treatment.

In ambulatory cases where immobilization of the muscles is indicated, I do not feel the immediate use of a fitted belt is advisable as the patient with such a device immediately magnifies in his mind the importance of his injury and feels that he is really disabled, perhaps for some time. We accomplish very satisfactory results in cases of this type by the use of adhesive strips, as I have described previously. Most of these patients continued to work and are entirely recovered in from 7 to 10 days, their only discomfort usually coming from the irritation of the adhesive itself. I do not wish to minimize the importance of belts in really serious cases. Where you have a genuine sacroiliac sprain, the special belt for that condition gives excellent relief.

Chronic back cases have to be treated with a plaster cast, the cast being applied while the patient is in extreme extension, extending from under the arms to well down over both thighs. It should be left on for 5 or 6 weeks. If this treatment is properly carried out, you will not only correct the bone or joint condition but at the same time give the muscle a chance to restore itself to normal. It is true that we do not give the muscles in this region enough consideration, especially when we have myositis or myalgia to deal with, and we pay more attention to the bones than necessary.

Another treatment that is carried out quite extensively, especially pertaining to subluxation and sacroiliac conditions complicating the lumbosacral strain, is a treatment by Dr. Adams, of Boston, of forceful manipulation of the legs, back, and spine. Many orthopedic surgeons regard this treatment as being too strenuous and therefore not safe. While in Boston in 1934, attending the meeting of the American College of Surgeons, I observed a number of cases Dr. Adams had treated in which he had obtained excellent results.

After carrying out all these treatments and the patient is still complaining of pain, you must then consider surgery. The operation performed in the majority of cases is fusion of the fifth lumbar with the sacrum by the Hibbs method, which has proved very satisfactory in the New York Orthopedic Hospital. This operation completely immobilizes the lumbosacral joint and interferes very little with mobility of the spine, as there is very limited motion in this joint anyway. Fusion operations upon the spine are looked upon by some doctors and commissioners as a radical procedure; but experience and cases recorded by orthopedic surgeons have proved that few deaths have resulted, there is very little shock, and the results accomplished have been very satisfactory.

I thoroughly agree with Dr. Kreuzscher that getting good clinical history and physical examination are very important in all back cases, because they bring out defects which otherwise might be overlooked. I believe the day is coming when we shall be able to show our insurance companies and industries that are self-insured

that complete physical examinations at the time of employment of all applicants, followed by periodical check-up examinations will lower their loss ratios and at the same time give them higher efficiency in their personnel.

Some may criticize physical examinations being required of all employees because they tend to eliminate from industry many people who may be unable to be graded as first-class risks, but are good workers and deserving of jobs. Rather than eliminate from work applicants and people already employed, by means of examinations, they can be located in industry where their defects will not be a hazard to either them or their fellow workers. If a person is found by examination to have a defective back, he can be guarded from a long, expensive injury by keeping him at work which does not require a strong back. If the person has been employed for some time before the examination is made, and he is found to have some physical defect, that should be no reason for his dismissal. It is of inestimable value to have his defects definitely on record, so that in the event of an injury, and a possibly complicated settlement as to his permanent or temporary disability, his known defects can be called to his attention.

I further believe that the time is not far off when examinations of applicants for industrial positions will include X-rays of the spine as well as of the lungs, as is now being required by many insurance companies and industries where there is a silicosis hazard. In the same way we shall be able by means of X-ray to determine definitely the condition of a man's back before he becomes exposed to a compensable accident or, if he has been working, before he has an injury. Of course, the cost of such an elaborate program immediately comes to mind. However, when officials become convinced of the value of X-ray pictures of the spine, and insist on them for all employees under compensation, the work can be handled on a large volume basis which will make it possible to reduce the costs accordingly.

Dr. PUSRZ (Kansas). I was glad to hear Dr. Kreuzer emphasize the importance of very careful diagnosis of low back pain. It is not sufficient, however, to differentiate between a sprain, arthritis, or a tumor. The modern industrial surgeon must be able to put his finger on the exact location of the condition which is causing the trouble. He must be able to differentiate between the sacroiliac and sacrolumbar sprain; he must be able to tell whether the pain is from arthritis or from iliolumbar sprain or sprain of sacrotuberous or sacrospinous ligaments. Until he can make a definite diagnosis in terms of exact anatomy and exact pathology, the whole realm of treatment for low back pain is going to be a haphazard guess.

I want to stress that, because recently in going over the cases more carefully, we have been able in a small community to get a comparatively large number of diagnoses of iliolumbar and sacrotuberous and sacrospinous sprains.

It is very important to evaluate the relationship of trauma to the particular condition which one is investigating. There must be not only the occurrence of trauma but knowledge of the exact relationship between the onset of the pain and the occurrence of the injury. In taking a careful history, the history of an arthritic syndrome is essentially different from a mechanical syndrome, and if one is care-

ful properly to evaluate the symptoms of which the patient complains, it is usually possible to make a diagnosis of sacroarthritis or sacrosprain.

I must disagree with Dr. Kreuzscher very emphatically on the value of physiotherapy in the treatment of these conditions; first, because the fact physiotherapy is being abused is not the manufacturer's fault nor the physiotherapist's. It is your fault. Until such time as doctors understand the value of physiotherapy in the treatment of disease all of this nonsense which is going on will continue.

The claim for physiotherapy is not that it will cure anything, but that it is a valuable adjunct in the treatment of disease. I know of nothing that is more comforting to severe arthritis than application of infrared heat, followed by massage by a competent person and at the right time. It is not a cure, but it is an important adjunct in our treatment.

Take a case of fracture of the transverse process of the lumbar vertebrae, for instance. In my experience, we cause more trouble by immobilizing these cases too long. I have never seen a case of permanent disability due to an ununited transverse process of the lumbar, but I have seen a great many disabilities remain because the surgeon was unable to, or did not, diagnose that the patient had not only a fracture of the transverse process of the lumbar but also a sprain of the sacroiliac joint.

A great many of these conditions caused by sacroiliac sprain and sprain of other parts of the body can be helped materially by the expert administration of physiotherapy. That does not mean that the doctor makes the diagnosis of sacroiliac sprain and tells the physiotherapist to go ahead and give the patient the treatment for sprain of the sacroiliac joint. The surgeon must dictate to the physiotherapist exactly the mode of treatment he wants given. If he wants infrared, he must designate infrared, the length of time it is to be applied, and if it is to be followed by massage, he must indicate whether it is to be friction rubbing or otherwise.

I think the proper use of physiotherapy is a most important adjunct in the treatment of these conditions. As far as manipulation is concerned, I believe that should be reserved for the chronic cases of sacroiliac sprain. In cases of sacrolumbar sprain, it has been my experience that manipulation has very little effect. In cases of sacrolumbar sprain I have sometimes had to sever the ligaments between the fifth lumbar and the sacrum, which is comparatively simple and follows the reasoning of manipulation.

I think we as doctors should make more definite diagnosis and indicate to our physiotherapists just what to do and not leave it to them. The same is true of bracemaking. Too many doctors take the attitude of letting the bracemaker dictate what type of brace should be used for a fracture of the spine, or what type of belt for a sacroiliac sprain. The surgeon should have the ability and knowledge to designate to the bracemaker just what type of brace is to be applied, just as he should have the ability and knowledge to tell the physiotherapist just what treatment is to be given.

In my opinion, one of the most prevalent mistakes we are making today is the application of flimsy braces which are not properly immobilizing the body. In cases of severe sprain or arthritis of the

spine, the brace must be an integral unit which grasps the body as a whole. It is almost impossible to manufacture a brace by measurement alone. The doctor must take a plaster model of that body in order that the bracemaker may make an exactly fitting brace which will grasp the body in the proper position.

The doctor should designate what he wants to the physiotherapist and to the bracemaker just as he designates to the pharmacist what he wants in a prescription.

Dr. FRANCISCO (Missouri).—I was in Sedalia, Mo., a few years ago when the State medical society met there, and discussion arose in regard to low back pain, very much as it has been discussed here today. A good many of the things that have been said about it today were said at that time.

Dr. Chenoworth, of Joplin, said: "What I would like to have these learned doctors tell me is, when you have done all these things and your patient still complains about his back, what are you going to do?"

Dr. Herman Pierce got up and said, "There are just two things you can do after you have done all the things that are known to be done. One is to do like the poor folks in Ireland do, the best you can; the other is to follow Fatty Lewis' advice about the dandelions in the yard, that is, just die and leave them."

What I wanted to say about low back pain is that there are too many doctors permitting their patients to make the diagnosis. That is wherein the difficulty lies. If the patient is going to make the diagnosis and you are going to treat along the routine lines, you are not going to get anywhere. Drs. Pusitz and Kreuzscher have both emphasized that.

On the other hand, when you have made the diagnosis, you must impress the patient with the fact that the condition is more or less similar to any other joint condition. I do not know why there should be the feeling there is about back sprains and back pains, because all of the joints react much the same as those joints. There is a certain amount of stress and a certain amount of physiological pain about which I think we have forgotten. Dr. Kreuzscher mentioned that one may have a pain in the knee or the shoulder or the elbow, but that the discomfort caused from pain in the back is regarded with a great deal more seriousness than when it is in the extremity joints.

I think one has to be quite definite in handling those cases. I mean this: If a fellow has not very much the matter with him, I think he should be impressed with that fact. If your examination of the patient shows no evidence of any serious condition, I think you should tell him so.

I believe that is a good policy to practice in all kinds of medicine. I have seen a great many people who have suffered long and continuously as a result of having been told that they had something serious the matter with them. That is a great mistake. If there is anything serious the matter, that is different, but if they have nothing much the matter with them, they should be told and in that way get their attitude directed right.

One other thing that impresses me in the handling of these cases is that it frequently happens that a fellow apparently is all right, and you tell him to go to work. He goes to work and immediately

has some discomfort. He thinks it is the result of his injury. I try to tell such patients that it is the result of disuse, of not having been at work. If any of us were to go out and throw a baseball today, we would have some discomfort tomorrow as the result of using muscles which we have not been accustomed to using. I think that is often the case with backache. The person thinks because he is having discomfort he is not well and wants more treatments. It will help a great deal if the doctor will take a little time to explain to such patients that the discomfort is not the result of the injury but primarily because of disuse.

In dealing with these cases I think we have attempted often to do too much. I never heard very much about physiotherapy and lights and things like that until after the war. Then people got the notion that the disabled soldiers should have the benefits of everything in the world, and this physiotherapy apparatus was played up.

A good many men are getting away from the ordinary type of physiotherapy and limiting it to heat and massage. I think heat and massage, intelligently used, are about all the physiotherapy one needs to use. I think there is such a thing as giving these patients "physiotherapy-itis." It amazes me to see how long they will come to have light on their backs. It is not that they have any particular faith in it, but they seem to want to continue with it.

After the diagnosis is made and the treatment outlined, I think the doctor has to use a good deal of psychology with the patient to overcome the fear that is back of the condition. I think we should emphasize the fact it is a good thing that there is such a thing as psychological pain. Almost everyone has had a backache at some time or other. I dare say if I were to ask the men in this audience to stand who at some time in their lives had had backache almost everybody in the room would rise. In some instances backache is disabling, but in most instances the best thing to do is to keep going and keep the physiological processes at work.

Chairman BOWEN. Dr. Kreuscher, will you close the discussion?

Dr. KREUSCHER. I have nothing to add, except that I wish to thank the men for their discussion. I hope what has been said on the subject may bring those of us who are treating industrial cases a little closer to our patients in an effort to reduce the disability and see if we cannot give them a little mental treatment along with the physical treatment. I think that is very important.

Chairman BOWEN. Dr. Loveland has a resolution which he would like to introduce at this time.

Dr. LOVELAND (Kansas). I have been requested to present this resolution to the section:

Whereas the I. A. I. A. B. C. has this year extended the medical profession an opportunity to participate in a medical section for discussion of the many medical problems incidental to workmen's compensation and has otherwise cordially invited the members of that profession to take part in the deliberation of this organization; and

Whereas the medical profession greatly appreciates this opportunity and believes that cooperative activities of this kind will produce many mutual benefits: Now therefore be it

Resolved, That the medical profession does hereby thank the I. A. I. A. B. C. for its courtesy and cooperation in this regard, and also does hereby express its hope that similar programs may become an annual adjunct to the meetings of this organization.

[Dr. Loveland's motion for the adoption of the resolution received several seconds and was carried.]

[At the suggestion of Dr. Hassig, the resolution was presented to President Baker.]

President BAKER. I will see that this resolution is properly presented at our executive-committee meeting, which will probably be sometime Friday morning, at which time it will be given due consideration.

I am glad for this expression, and I want to compliment you on this meeting. I think it has been a fine one, and particularly in view of the fact it is an initial meeting of the kind, a great success. I personally very much appreciate the splendid loyalty and cooperation on the part of the medical profession in this endeavor.

Chairman BOWEN. The next speaker will be introduced by Dr. L. D. Johnson, of Chanute, Kans.

Dr. JOHNSON (Kansas). Next on the program is the discussion of knee-joint derangements. As you all know, this is one of the most important things that come before industrial bodies.

Our speaker had wonderful training with Steindler, of the University of Iowa, and is perfectly competent to give us a discussion that is well worth while. I wish to introduce Dr. Arthur E. Bence, of Wichita.

Dr. BENCE (Kansas). Before getting into my paper, I want to say in presenting this, I do not expect to present anything new and startling, but what I do expect to present to you in a manner which you can grasp are some of the details which are commonly overlooked and a little of the anatomy which is not thoroughly understood.

Internal Derangements of the Knee

By Dr. A. E. BENCE, *Wichita, Kansas*

It is impossible to discuss fully all lesions producing internal derangements of the knee joint in a paper of this length. Therefore, the writer has largely confined his remarks to the discussion of the most common causes of this disabling lesion, namely, injuries to the semilunar cartilages.

ANATOMY OF THE KNEE

In making a diagnosis of internal derangement of the knee one must have a thorough knowledge of the anatomy and pathology pertaining to the joint. The knee is a complicated, semihinge joint. There are three points of contact—the condyles of the femur with the tuberosities of the tibia, and the femur with the patella.

Draped about the articular margins of the condyles of the femur are the sickle-shaped semilunar cartilages. Their broad convex margins are attached to the tuberosities of the tibia more or less by the coronary ligaments. Their narrow, free, concave margins extend inward toward the center of the joint. The cartilages normally fit into the triangular space about the area of contact between the femur and the tibia.

Semilunar cartilages.—The internal semilunar cartilage is nearly semicircular in form, is wedge-shape in cross section and at its base is loosely attached to the anterior or weakest portion of the deep layer of the internal lateral ligament, but is firmly attached to the posterior or stronger section of the ligament.

The cartilage terminates anteriorly by bifurcating; the internal or posterior portion passes across to be attached to the external semilunar cartilage and is known as the transverse ligament. The anterior, or shorter portion, is attached to the intercondyloid fossa of the tibia in front of the attachment of the anterior cruciate ligament.

The posterior half of the cartilage is much larger than the anterior and is fixed to the nonarticular area of the tibia between the attachment of the lateral meniscus and the posterior cruciate.

The external semilunar cartilage is more circular and thicker than the internal. It has two attachments anteriorly to the internal cartilage by the transverse ligament and by the anterior horn to the nonarticulating surface of the tibia just behind the anterior tibial attachment of the internal cartilage. The posterior end is attached to the tibia, anterior to the posterior attachment of the internal semilunar and to the posterior cruciate ligament by a strong band known as the ligament of Wrisberg. The external cartilage, like the internal, is bound to the outer margin of the tibia by the coronary ligaments. The external coronary ligament is approximately 10 mm in length, whereas the internal is only 6 mm long. This difference in length in the coronary ligament, plus the fact that the external cartilage is not attached to the external lateral ligament, permits a greater functional range of motion without trauma.

The function of the semilunar cartilages is twofold: First and most important is the maintaining of a constant film of synovial over the cartilagenous covering surfaces of the joint. Second, by their shape they aid in adapting the condyles of the femur and the tuberosities of the tibia to the ever-changing relation of the articular surfaces throughout flexion and extension.

The ligaments of the knee joint.—The ligaments of the knee joint for the most part, are strong flat bands and are commonly spoken of as the articular capsule, the ligamentum patellae, the anterior and posterior cruciate (cross ligaments), the internal and external lateral ligaments, the oblique popliteal, the transverse, and the coronary.

The capsular (articular capsule) ligament completely envelops the joint, except over the upper pouch, subjacent to the quadriceps extensor tendon.

The ligamentum patellae is a powerful flattened band connecting the patella to the tibia.

The cruciate ligaments are strong, rounded, tendinous bands. They are known as the anterior or lateral and the posterior or medium. The anterior arises from the outer nonarticular rough surface of the tibia anterior to the tibial spine and passes upward, outward, and backward to insert on the posterior end of the mesial surface of the external condyle.

The posterior cruciate ligament arises from the anterior portion of the lateral surface of the mesial condyle and passes downward, outward, and backward to attach to the nonarticular surface of the tibia, posterior to the spine.

Lateral ligaments.—The internal lateral ligament extends from the mesial aspect of the internal condyle above to the posterior mesial aspect of the inner tuberosity of the tibia. The ligament is thin or weak anteriorly but thickens and is strong posteriorly. Anteriorly it is loosely attached to the internal semilunar cartilage while the posterior portion is firmly attached to the cartilage.

The external lateral ligament is made up of a long and a short section in general. It passes from the head of the postero lateral aspect of the fibula and adjacent ligaments to the external condyle of the femur.

Muscle support of the knee joint.—A discussion of the ligaments of the knee joint would not be complete without mentioning:

The vastus internus, whose fibers attach to the internal lateral ligament.

The semimembraneous tendon, which comes in close contact with the posterior end of the internal cartilage as it passes over the posterior mesial condyle of the tibia to insert into the groove on the back of the condyle.

The biceps tendon is closely associated with the external lateral ligament, and the popliteal tendon passes between the external lateral ligament and the tibia through a groove on the posterior surface of the external condyle. Through part of its course it is in close relation to the posterior portion of the external semilunar cartilage.

The oblique popliteal ligament binds the structures of the posterior surface of the joint together. This ligament is usually injured in hyperextension of the knee.

The heads of the gastrocnemius muscles also reinforce the posterior part of the joint.

The transverse and coronary ligaments are discussed with the cartilages.

FACTORS PRODUCING INTERNAL DERANGEMENT

- (a) Lesions of the semilunar cartilages.
- (b) Rupture of the internal and external lateral ligaments.
 - 1. Of the crucial ligaments.
- (c) Hypertrophic villi.
- (d) Alterations of the infrapatella fat pad.
 - 1. Hypertrophy.
 - 2. Scaring and retraction into the joint.
 - 3. Mucoid cyst.
- (e) Recurrent dislocation of the patella.
- (f) Benign tumors, xanthoma, fibroma, endotheliomata, lipomata, and chondromata of the anterior end of the cartilage.
- (g) Free and foreign bodies in the knee.
- (h) Fractures into the tibial tuberosities, femoral condyles and the resulting mechanical disalignment.
- (i) Osteochondromatosis rare.

During motion the external condyle is usually fixed at about the center of the articular surface of the outer tuberosity of the tibia. The internal condyle glides across the tibial articular surface in a swinging arc, thus greatly increasing the chance for trauma to the internal semilunar cartilage.

Last, the muscles of the knee joint are paramount in maintaining the normal tension of the joint.

Any alteration of the quality and tone of the quadriceps extensors, especially the vastus internus portion, will be followed by subsequent

strain and injury to the joint. In my own case the vastus internus was the first to atrophy and is coming back very slowly. The joint gave me no trouble after the twelfth day, even though I was on it seven to eight hours every day after the seventh day.

MECHANISM OF INJURY AND PATHOLOGY

Internal semilunar cartilages.—Whenever the body weight is thrown on the everted toe of the foot with the knee partially flexed, the upper end of the tibia is forced more or less violently into the external rotation. The internal condyle of the femur is thus caused to glide backward, pushing the posterior or stronger portion of the cartilage ahead of it. This action more or less draws the anterior or weaker portion of the cartilage tightly into contact with the opposing articular margins of the tibial tuberosity and femoral condyle. Then when extension of the leg on the thigh begins, if the cartilage is caught one of five things happens:

1. The cartilage is further drawn into the vise-like grip of the opposing articular surfaces which crushes the cartilage and tears it loose from its anterior lateral attachment, producing the initial longitudinal tear which by repeated injury becomes the bucket-handle type of cartilage.
2. The cartilage may be torn loose at its anterior end, rupturing the transverse ligament, or the anterior horn or both.
3. The cartilage may tear transversely at the point of marginal contact with the femoral condyle producing the so-called middle third fracture.
4. If most of the crushing force is everted on the posterior end of the cartilage, a posterior end or third fracture is produced.
5. In rare cases there may be a longitudinal fracture, complete or incomplete in the horizontal plane.

External semilunar cartilage.—The external cartilage is usually injured by forced inward rotation of the tibia on the femur. On slight flexion and adduction, as the flexion or twist continues when one falls, the cartilage is caught between the grip of the external condyles of the tibia and femur.

The pathology of the injury to the external cartilage is the same as for the internal except that the posterior end is usually the one injured. The anterior is left intact. Also according to Dr. Campbell, cysts are more frequently found in the external cartilage than the internal. (13-1) Campbell.

SYMPTOMATOLOGY AND PHYSICAL FINDINGS

History.—The importance of a carefully taken history cannot be overestimated. Previous accidents must be closely analyzed and the chronological sequence of events established. Did the foot slip? Did the patient fall on the knee, or did something strike the part? Was the knee flexed or rotated and if so, in which direction was the force applied? Did it swell at the time of the first accident? Has it swollen since? How often? Did the knee lock at the time of the first accident? Has it locked since? Can the patient completely extend the knee? Does the attempt to completely extend the knee produce a sense of fullness in the joint as though something was being wedged between the joint ends? Does the knee give way? If so, when and how?

Pains and tenderness.—Pain is almost a constant complaint, being present in 90 percent of the cases. The examiner should ask himself, Is the point of greatest tenderness—

(a) Over the lateral ligaments of their attachments to the bone or over the lateral joint margin? If the greatest point of tenderness is over the upper end of the tibial or lateral surface of a femoral condyle, or extends along the course of the ligament, beware of an injury to the ligament.

(b) Over the anterior or posterior end of the cartilage.

(c) Over the infrapatella fat pad.

(d) Over the popliteal space.

(e) Pain referred deep into the joint in all probability means an intercondylar lesion.

Pain location in an acute case is not infallible, as the pain may be referred to any or all parts of the knee but after 2 to 4 weeks is extremely accurate if one correlates it with a thorough physical examination.

Swelling.—In all cases having a history of injury, swelling is one of the constant complaints of the patient (95 to 100 percent).

"Giving away" or weakness is present in 80 percent of all recurrent cases. The patient lacks confidence in the part. It gives way, going down stairs, over rough ground, or when he attempts to run.

Locking.—The inability to extend the knee actively or passively is present in about 65 to 70 percent of the cases. It occurs suddenly and may be momentary or persist until reduced or removed.

Slipping is akin to locking but is not as severe. The cartilage is caught just hard enough to make it pop out like a marble from under the edge of the shoe. The patient will invariably say his kneecap was out of place or he dislocated his knee.

PHYSICAL EXAMINATION

The examination cannot be performed satisfactorily unless the patient is properly dressed. The examiner should follow a definite routine in order to eliminate errors. The writer prefers to have the patient in an ordinary operating room gown so that the thighs can be readily seen.

1. With the tail of the gown drawn between the limbs, the patient is asked to walk across the examiner's line of vision backward and forward. Any fixed flexion of the knee joint or muscle atrophy will be seen.

2. With the patient facing the examiner, who is seated, any fullness or alteration in the shape of the joint is noticed.

3. An active attempt to flex or extend the joint against resistance will reveal muscle wasting as well as loss of muscle tone in the chronic case. Always test the full range of motion and make note of any grating in the joint.

4. In palpating the joint:

(a) Temperature changes, presence of fluid in the joint, and the points of resistance or masses should be noted.

(b) Always test for lateral and anteroposterior mobility. The knee should be in full extension when tested for lateral motion, because the normal knee has little mobility when it is at 180°. Therefore the slightest comparative increase in lateral motion is pathological.

(c) With the knee flexed over the side of the examining table the joint should be closely palpated over the margins and the attachment of the ligaments determining any enlargements, oedema, or points of tenderness.

(d) With the patient in the reclining position the heel and hip fixed against the table any sudden gentle attempt to force the knee backward produces a sharp pain in the joint. The examiner will also notice a slight spring effect. The two findings will be present in about 65 percent of the deranged knees and when present always mean pathology within the joint.

X-RAY EXAMINATION

Radiographic examination of lesions of the semilunar cartilages are usually of little positive diagnostic value.

1. They are, however, of positive value in locating: A fracture of the tibial spines, tibial tuberosities, femoral condyles or linear fractures of the patella, osteochondritis desiccant, calcification of the ligaments and osteoarthritic spurs and an occasional calcification of the cartilage.

2. They should never be omitted and should always be carefully examined before operating.

DIFFERENTIAL DIAGNOSIS

1. Loose body:

- (a) They can usually be felt by the patient, sometimes by the surgeon.
- (b) X-ray may show them.
- (c) The locking lasts only a minute and can be reduced by any type of movement, whereas a locking semilunar cartilage will require a specific measure. The patient often finds the exact maneuver to reduce it.
- (d) Locking without a history of an accident favors a loose body but is not proof of it.

2. Quadriceps insufficiency may produce internal derangement or, on the contrary, be caused by it. A carefully taken history and a thorough examination will usually clear the picture.

3. Infrapatella fat pad: The locking is usually less severe and the pain deeper in. If one presses simultaneously over each side of the patella tendon and on a level with the joint line directing the force toward the center of the joint surface, the point of greatest tenderness is evidenced. With the knee completely extended there will be an excess fullness over the joint level on each side of the tendon.

The writer believes that most of the knees which are opened, and no apparent pathology found, are due to changes in the fat pad which overlies the anterior end of each cartilage.

4. Hypertrophic villi: Even though they are often credited with producing locking in the knee I have never found any at operation that I thought was sufficient consistency to be of any consequence.

5. Lateral ligament: Rupture or strain may be easily overlooked if one is not careful in his examination.

- (a) Pain over the points of femoral or tibial attachment.
- (b) Increased lateral mobility, usually abduction.
- (c) History of a blow to the side of the leg, usually the outer surface.

6. Rupture of the cruciate ligaments: The anterior ligament is ruptured by hyperextension of the knee or by a severe strain with the foot in outward rotation—as may occur in a basketball game. The tibia has a tendency to glide forward on the femur if the anterior crucial is ruptured, especially if there is an associated strain of either or both lateral ligaments and the popliteal ligament.

The posterior crucial ligament is ruptured by the same maneuver

causing injury to the external cartilage—namely, with the foot fixed to the ground the tibia is rotated inward on the femur and adducted at the same time. Rupture of the posterior crucial permits the tibia to glide backward on the femur. Rupture of both ligaments permits forward and backward gliding of the tibia.

7. Arthritis: X-ray and a careful study of the vague symptoms of grating, weakness, mild pain not referred to any part of the joint, and pain on forced extension.

8. Intra-articular fracture: One cannot differentiate a fracture of the spines of the tibia or of the joint surface from a cartilage injury except by the X-ray.

9. Fracture of the tip of the patella without separation is always painful on forced extension and there is a definite point of tenderness over the tip of the patella. X-ray should always be used.

10. Recurrent dislocation of the patella: The knee cap can be pushed over the outer condyle. If one is in doubt the case should be asked to carry out a fixed set of exercise for the benefit of the vastus internus and asked to return in 2 or 3 weeks.

11. Tumors: Benign tumor, such as xanthoma, fibroma, or the end of a torn cartilage, endothelioma, chondroma, pedunculated lipomata may be caught in the joint. A hernia of the joint capsule may produce a weak joint. These conditions are relatively uncommon in the knee and they cannot be positively diagnosed without opening the knee.

TREATMENT

1. The treatment, of necessity, must be based upon the history and the findings at the time of the examination. In acute cases the locking should be reduced by manipulation with or without anesthesia. The writer applies a light leg cast for a week to 10 days in some of the more severe knees; but since the pathologist repeatedly does not find positive evidence of regeneration in any tear of the cartilage except an occasional ill-formed or scar mass at the ends or along the outer border of the cartilage, the treatment should be direct toward prevention of muscle atrophy and additional immediate trauma.

2. If manipulation will not reduce the dislocation, open operation is indicated and nothing is to be gained by delay.

3. In the majority of patients an all-cotton elastic bandage is applied for 48 hours. It should not be continued indefinitely, for the prolonged use of any constriction about the knee joint is certain to produce a synovitis. The patient is allowed to walk on the knee after 48 hours and perform any but the most strenuous labors. If the quadriceps shows signs of atrophy and loss of tone, massage and graduated exercises are started at once. The usual mistake in treating the acute case is too rigid and too prolonged immobilization with no weight bearing.

4. In the cases of weeks or years standing, if the history and findings are inconclusive, 2 to 4 weeks' observation will clear the case as a rule. The cartilages which periodically give trouble, also the unreducible type, call for an early open correction of the mechanical derangement.

Incision preparation.—The transverse, oblique, split patella and longitudinal incisions are used for anterior derangement. When

the posterior end of either cartilage is suspected, or if not sufficient pathology is found anteriorly to account for the symptoms, the posterior internal or the posterolateral incision may be used to an advantage. However, the writer has found it necessary in only a few cases to make both the anterolateral and posterolateral incision, being able as a rule to pull the cartilage forward far enough to determine pathology.

The writer prefers in operating an internal cartilage to make a short longitudinal internal incision to begin with. This may be extended upward if found necessary.

Technique of operation.—1. The operation begins with a careful preparation of the knee at 4 or 5 p. m., the day before surgery. That is a rigid part of the aseptic technique that must be carried out at all times.

2. Every one coming into the operating room should be properly masked. No operating room should be used for a clean joint case that has been contaminated by even a questionable pus case within the past 24 hours.

3. If one uses a tourniquet it should be placed high on the thigh and just firm enough to stop arterial flow. As soon as the skin is incised and bleeding checked, wound towels should be clipped along the skin margins. The skin should thus be covered and kept dry from the initial incision to the final closure of the wound. All retraction should be carefully done, avoiding unnecessary handling. Any other procedure is poor surgery.

4. Upon opening the joint, the position of the cartilage, its mobility, the type of injury, or other superimposed pathology such as loose bodies, torn crucial ligaments, osteochondritis dessicans, tumors, fibroma, and xanthomata, cysts and fibrillation of the articular cartilage, especially of the patella, should be looked for. (A careful record made of a thorough internal inspection of the joint will not only increase our knowledge of joint pathology, but will certainly improve our surgical judgment as well.) If the damage is a bucket-handle tear, the removal of the displaced part is easy. The peripheral part should be inspected and if found projecting into the joint should be removed.

If the joint appears normal on first inspection, a thorough examination of the fat pad should be made. If the history is positive for internal derangement, the anterior two-thirds of the cartilage should be liberated and then pulled forcibly forward; if there is a posterior tear, the pathology usually can be seen. In either event the cartilage should be removed. In two cases the writer has operated the joint looked normal, but a horizontal longitudinal tear was found as soon as the anterior portion was liberated.

If no pathology is found in the cartilage, a reexamination of the infrapatella fat pad may show it to be thickened, fibrosed, or cystic or retracted into the joint by the ligamentum mucosum. The enlarged mass should always be removed. To repeat what the writer said, the operator should not fail to look the joint over closely for loose bodies, torn ligaments, tumors, osteochondritis dessicans and fibrillation of the joint cartilage proper, especially on the patella.

5. Every effort should be made to close the joint in the shortest possible time without undue haste. If the fat pad is retracted into

the joint, enlarged, cystic or fibrosed, the pathological portion must be removed.

Post operative treatment.—Tourniquet bandage: A firm compression bandage is applied as soon as the sponges are on the wound and kept in place for 24 hours. During the first 4 or 5 days, the patient is requested to contract the quadriceps four or five times at intervals throughout the day. The stitches are removed from the seventh to the tenth day. The patient begins to walk about the eighth to the tenth day, and should be closely supervised to be sure that the operated limb is not favored any more than is absolutely necessary.

Physiotherapy is an essential in most of the cases. Carefully planned, simple but effective post-operative care pays big dividends in any joint lesion. The average knee operated on for a cartilage can return to ordinary labor in 5 to 6 weeks, some sooner. A few will require a much longer time. The length of time required to put a knee back to work depends upon the type of cartilage injury, the character of the quadriceps, and the mental attitude of the patient.

CONCLUSION

1. In conclusion, I again urge, that in spite of the difficulties involved in making a positive diagnosis, a relatively accurate working diagnosis can be made, if the operator will take the time to study his case thoroughly. This is essential if one is to avoid unnecessary surgery, or plan a satisfactory exposure of the joint.

2. In many cases a repeated examination is necessary in making an accurate diagnosis.

3. A loose cartilage, in the adult knee, which has locked the second time or has continued to give trouble after the initial injury, should be removed as early as possible. This would relieve the joint of a constant source of mechanical irritation.

4. The object of all treatment should be to put the patient back to work in the shortest possible time, with a minimum loss of function and at the lowest consistent medical cost.

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DISCUSSION

Dr. DIVELEY (Missouri). Dr. Bence has given us a most complete dissertation on the internal derangement of the knee joint—truly one for which little criticism can be given and very little new added.

It is rather singular that your chairman has chosen an essayist and a discussor, both of whom have been afflicted with the condition under discussion, and who have both experienced the symptomatology over a period of years, who have gone through the operation of excision of a semilunar cartilage. This should make them conversant, if not familiar, with the subject.

I wish to confine my few remarks to injuries of the knee cartilage, as they seem to me to be the most important and truly are the most frequent injury of the knee joint.

There are two points of diagnosis which might be added and which may aid you in the differentiation of injuries to the internal or the external cartilage.

1. With the patient sitting, the knee is flexed to a right angle, and the foot and leg are rotated outwardly with the knee held stationary. Pain will be elicited on the medial aspect of the knee if the internal cartilage is affected and vice versa on internal rotation.

2. With the patient standing, he is asked to slightly flex the weight-bearing knee and to rotate the leg inwardly. With this maneuver pain and a distinct sense of weakness are noted on the medial aspect of the knee when the internal cartilage is affected.

It occurs to me that before a group of this type, a discussion of the rating of disability for cartilage injuries is most apropos. Personally, it is my opinion that if the acute injury is given conservative treatment over a sufficient period of time—4 to 6 weeks—the patient should be returned to work with no percentage of disability. If, on the other hand, the man finds that he cannot work, he should be adjudged as a temporary total disability and advised to submit to excision of the affected cartilage. Procrastination in these cases is expensive and of no value. Judging from my own experience and observation, I am prone to call the excision of a knee cartilage an operation of election. We always instruct our cases to use the knee; and if using it interferes with their work to the point of disabling them, they should elect to have the cartilage removed. If they can carry on their work with a minimum of discomfort, no excision is necessary.

After a properly performed arthrotomy with the excision of the cartilage, I believe that there should be very little permanency of disability. It is argued that a part of the joint has been removed, the knee is weakened, and there will always be some pain and discomfort. For this the claimant is generally given a rather high percentage of permanent disability.

This should not be true, for the operation was advised by the attending surgeon and accepted by the claimant in order that the percentage of disability could be lowered. If the cartilage has been properly excised and the patient has been given adequate supervision after treatment, it is our belief that the knee joint is just as strong, functions about as well as before, and is pain-free.

Dr. BENCE. I wish to thank Dr. Diveley for reminding me of two points which I omitted in my paper. However, I use them in making examinations.

In conjunction with what Dr. Diveley said, I had an opportunity to operate a knee for fracture of the patella. Three years later I removed an internal semilunar cartilage. At that time I found considerable fibrous formation, which resembled semilunar cartilage. The man had had no functional disability from it.

Chairman BOWEN. There is a gentleman in the room whom I should like to introduce, the State compensation officer from the W. P. A., Joseph Poizner. He has been a friend of the doctors in Kansas. He is the man who pays us, and I am going to ask him to say a word to you at this time.

Mr. POIZNER (Kansas). There is nothing much that I can say, except that I am glad to have the opportunity to be here with you, and to tell you that the W. P. A. and the compensation commissioner are thankful for the wonderful cooperation they have received from the doctors in the State. The doctors' attitude toward our program has been all that we could ask, and I want to thank them.

Chairman HASSIG. Due to the absence from the State of Dr. H. L. Snyder, of Winfield, who was to have presided as chairman for the rest of the afternoon's program, I am going to ask Dr. Merrill Mills, editor of the Kansas Medical Society Journal, to preside.

Since it is getting late, I would suggest that the general discussion of the remaining papers be dispensed with, having only the discussions prepared by designated doctors.

Chairman MILLS (Kansas). The next speaker will be introduced by Dr. L. F. Barney, of Kansas City, Kans.

Dr. BARNEY (Kansas). Although I met the next speaker only about 2 minutes ago, I have made some appraisements of him, and I am going to give you the logic from which I made my conclusion.

Personally he is very modest, because when I wrote to him for some information as to his history, he said it was very inconsequential, and he hoped the introduction would be very short. As to his medical education, there can be no question, because he is a graduate of one of the outstanding medical schools of the world, the University of Pennsylvania Medical School.

As to his knowledge of diseases of the chest, he has had exceptional advantages along that line, having spent a year in the Pathological Institute of Professor Erdheim of Vienna, where the majority of his post mortems were in chest pathology. He spent another year with the Wisconsin Tuberculosis Association in the clinical diagnosis of diseases of the chest. Since 1932 he has been connected with the silicosis prevention program in Wisconsin, making preemployment examinations of the workers employed in the dusty trades.

He is a member of the medical committee of the National Silicosis Conference and is also a member of the Air Hygiene Foundation of America.

As to his ability as a speaker, I will let him demonstrate that.

I take great pleasure in introducing Dr. Oscar A. Sander, of Milwaukee, Wis., who specializes in internal medicine and who will speak to you on the subject of silicosis, which is of vital importance to all who have responsibility for the individuals who work in the dust.

A Practical Discussion of the Silicosis Problem

By Dr. O. A. SANDER, *Milwaukee, Wisconsin*

Although dust disease of the lungs can be traced far back in history, it was not until the introduction of mechanical processes in mining and manufacture, which greatly increased the amount of dust generated, that it became a serious problem. Engineering methods of protecting those exposed did not keep pace with the increasing speed of production. Little thought was given to the early deaths, which were variously termed "consumption", "phthisis", and so forth, and which in reality were cases of silico-tuberculosis. The disease was thought to be inherent in the industry and was a part of the risk assumed by a worker when he entered such an industry. Not until the whole problem suddenly burst onto the public consciousness, through civil suits and newspaper publicity, did many industrialists realize that something must be done.

That preventive measures had been carried out for many years in some industries in isolated sections was a surprise to many. For instance, within the past 2 years one industrialist was found who was surprised to learn that sandblasting could be done much more safely and actually more economically in an exhausted booth rather than right out in the open at one end of his foundry. One cutlery manufacturer who had always insisted that only sandstone grinding wheels could turn out the quality knives he had always made, finds within the past year that they can be replaced with harder artificial abrasive wheels with no loss in the quality of his product. He is still more surprised to learn that the change is lowering his cost of production, because he now is required to buy only one-third as many wheels as he formerly did. Any number of such surprises might be cited to show that engineering control is catching up with the problem, provided its benefits can be sold to those who must face it.

Because lung changes due to silica-dust inhalation are so slow and insidious in their development, many dusty-trade employers have been lulled into the belief that the hazard does not exist in their establishments and have consequently disregarded the engineering suggestions which would reduce the hazards. Sooner or later, however, one of their old employees breaks down with "lung trouble", which throws the entire personnel of the plant into a frenzy of fear. The problem then is an acute one, for which the executive staff is unprepared. How much better it would have been to have established a sane program of control earlier.

Such a practical program in any dusty trade is a combination of engineering and medical control. Neither is adequate without the other. Both are necessary. A discussion of the engineering control must be left to our engineering friends, who, by the way, are doing an excellent job. They have devised methods for prevention of dust dissemination for almost every known dusty process. It appears to be the work of the medical control to point out the need of applying those methods to particular hazards.

Up to a few years ago only isolated surveys had been made in several of our dustier industries, largely to determine the extent of the hazard presented by each. Best known of these investigations have been carried on by two of our governmental agencies—the

United States Public Health Service and the United States Bureau of Mines—and by the Metropolitan Life Insurance Co. as studies of the granite, cement, foundry, and various mining industries. When attempts were made to correlate the findings of each regarding safe limits of dustiness, it was found that such correlations were not possible. Factors other than the concentration of silica dust alone seem to play a part in the rapidity of the development of silicosis. Just what those factors are and how much of a part they play remains to be definitely determined. More prolonged studies and observations are necessary in each dusty trade. Each must establish not only its safe limits of dustiness but also its own engineering and medical control measures and its own data regarding prognosis.

Such a prolonged study is now in progress in the State of Wisconsin; in fact, has been for almost 4 years. It is a very practical program which combines control methods for elimination of the dust, with initial and periodic examinations of those exposed. The majority of the dusty trades in the State are included in this survey, foundry workers being by far the largest group. The entire group now totals over 15,000 workers who have been examined at least once, half of whom have also had follow-up examinations. It is my privilege to be conducting this extensive study with the cooperation of the many physicians throughout the State who are making the examinations for their local industries and sending me the chest X-ray films and examination reports for interpretation. Somewhat over half of the total number are from the Milwaukee area, the majority of which are under my personal observation. The project began in 1932, when a large group of metal-trades employers decided that a medical-control set-up was necessary. With one of the large mutual insurance carriers in our State pointing the way, the stone trade and numerous others with a silicosis hazard soon joined the survey. Others who are cooperating are the workers themselves, the employers who are paying for the examinations at so much an examination, and the various insurance companies who carry the compensation insurance, which in Wisconsin covers silicosis.

In spite of the fact that the individual employers assume the cost of the examinations, the medical records remain strictly confidential and the private property of the examining physician. No information is given the employer which is not given to the examined employee at the same time. This procedure obviates the dangers of any injustices being done and is recommended. It has met the objections that are usually raised against employer examinations of employees and has been satisfactory to all concerned.

In the early part of this work all employees exposed to dust in a plant, stone-cutting shop, or quarry were examined. These findings were correlated and the worst hazards were in this way pointed out to the engineers who were charged with the work of reducing the hazards. Standard dust counts are used as a check on the effectiveness of the engineering control measures. No old employees are discharged from their jobs except those who are found to have active tuberculosis. These actively infected cases are urged to enter a sanatorium for treatment and isolation, and those in whom silicosis is part of the picture are compensated. Cases of simple silicosis, which obviously require a markedly decreased dust exposure in the future, are given the necessary protection by attempts to eliminate the

dust to which they are exposed. If this is not possible to a sufficient degree, they are either given an approved respirator or are shifted to other work until such time as their own jobs can be made safe. Cases that are found to have an inactive lung infection, which may reactivate, are especially protected from exposure to excessive dust concentrations. This latter group will be discussed at greater length later.

The frequency of reexaminations is dependent on the findings in each case at the first examination. Those who have worked for many years in a dusty trade and have not developed a recognizable degree of silicosis or whose lungs show no evidence of infection are not examined as frequently as the others. Allowing an interval of 2 or 3 years between their examinations seems to be perfectly safe. Those with simple silicosis are examined annually, while the inactive infection cases receive either annual or more frequent check-ups depending on the extent of the infected lesions.

At each examination the individual as a whole is studied, to include a complete physical examination as well as a single postero-anterior roentgenogram of the chest. Stereoscopic films are made only when necessary for differential diagnosis, the single flat film being entirely adequate in 49 out of 50 examinations. The condition of the heart and blood vessels in any individual engaged in physical work is of prime importance in his ability to carry on. How much more important it is for an individual with advanced silicotic fibrosis to have a good myocardium is not generally appreciated. One sees many such cases that continue at their work year after year without undue extra effort. On the other hand, others with less silicosis become short of breath on only mild exertion because of a poor myocardium or sclerotic coronary blood vessels. Determination of the condition of the cardio-vascular system is of such importance that the addition of an electrocardiogram is now being considered as part of the routine examination. Further work in this direction is very necessary.

In any routine examination program the question of individual predisposition or susceptibility always arises. Just what types of defects should bar a man from dusty work? Obviously, all will agree that the man with active pulmonary tuberculosis should be kept away from dust exposure, as well as out of any kind of work until his tuberculosis becomes healed. Not quite so obvious to many is the fact that arrested cases of tuberculosis—that is, those as yet not thoroughly healed—are inviting reactivation of their infection by inhaling silica dust. When a doubt exists as to whether or not the infection is thoroughly healed, the safest side on which to err is to assume that the completely healed stage has not been reached. In fact, recent pathological evidence casts doubt that such parenchymal tuberculous lesions are ever thoroughly and effectively healed before the age of 50. This applies for nonsilicotics as well as for silicotics.

It is these not well-healed infections which later become the active silico-tuberculosis cases as more and more silica accumulates in the lungs. They are then erroneously referred to as "tuberculosis superimposed on silicosis", whereas our observations suggest that the great majority were infected early in life, the accumulating silica preventing the healing of the infection. During the course of this survey

fully 25 such inactive silico-tuberculosis cases have been seen to break down with an active and open infection. However, only three cases have come to light in whom tuberculosis developed after the age of 30 in lungs which appeared to be uninfected at their first examination. One of these had no diagnosable silicosis while the other two had a moderately advanced degree which had developed as a result of massive exposures to silica dust. The fact that not one of the hundreds of cases of long-standing simple silicosis under observation have become infected may eventually be shown to have considerable significance. It suggests that the silicotic lung which results from prolonged inhalation of minimal to moderate dosages of silica may be no more susceptible to tuberculosis than is the nonsilicotic lung.

Therefore, the one rigid rule in this survey is routinely to prevent from entering a dusty trade all applicants who have a not thoroughly healed tuberculosis, whether or not they have silicosis. Old employees in a surveyed plant who show such infection, with or without silicosis, are given the utmost consideration as far as the reduction of their dust exposure is concerned. If their old jobs cannot be made sufficiently safe, they are shifted to definitely nondusty work. It is hoped that this rigid protection of this group will prevent many active and progressive cases of silico-tuberculosis. Older persons above the age of 50, on the other hand, with obviously well-healed and calcified tuberculous scars are permitted employment just as if their lungs were entirely clear, provided, of course, that they do not have an associated excessive amount of silicosis.

Only individuals with advanced degrees of silicosis are barred from reentering a dusty trade. Most early simple silicosis cases are permitted employment at jobs where the dust hazard is under control. This is especially the rule with older individuals who have been exposed to dust for many years and have acquired no more than an early silicosis. They are considered far better risks for further moderate dust exposure than are younger persons who have never been exposed to industrial dust.

When this fact becomes generally understood by dusty-trade employers, the fear that workers have had of submitting to an examination should be largely removed. Labor will cooperate with such a program, as it has in our survey, when the workers realize that minor lung defects such as early silicosis, small and well-healed infection scars, and so forth, will not bar them from further employment in their chosen occupations. As an example, we know of one employer who refused to accept for work in his foundry any applicants who did not have perfectly normal lungs in every way. Even persons whose chest X-ray showed only a small diaphragmatic adhesion were rejected. As a result he was required to examine seven men for every one he employed. This soon became quite costly, besides caused a disturbance among his regular employees. He has since become convinced that such rigid weeding out was entirely unnecessary from a medical standpoint and has joined the survey project.

One of the main reasons why employers have feared to accept workers who already had a diagnosable degree of silicosis acquired in plants other than their own was because of the disability which had always been alleged to be cases of simple silicosis. Until a few years ago it had been generally believed that by the time silicosis

was diagnosable on a chest X-ray film it was already causing some impairment in the proper function of the lungs. Such estimates as 25 to 50 percent disability were attached to early nodular fibrosis cases. These estimates in most cases were based on vital capacity readings, which are known to be most unreliable unless the subject is cooperating to the fullest extent. As a result, many of these early cases received compensation awards which totaled as much as \$2,000 in some cases. Quite naturally employers feared to employ workers who already had that much accumulated liability that was acquired elsewhere.

In the past few years, however, opinions on the disability with simple silicosis have changed considerably. As one observes these individuals year after year he becomes impressed with the absence of complaints among those with even a moderately well-developed silicosis. Those with a good cardio-vascular system have no more shortness of breath on exertion than do the nonsilicotics. Recent physiological studies at the University of Rochester bear this out. They find no diminished capacity for work until the residual air of the lungs has increased to about 40 percent of the total capacity. In the normal lung the residual air constitutes about 20 percent of the total capacity. In other words, the residual air must be about twice as much as normal before any conscious dyspnea occurs. Only in advanced cases of silicosis or in cases of emphysema with or without silicosis do they find the residual air increased to this degree. In early or moderately well-developed silicosis cases without emphysema, little or no rise in the residual air content is found. In other words, it is emphysema which is the chief factor in a decreased function of the lungs. Since a secondary or compensatory emphysema does not develop in most cases until lung fibrosis becomes massive, it is reasonable from a physiological standpoint to conclude that impaired function of the lungs does not occur until such a stage has been reached. In our survey we have proceeded on this basis. If we are wrong, the employers for whom we are making examinations have acquired many employees who may prove costly to them in the future. We are more and more convinced, however, that we are right in this belief and shall continue to permit employment under controlled conditions of the simple silicotic whose fibrosis is long standing.

The progressiveness of silicosis has always been emphasized as one of its prime characteristics. In almost 4 years of observation not one case of visible progression has come to light. We are not concluding as a result of this short period of study, however, that no progression is occurring. Within the next 10 years we may expect to see some cases develop a visible nodulation that was not present earlier. We feel, however, that such cases will be relatively few because of the continued reduction of the dust concentrations in the industries we have under observation. Our impressions on the progressive nature of silicosis are these: That in the uninfected lung the fibrotic changes occurring with moderate silica exposures are extremely slow, so slow, in fact, that the majority so exposed could not live long enough natural lives to develop a massive lung fibrosis. With massive silica dosages, however, progressive fibrotic changes are much more rapid, and it is this group that will show progression of the fibrosis even after silica inhalation is stopped. How long and

how far such progression will proceed before an end stage is reached is problematical and remains to be definitely determined. We are observing numerous such advanced cases which we believe are uninfected—men who were sandblasters in the days before the modern air helmet was used. Two have become infected, as previously described, but none of the others has shown visible progression of the silicosis in over 3 years. What lung changes will occur, what percentage will become infected, and how soon the fibrosis will be seen to progress in those who are still uninfected remains to be seen. It is believed they will follow the classical picture of silicosis in that the majority will die of some complicating lung infection.

Fortunately this group which had massive silica exposures is extremely small as compared to the large numbers of workers who were exposed to minimal or moderate degrees of industrial dust. Out of the frequently quoted group of 500,000 dusty-trade workers in the United States, that only a small percentage has been dangerously exposed is suggested by our survey. That a good prognosis can be offered the large majority is the feeling which is becoming more and more certain, proof of which will come when sufficiently large numbers have been observed over a somewhat longer period of time.

Since no statistical summary of the findings in our project has as yet been attempted—and probably will not be until a rather large group has been observed for at least 5 years—no definite statistics can be quoted in this paper. Any conclusions and deductions which have been made are still based on our observations of these dusty trade workers from year to year and the impressions derived therefrom.

It should be stated that the nomenclature which we use in our silicosis classifications is the one which was suggested by a special committee composed of Drs. Pancoast, Pendergrass, Riddell, Lanza, McConnell, Sayers, Sampson, and Gardner. It was published as a reprint of the Public Health Reports, volume 50, no. 31, August 2, 1935, and is entitled "Roentgenological Appearances in Silicosis and the Underlying Pathological Lesions." Instead of the old "first, second, and third stage", which never were very satisfactory, it has simplified the classification by using only two groups; that is, "simple silicosis" and "silicosis with infection." In the "simple silicosis" group are included all degrees of nodular fibrosis, all prenodular cases falling under the "healthy lung" classification. In the "silicosis with infection" group are included all degrees and types of tuberculosis, whether active, inactive, or well-healed. Because of its simplicity and completeness, this classification is recommended for adoption generally by those engaged in this work. Only by the use of a uniform nomenclature will it be possible to compare and correlate the findings of the numerous silicosis surveys now in progress in the country.

While many phases of this large subject have not been touched upon at all, the aims to be attained in a practical medical control program have been discussed. They may be summarized as follows:

1. Discovery of the hazards as a result of finding the cases, in order to hasten the eradication of the dust hazards.
2. Discovery and isolation of all active and open cases of tuberculosis, removing them as sources of contact with other employees, especially protecting the younger workers who are susceptible to contact infection.

3. Discovery of infected lung cases in which the tuberculosis is not active nor well-healed and offering them special protection against excessive dust inhalation.

4. Periodic examination of the latter group at frequent intervals so as to discover any reactivation of their tuberculosis before they have been active too long, again so as to protect especially the younger employees. Such early discovery of a reactivation also offers the infected individual a better chance for cure of his tuberculosis.

5. Discovery of the simple silicosis cases to give them added protection from further excessive dust exposure.

6. Periodic examination of the latter group at yearly intervals to determine if their added protection is adequate by noting whether or not the fibrosis is increasing; also to determine whether or not they are becoming infected.

7. Periodic examinations of all employees exposed to dust to establish data for prognosis, to give added protection to those who develop silicosis during the course of the survey.

8. Periodic examinations of all employees to reassure them that they are not developing "bad lungs", as they term it. Since the recent extensive newspaper publicity on silicosis, the silicosis phobia is much more widespread than is generally realized. Examinations afford an excellent opportunity for education of those exposed to dust to allay their fears. This in turn results in a more satisfied and loyal worker because he appreciates what his employer is doing to protect him.

Finally, it is the firm belief of those of us who are engaged in this work that with such a program of medical control along with the necessary engineering control, any dusty trade, no matter how hazardous it had been in the past, should be able to solve its silicosis problem within a relatively few years. The tuberculosis rate in any dusty trade, with such control, should drop below the incidence in the community as a whole. Industrial tuberculosis will then have become an extinct disease.

DISCUSSION

Dr. BROWN (Kansas). Silicosis is the most important occupational disease we have to contend with at this time. As Dr. Sander has said, its development is insidious and our lack of knowledge has lent itself to no less insidious propaganda, making for hysteria, racketeering of claims, misinformation, and conjecture. General statements have been founded on too little fact, so that many believe that once silicosis developed, the individual was doomed.

It is studies such as these made by Dr. Sander which establish the actual facts through which we may know how serious the condition really is and what must be done to control it. Facts are never as alarming as conjectures, which have all too frequently formed the basis of opinion. Facts can be faced. We know that the silicosis problem is serious.

We appreciate Dr. Sander's statement that both medical control and engineering control are essential; they supplement each other and are both essential to final control. This is well shown in the studies where radiographic and physical examinations and reexaminations have gone hand in hand with engineering control. Such a procedure has reduced the case incidence tremendously.

While Dr. Sander is not yet prepared to publish statistics on the work he is conducting, his observations are of great interest. He has seen practically no progression of those cases he has examined in a 3-year period. This agrees with the statement of Sayers and the recent work of Gardner. Sayers has said that an uncomplicated

silicotic may be permitted to continue at work, particularly if the dust exposure is controlled.

All of us realize the importance of preemployment examinations, removal of tuberculosis cases, routine examinations, and periodic examinations in the control of silicosis. I am especially interested in the fact that labor has cooperated in this program to the extent outlined by Dr. Sander.

I would be interested in knowing how provision is made for the skilled worker whose job has to be changed and whose wages may be materially decreased, also whether there is any provision for rehabilitation of the worker who must be removed permanently from an occupation. These things are important to know because one of the chief reasons for lack of medical control in silicosis is the opposition to physical examinations. It seems to me until we can make satisfactory provision for those who, because of the work they have done in the past, must be given other occupations, we will have difficulty securing the necessary acquiescence to physical examination for medical control of the problem.

While silicosis is the most important occupational disease we have to consider at this time, there are many other conditions of industrial environment that will affect health. The last census shows approximately 15,000,000 people engaged in manufacturing and mechanical industries and the extraction of minerals. Among this tremendous number of people there are about 900 occupations which are potentially hazardous to health and which will affect the health of the individuals unless they are controlled. Kansas itself has more than 130,000 individuals, or some 37 percent of its working population, so employed. This constitutes a health problem of first importance.

Most occupational disease is insidious in its development. There is not the obvious relationship between cause and effect that there is in an accident. Probably that is one of the reasons that we have progressed so much further in accident prevention than in occupational disease prevention. There is little to call our attention to the fact that a material or process is affecting the health of the worker; nothing dramatic in the gradual fibrosis developing as the result of exposure to silica dust; the dragging gait and mental peculiarities slowly evidenced as the result of exposure to certain solvents, or the gradual diminution of muscular strength of those exposed to lead. Much harm may be done before we realize the relationship between cause and effect.

It is with extreme gratification that I am able to speak of the tremendous development of occupational disease control within the last year. For the past 10 years the committee of industrial hygiene of the State and Provincial health authorities of North America has been engaged in working out details of how this problem of occupational-disease control could best be handled by the official health agencies of the country.

Health officers have felt for a number of years that this work should be included as part of the activities of official health work, but I hardly need to say that in the last 5 or 6 years we have been fortunate to retain the personnel that we have had, and the difficulties of undertaking new work have been almost insurmountable.

However, the provision of money for necessary health work under the Social Security Act has made it possible to obtain funds for health authorities to undertake the work of occupational-disease control, particularly in those States in which occupational disease prevention is a major problem. It is with great satisfaction that I am able to say to you, at this time, there are now more than 15 units connected with health departments in the various States, including Kansas, undertaking the necessary work in occupational-disease control.

The industrial hygiene committee of the State and Provincial health authorities has worked out the necessary personnel and their qualifications for this type of work; the laboratory facilities that are necessary, and the set-up of such a division as part of the health department. The men now engaged in this important phase of public-health work in these various States have, or will have, the technical background and the necessary laboratory facilities for conducting this work. Last spring the United States Public Health Service conducted a short course for these men, and we may now hope to have an intelligent attack not only on the silicosis problem but on occupational disease prevention as a public-health entity throughout the country. Meanwhile, we will be looking forward to the splendid work being done by Dr. Sander and his colleagues, and eagerly await the publishing of those statistics which he has promised after a 5-year interval.

Chairman MILLS. The next speaker will be introduced by Dr. C. C. Nesselrode of Kansas City, Kans.

Dr. NESSELRODE (Kansas). I find my situation different from that of Dr. Barney in introducing the next speaker. He is a man I have known for a number of years, and a man most of you have known for a number of years. Like the previous speaker, he is a graduate of the University of Pennsylvania.

The gentleman who is about to speak to us is a member of the American Surgical Association, the Western Surgical Association, the American Neurological Society, and many other medical groups. Although it is not his first visit to Kansas, we are glad to welcome him here, and I take great pleasure in presenting to you at this time Dr. A. W. Adson of Rochester, Minn.

Surgical Treatment of Injuries to Peripheral Nerves

By Dr. ALFRED W. ADSON, *Section on Neurologic Surgery, the Mayo Clinic, Rochester, Minn.*

The surgical treatment of injuries of the peripheral nerves is governed by the physiopathologic phenomena of degeneration and regeneration of these nerves. The character of the injury, whether it is contusion of a nerve, compression of a nerve by a blood clot or callus, a clean-cut section, or extensive laceration resulting in loss of nerve tissue or in avulsion of a nerve, more or less determines the type of surgical operation that is indicated. The degree of paralysis and the interval between the time of the injury and the repair are important factors in selecting the operative procedures and in determining the indications for operation. The ideal operative measures are neurolysis of nerves which are partially paralyzed as a result of constriction and end-to-end suture following removal of

the neuromas. Suturing should be performed in the first 6 months following the injury; interrupted silk sutures should be placed in the epineurium without tension. Prevention of undue traction on the suture line, and gentle massage of the paralyzed muscles during the period of recovery, are essential to successful regeneration.

DEGENERATION AND REGENERATION

Immediately following division of a nerve the process of degeneration and regeneration begins. This histologic process was described by Waller in 1852. The axis cylinder and myelin in the segment of the peripheral nerve which has been severed from the ganglion completely degenerate, whereas the same elements in the proximal segment degenerate upward to the first node of Ranvier. At the same time the nuclei associated with the sheath of Schwann start a process of hyperplasia, which begins with enlargement of the nucleus and a granular deposit in the cytoplasm. The Wallerian degeneration begins about the third day and is complete on the twelfth day, except for the resistant axons and the myelin granules that may be seen for several weeks. This process consists of a granular disintegration of the axon in the distal end and of the axon in the proximal end up to the first node of Ranvier. The myelin begins to disintegrate and forms droplets of fat within the neurolemma, thus giving a positive black stain by Marchi's method, whereas the normal myelin gives a yellow stain.

The regenerative process is continuous with the degenerative process: First, the nuclei of Schwann's sheath multiply very rapidly and fill the empty lumen of the neurolemmal sheath in the distal end as well as the sheaths from the site of severance to the first node of Ranvier; then, if the intervening gap between the severed ends is not too long or if it is protected by some form of tube, these cells will send out protoplasmic bands of gelatinous appearance, which fill the intervening gap. Simultaneously the axon sends out numerous neurofibrillae, numbering from 5 to 15, which grow downward through the mass of protoplasmic bands, and, if the gap has been bridged by these bands, they follow the bridge and enter the distal nerve segment. It is not uncommon to find two or three axons following a single protoplasmic band. Many of the neuraxons, however, will fail to enter the distal nerve segment and will produce an oval enlargement at the site of anastomosis, known as a neuroma.

The protoplasmic bands and cells arising from the neurolemmal sheath not only assist in keeping the lumen of the distal segment open and bridge the intervening gap between the nerve ends but also apparently they arrange themselves and act as a reticulum, forming the meshwork in which the myelin is deposited, enabling the nerve to complete its process of regeneration. The following outline is quoted from S. Walter Ransom:

Early changes in the distal stump.—(1) Degeneration of the medullated fibers and formation of nucleated protoplasmic bands; (2) Degeneration of the nonmedullated fibers and the formation of nucleated protoplasmic bands; (3) Abortive autogenous regeneration in the distal stump.

Early changes in the proximal stump.—(1) Changes in the nonmedullated fibers, early abortive regeneration, cellulipetal degeneration, formation of new axons; (2) changes in the medullated fibers, formation of a zone of reaction, fibrillar dissociation, early branching of the axons in the immediate neigh-

borhood of the lesion, formation of lateral branches at some distance above the lesion, formation of fiber bundles and skeins.

Mechanism of the regeneration of nerve fibers.—(1) Proliferation of axons in the central stump; (2) Penetration of the new axons through the scar; (3) Utilization of the protoplasmic bands as pathways for the new axons in the distal stump.

NERVE INJURIES

Since this discussion deals with the treatment of injuries to peripheral nerves, I shall not review the clinical syndromes relative to individual nerves but shall review the various types of injuries that may affect peripheral nerves.

Contusion of a nerve.—Temporary or permanent paralysis may result from contusion of a nerve. The blow to the extremity or to a nerve need not be sufficient to produce fracture of a bone. However, these injuries are usually associated with a fracture. The two most common lesions are those of the ulnar and of the perineal nerves; the injuries take place where the nerves are exposed at the elbow and below the head of the fibula. There is a condition that is referred to as "tardy ulnar palsy" which develops years after fracture of the internal condyle of the humerus. The malposition of the fragment and the excessive growth of the callus flattens the ulnar groove and subjects the ulnar nerve to frequent trauma and to undue tension on flexion of the forearm. It is seen most commonly among chauffeurs, farmers, and ball players. The symptoms are initiated by a tingling sensation along the distribution of the ulnar nerve and progress slowly. Surgical treatment consists in transferring the ulnar nerve from its old condylar groove to a new position anterior to the condyle, so that the nerve lies in a new muscular channel. If the paralysis has developed to such a degree that loss of function is 50 percent or more, it is necessary to resect the neuroma, which is a fusiform thickening in the nerve, before suturing the nerve end to end and transferring it to the new muscular channel.

Unless the clinical history suggests that the contusion has crushed the nerve, it is advisable to postpone exploration for 8 to 12 weeks, in the hope that recovery will be spontaneous. During this period of observation gentle massage is to be applied, and the extremity should be supported to prevent undue stretching of the paralyzed muscle. However, if no signs of improvement take place in the partially paralyzed nerve within that period and no signs of improvement take place within 3 or 4 days after a complete paralysis, it is advisable to explore the nerve, perform neurolysis, or transfer the nerve to a new muscular bed. If the contusion has been extensive enough to have crushed the nerve, immediate resection of the injured portion with end-to-end suture is indicated.

Compression of a nerve.—Paralysis from compression of a nerve may develop at the time of injury or weeks following the injury. In the first instance, the paralysis results from extravasation of blood into muscle and soft tissue which in turn displaces the nerve and compresses it against a fascial band. The two nerves most commonly injured thus are the median and the musculospiral nerves, and their point of injury is in the antecubital fossa, where fascial bands fail to stretch with the enlargement of the muscle. Exploration, with liberation of the nerve, is indicated within 72 hours after the injury.

Late compression results from callus which envelops the nerve at the point of fracture. The symptoms in this instance make their appearance as the callus becomes organized. Although the symptoms of sensory and motor disturbance progress slowly, the nerve should be promptly explored and liberated. Rarely is it necessary to do more than neurolysis, and it is obvious that the nerve should be explored as soon as the lesion is recognized, for the earlier it is liberated the more complete will be recovery. Incomplete bony union is not a contra-indication to exploration of nerves.

Lacerations of nerves.—These injuries are determined by the nature of the accident and vary from clean-cut section to extensive loss of nerve tissue, such as results from gunshot wounds and accidents with shredders. The treatment is divided into two stages, the immediate and the late repair. If the wound is inflicted by a clean, sharp instrument, it may be possible to effect end-to-end repair with a satisfactory result. More often than not, however, the wound is infected, which results in failure of the suture line to hold, and this requires exploration again at a future date. It is desirable to use interrupted sutures of silk in the epineurium to maintain apposition of the nerve ends while regeneration is taking place, but unfortunately the use of silk sutures in an infected wound is contra-indicated since the silk sutures are likely to remain a source of drainage and to prevent reoperation within a suitable interval from the time of the injury. Therefore, in most instances repair of the nerve at the time of injury is best made by two or three through-and-through sutures of chromic catgut, and special care must be taken to avoid undue traction on the sutured ends for a period of 6 to 8 weeks. Immediate suture of the nerve at the time of injury, even though the wound is infected, may prevent extensive retraction of the severed ends. If signs of regeneration do not appear within 6 months after the emergency repair of the nerve, it should be reexplored. Regeneration is recognized by improvement of vasomotor phenomena and by Tinel's sign—a tingling sensation on concussion of the nerve below the line of suture. If the wound has been infected, secondary exploration of the nerve usually is necessary. The exploration should be postponed for 8 weeks following healing of the wound, since most attempts at repair of nerves in the presence of infection result in failure.

The late repair of injuries to nerves should be instituted as soon as possible after the infected, lacerated wound has healed, unless there is evidence at the time of the primary repair that there has been extensive loss of nerve tissue which will make it utterly impossible to approximate the ends of the nerves or to bring them within 1 or 2 cm of each other.

During the development of surgery of peripheral nerves, innumerable operative procedures have been devised, such as the flap method, the fusion method, overlaying of small nerves and tying them with a silk ligature, fascial tubulization, vein tubulization, homogeneous and heterogeneous transplantation, and the end-to-end anastomosis in immediate approximation. Investigations and experiences in war have shown that following removal of neuromas, end-to-end suture with interrupted blood-vessel silk, in a dry, aseptic field, is the ideal method. In order to accomplish end-to-end anastomosis it may become necessary to flex or to adduct the extremity

and in some instances to transfer the nerve to a new position in order to close the gap between the ends of the severed nerve. If the distance is as short as 1 to 2 cm, homogeneous, cable grafts or tubulization may offer sufficient assistance for a number of the proximal axons to reach the distal end. All foreign material placed between the ends of the nerve as a bridge merely serves as a framework for axons to follow, but never does the nerve graft become a part of the new axon which traverses the gap to reach the distal segment. If the gap is greater than 1 or 2 cm, scar tissue invariably strangles the regenerative axons and prevents regeneration. The retracted ends of a nerve, following severance, can be stretched moderately to close a gap; then, by overlapping and suturing the bulbous ends of the nerve and allowing this temporary suture to remain in place until the flexed extremity is allowed to extend to its normal range of motion, the secondary repair can be effected. When it is impossible to accomplish good repair of a nerve, it is much wiser to consider transfer of a tendon, and thus to secure a moderately useful extremity than to wait indefinitely, 2 or 3 years, for unlikely regeneration of a nerve.

Intracranial nerves which have been injured by a fracture of the skull or gunshot wounds do not lend themselves to surgical repair. After peripheral injuries of the fifth, seventh, tenth, eleventh, and twelfth cranial nerves, anastomosis, similar to that employed in repair of spinal nerves, can be performed. If the seventh nerve, the facial nerve, is injured within the skull or at its bony exit, it is repaired by transferring the proximal end of a less important nerve, the spinofacial or the hypoglossal nerve, to the distal end of the facial nerve. Since facial paralysis is so disfiguring it has proved justifiable to substitute paralysis of the spinal accessory nerve or of the hypoglossal nerve, in the hope of securing return of function of the facial muscles. Although a good functional result is obtained, and the disfigurement disappears when the face is in repose, full control under emotion is lacking. During the period of regeneration it is necessary for the patient to exercise considerable will power in reeducating the muscular control, for at first the facial movements will occur whenever the shoulder is lifted or the tongue is moved, depending on which nerve was used in the repair. The first signs of facial movement, indicating regeneration, occur about the fifth month following repair of the nerve. The degree of regeneration improves until the end of the second year. If the patient is faithful about his muscular exercises, he will be able to dissociate movements of the shoulder from the facial movements and he will be able to move the facial muscles without moving the shoulder by the time 2 years have elapsed following operation.

Avulsion of nerves.—The components of the brachial plexus are most vulnerable to avulsion, and the type of avulsion that occurs earliest in life results in obstetrical palsy. The type that occurs most commonly is that which results from a blow on the shoulder or from a fall on the head and shoulder. These two types of injury are characterized by paralysis resulting from incomplete or complete avulsion of the fifth, sixth, and seventh cervical roots.

In attempting to analyze the reasons why some patients recovered spontaneously while others did not, and why most operations for

avulsions of the brachial plexus failed to cause improvement of the paralysis, I carried out an investigation, attempting to reproduce the injuries in fresh cadavers. Varying degrees of traction were placed on the brachial plexus. I exerted downward pulls on the shoulder, upward pulls on the arm and shoulder with anterior and posterior rotations of the plexus, simulating injuries caused by machine belts; also, I produced oblique pulls on the shoulder, simulating injuries caused when an individual attempts to extricate his hand when it is caught in a machine. The following observations were elicited: All injuries which occurred under moderate traction resulted, first, in tearing of the fascial attachment about the dorsal ganglion and, second, in the rupturing of blood vessels in the nerve and sheath. As the traction was increased, either downward or upward, the dorsal ganglions were dislodged and the motor root was partially avulsed from the cord. As the traction was increased still more in a downward direction, the fifth cervical nerve root was avulsed, and partial avulsion of the sixth and seventh roots occurred. When the pull was directed upward a similar result occurred, but in reverse order; avulsion of the first thoracic root was greater than that of the eighth and seventh cervical roots. The rotating forces resulted first in avulsion of the seventh cervical root and then in involvement of the upper and lower roots, thus explaining why injuries caused by machine belts were usually more extensive than those caused by falling. The oblique pulls resulted in fragmentation of nerve fibers and rupture of nerve fibers occurred, similar to the tearing of a rope when undue tension is exerted. These facts explain why surgical attempts at repair are more or less futile. It is impossible to reinsert nerve roots into the spinal cord.

It is obvious that spontaneous partial recovery will follow many incomplete avulsions. Massage, passive motion, and support of the muscles and of the extremity are essential to recovery. Orthopedic plastic procedures occasionally can be employed to improve the function of a partially paralyzed extremity. However, if improvement does not appear within 18 months following complete avulsion there is very little likelihood of subsequent improvement; therefore, it is often advisable to consider high amputation to relieve the patient of a useless, painful arm. Similar injuries to the lumbosacral plexus may occur but are rare and usually the avulsion is incomplete. The tearing of other peripheral nerves in accidents with buzz saws likewise lend themselves poorly to repair of nerves. Occasionally one is able to resect good portions of the nerve and to effect end-to-end anastomosis with partial improvement as a result.

PROGNOSIS

The results of surgical operations on nerves depend on the character of the injury, on the duration and degree of the paralysis, and on the performance of a satisfactory operation. Partial paralysis attributable to contusion or compression may disappear completely in 6 weeks or may require 2 years, depending on whether or not degeneration has taken place in any of the axons. Once degeneration has occurred, the entire process of regeneration must follow before sensory or motor improvement appears. If only a portion of the nerve has been injured, the normal fibers will function while

the repaired injured fibers undergo regeneration. The longer the nerve, the slower will be the recovery, since new axons grow on an average of 1 to 2 mm. each day. In addition to the time required for the axons to grow through the distal segment, 6 to 8 weeks are required for the process of degeneration and regeneration, and for new growth of axons through the suture scar to be completed; a similar length of time is required for the formation of sensory or motor end bulbs. Thus, the surgeon can calculate when the first signs of regeneration should appear by measuring the length of the distal segment and adding sufficient time for the axons to pass through the scar and for sensory or motor end bulbs to develop. The line of anastomosis is placed in a new muscle plane whenever possible, to eliminate the constricting effect of the scar of the traumatic wound, for such scars decrease and occasionally eliminate the possibility of regeneration.

The interval between injury and repair is an important factor in determining the degree of recovery. The longer the interval, the poorer will be the result, since the protoplasmic bands of Schwann's sheath cells slowly become organized and do not readily admit the new axons. The longer a muscle fiber remains paralyzed, the greater will be the atrophy and fibrosis and the less likely will be its recovery when it is innervated again. The ideal time for repair of a nerve is immediately following injury; if repair cannot be done then, it should be done as soon as possible. The degree of recovery is reduced by 30 percent if repair is performed in the second year following injury and is decreased by an additional 50 percent in the third year. Therefore, there is not much to be expected from repair of a nerve after the third year.

It is obvious that the degree of improvement following any operation on a nerve depends on the accuracy of the procedure and on the thoroughness with which neurolysis, or end-to-end suture, is made. All neuromas and scar tissue must be resected before sutures are inserted. The various fasciculi must be approximated or crossed regeneration will result. Peripheral silk sutures in the epineurium produce less scar tissue at the suture line than do through-and-through sutures of either silk or catgut. The circulation to the nerve ends must be preserved although bleeding between the approximated ends is not permitted, since a small hematoma may deflect many of the outgrowing new axons. Strict asepsis and hemostasis must be maintained to secure the best results.

If end-to-end approximation has been accomplished with some tension on the nerve ends, it is extremely important that the extremity be held flexed or adducted by a brace for 12 weeks to prevent tearing of the suture line. After the first 3 postoperative weeks the extremity can be lifted out of the brace for daily massage, but at no time should it be allowed to extend and to place undue tension on the suture line. After 8 weeks, when the anastomosis has become secure, the extension should be increased each day so that by the twelfth week it will have reached full range. The brace should be worn for the full 12 weeks. In musculospiral paralysis it is necessary to protect the muscles from undue stretching by applying a cock-up splint for the palm of the hand and the wrist.

Electric treatment of a paralyzed extremity does not hasten regeneration. Galvanism may aid in more or less massaging the

muscles. Once motor regeneration appears, faradic stimulation will intensify the feeble muscular contractions and encourage the patient and possibly it will aid in reviving muscular activity. Gentle massage and passive motion are the most effective treatment in maintaining muscle metabolism. Active motion and muscular training should be instituted as soon as signs of regeneration appear.

DISCUSSION

Dr. TEACHENOR (Missouri). My discussion will be brief. I think you will agree with me that the very clear and vivid presentation by Dr. Adson leaves very little for discussion other than to reiterate what he has stated and agree with him in every detail.

I know of no other branch of surgery in which the surgeon is more at the mercy of the vagaries of nature than he is in peripheral nerve surgery. Dr. Adson has given a very vivid illustration of the process of degeneration and regeneration of nerves; various types of nerve injuries; the necessity for the very meticulous care in the end-to-end suture, which must be placed in a position where secondary scar formation may not interrupt the regeneration of the nerve.

There is another factor which is of equal importance, and that is the preservation of the structure and function of the tissues toward which the nerve is regenerated. It is obvious that a perfectly regenerated nerve will not activate a fibrous muscle, an ankylosed joint, or a degenerated skin. In most of our surgery, if we obtain primary union in our wounds, we have attained a successful operation, but it is obvious from what Dr. Adson has shown us that a primary union of a nerve in the wound is only the beginning of a truly regenerative process with which the vagaries of nature may interfere and cause a failure in our results.

Dr. Adson has covered the matter of nerve suture so carefully that I think it is hardly worth while for me to continue with that.

I find in my own practice that certain nerves do have a tendency to regenerate much better than others, or, in different words, we obtain better functional results in the suture of certain nerves than we do in others. I think in addition to the regeneration of the nerve there are, perhaps, other factors which may account for this.

For example, it has been my experience that the radial nerve in the upper extremity has shown regeneration and return of function very much better than the median and ulnar. I think there may be an easy way to explain this, inasmuch as the radial nerve, in the main, supplies larger muscles, the structures are not so delicate, and the muscles are also available for proper physiotherapy, massage, heat, and electrotherapy, if desired, so that these muscles may be kept in a better functional state while we await regeneration of the nerve. Perhaps for that reason we may expect better results.

The ulnar nerve, in particular, and also the median, supply the very fine, intrinsic muscles of the hand, which, on account of their delicate structure, I feel, degenerate much more rapidly than do the larger groups of muscles. In addition to that, they are not as accessible for massage, or passive motion, as are the muscles supplied by the musculospiral nerve.

There is also the fact that in the median nerve, in particular, we have considerably more trophic changes accompanying injuries to

this nerve and the skin requires a great deal of attention during the process of regeneration, or the return of function will be a failure.

Another factor in connection with muscles is that we must not allow a paralyzed muscle to remain on a stretch. Overdistension or stretching of a muscle is disastrous. An example of that is that in radial nerve injuries, which, as I have stated, show a much better chance of regeneration, we are liable to fail in our results if a cock-up splint is not used to protect the muscles which are paralyzed. It is particularly true because the flexor muscles, not being involved, will pull the extensor muscles down, and the patient will overstretch these muscles. I insist upon the patient wearing a cock-up splint except for massage and physiotherapy, even wearing it at night to prevent stretching paralyzed muscles.

Massage is certainly an important factor in the treatment of these diseases to preserve muscle tone. I believe that heat plays a very important part and is an active factor, inasmuch as it stimulates the circulation to these paralyzed muscles and thus prevents gribosis and degeneration. Of course, it is very necessary to keep the joints of the fingers, wrist, or whatever part it may be that is involved, mobile at this time.

The skin is a difficult problem, unless we have the patient protected very thoroughly, particularly as I stated, in those nerves which have trophic disturbance, trophic ulcers in the fingers, and so on. They are likely to burn and are difficult at times to heal.

In summing up, there are two important factors in nerve injuries, first, the care of the nerve itself, and second, the care of the tissues toward which regeneration is occurring. Both of these factors have to be more or less complete in order to obtain a proper functioning result.

Chairman MILLS. I want to express appreciation to these men who have contributed to our program, which has been most interesting and instructive.

Chairman HASSIG. This meeting has been held under the auspices of the Kansas Medical Society, and on behalf of that organization I want to thank each one of you for the part you have had in making this meeting a success. Personally, I am quite gratified at the response with which our endeavor has met.

[The meeting adjourned.]

September 24—Morning Session

BUSINESS MEETING

G. Clay Baker, President, I. A. I. A. B. C., Presiding

President BAKER. I think Mr. Dorsett had a motion before this convention with respect to the report of the committee on the uninsured-risk problem.

Mr. DORSETT (North Carolina). I may have made a mistake by moving, after reading the report of the committee the other day, that the same be accepted at that time. Of course, I made the motion principally because there was a resolution attached to the report of the committee. If everyone knew the contents of the resolution, I do not believe there could be any objection to it whatever, because I do not see anything controversial in it, but it went over; and for the purpose only of straightening out the record I should be glad for the convention to do something with reference to that resolution and the report made on behalf of the committee.

President BAKER. Do you move the adoption of the resolution?

Mr. DORSETT. I move the adoption of the resolution.

Mr. LANGLEY (Idaho). I second the motion.

Mr. DORSETT. It contained merely this: A suggestion that the powers that be in the compensation insurance world work out voluntarily before our next meeting what they might consider an ideal plan for the complete coverage of all risks where the employers have the money to buy the policy, giving them an opportunity between now and our May meeting to work that situation out; and if it is not worked out, then urging the next convention to take the proper means to remedy the situation. That is all that resolution contained.

President BAKER. It is moved and seconded that the resolution be adopted. Is there any discussion? If not, all those in favor make it known by saying "aye"; contrary "no." It is so ordered.

If there is no further unfinished business, we will call for the reports of the convention committees.

REPORT OF THE AUDITING COMMITTEE

By Dr. E. B. PATTON, *Chairman*

The auditing committee finds that the mimeographed statement of the secretary-treasurer presents a correct statement of the receipts and disbursements from October 3, 1935, to September 15, 1936.

We commend the present treasurer for having kept since January 1936 duplicate itemized bank deposit slips and recommend that such practice be continued by all future treasurers of the association.

The auditing committee recommends that the audit of the association's books be made in the city of Washington just prior to the assembling of the conven-

tion and that a member of the association resident in Washington be designated by the president to make the audit. This recommendation is made for the reason that an audit made in Washington would facilitate access to all records of receipts, expenditures, and assets, and accomplish a more complete audit.

Financial Statement of the Treasurer, International Association of Industrial Accident Boards and Commissions, Oct. 3, 1935, to Sept. 15, 1936

BALANCE AND RECEIPTS

1935		
Oct.	3. Balance in bank.....	\$1,567.63
	8. Arthur Gaboury, general manager, Quebec Association for Prevention of Industrial Accidents, 1935-36 associate dues.....	10.00
	8. South Carolina Industrial Commission, 1935-36 dues.....	50.00
	8. New York Department of Labor, 1935-36 dues.....	50.00
	15. American Mutual Alliance, 1935-36 associate dues.....	10.00
	23. Association of Casualty & Surety Executives, 1935-36 associate dues.....	10.00
	23. Richard Fondiller, 1935-36 associate dues.....	10.00
	24. Puerto Rico Industrial Commission, 1935-36 associate dues.....	10.00
	25. E. E. Watson, 1935-36 associate dues.....	10.00
Nov.	1. Pennsylvania Department of Labor and Industry, 1935-36 dues.....	50.00
	13. Paterson Mortgage & Title Guaranty Co., interest on certificate.....	20.63
1936		
Jan.	11. R. G. Knutson, Hardware Mutual Casualty Co., 1936-37 associate dues.....	10.00
Mar.	3. Puerto Rico State Insurance Fund, 1935-36 associate dues.....	10.00
Apr.	16. Paterson Mortgage & Title Guaranty Co., interest on certificate.....	20.63
	24. Interest on Canadian bond No. 024880.....	22.50
	24. Interest on U. S. bond No. B-00069192.....	10.63
	24. Interest on U. S. bond No. B-00069192.....	10.62
	28. Collection on maturity of Canadian bond No. 024880.....	1,000.00
May	19. Paterson Mortgage & Title Guaranty Co., interest on certificate.....	20.62
	19. Michigan Commission of Labor and Industry, 1936-37 dues.....	50.00
June	2. William Schobinger, 1936-37 associate dues.....	10.00
	2. Richard Fondiller, 1936-37 associate dues.....	10.00
	4. Association of Casualty & Surety Executives, 1936-37 associate dues.....	10.00
	5. W. F. Dodd, 1936-37 associate dues.....	10.00
	5. Ontario Workmen's Compensation Board, 1936-37 dues.....	50.00
	9. Pennsylvania Self-Insurers Association, 1936-37 associate dues.....	10.00
	10. Virginia Department of Workmen's Compensation, Industrial Commission, 1936-37 dues.....	50.00
	11. Nevada Industrial Commission, 1936-37 dues.....	50.00
	11. West Virginia Workmen's Compensation Department, 1936-37 dues.....	50.00
	11. Puerto Rico State Insurance Fund, 1936-37 associate dues.....	10.00
	12. Industrial Accident Prevention Association, J. L. Dodington, secretary, 1936-37 associate dues.....	10.00
	12. National Council on Compensation Insurance, 1936-37 associate dues.....	10.00
	15. Georgia Department of Industrial Relations, 1936-37 dues.....	50.00
	15. Robert M. Crater, American Telephone & Telegraph Co., 1936-37 associate dues.....	10.00
	16. Missouri Workmen's Compensation Commission, 1936-37 dues.....	50.00
	16. Kansas Commission of Labor and Industry, 1936-37 dues.....	50.00
	17. Ohio Industrial Commission, 1936-37 dues.....	50.00
	18. Delaware Industrial Accident Board, 1936-37 dues.....	50.00
	23. American Mutual Alliance, 1936-37 associate dues.....	10.00
	24. E. I. du Pont de Nemours & Co., 1936-37 associate dues.....	10.00

June	24. Oregon State Industrial Accident Commission, 1936-37 dues	\$50. 00
	25. North Dakota Workmen's Compensation Bureau, 1936-37 dues	50. 00
	25. Connecticut Board of Compensation Commissioners, 1936-37 dues	50. 00
	26. Maryland State Industrial Accident Commission, 1936-37 dues	50. 00
	26. American Mutual Liability Insurance Co., 1936-37 associate dues	10. 00
	26. Arizona Industrial Commission, 1936-37 dues	50. 00
	30. California Department of Industrial Relations, 1936-37 dues ¹	50. 00
July	2. Nova Scotia Workmen's Compensation Board, 1936-37 dues	50. 00
	3. W. F. Ames, Bethlehem Steel Co. 1936-37 associate dues	10. 00
	9. Leifur Magnusson, American representative of International Labor Office, 1936-37 associate dues	10. 00
	22. Florida Industrial Commission, 1936-37 dues	50. 00
	23. Illinois Industrial Commission, 1936-37 dues	50. 00
	24. Wyoming Workmen's Compensation Department, 1936-37 dues	50. 00
	29. Maine Industrial Accident Commission, 1936-37 dues	50. 00
Aug.	7. Arthur Gaboury, general manager, Quebec Association for Prevention of Industrial Accidents, 1936-37 associate dues	10. 00
	7. Idaho Industrial Accident Board, 1936-37 dues	50. 00
	7. Massachusetts Department of Industrial Accidents, 1936-37 dues	50. 00
	7. Minnesota Industrial Commission, 1936-37 dues	50. 00
	10. E. E. Watson, 1936-37 associate dues	10. 00
	12. Wisconsin Industrial Commission, 1936-37 dues	50. 00
	13. North Carolina Industrial Commission, 1936-37 dues	50. 00
	14. Rhode Island Department of Labor, 1936-37 dues	50. 00
	17. New York Department of Labor, 1936-37 dues	50. 00
	21. Puerto Rico Industrial Commission, 1936-37 associate dues	10. 00
	21. South Carolina Industrial Commission, 1936-37 dues	50. 00
Sept.	1. Indiana Industrial Board, 1936-37 dues	50. 00
	Total	4, 573. 26

DISBURSEMENTS

1935		
Oct.	1. Exchange on Canadian check	\$0. 87
	2. Dr. L. U. Gardner, expenses attending Asheville convention	83. 00
	2. Grove Park Inn—hotel bill for Dr. Gardner	6. 12
	2. Dr. L. W. Hatch, expenses attending Asheville convention	75. 00
	4. Edith Peacock, clerical services at Asheville	25. 00
	4. Harriett Mangum, clerical services at Asheville	25. 00
	4. Viola Brownell, clerical services at Asheville	12. 00
	4. Sarah E. Lowry, clerical services at Asheville	12. 00
	7. Cash—express on mimeographed material sent to Asheville	7. 25
	7. Helen L. Mack, secretarial and clerical services from Nov. 27, 1934, to Sept. 30, 1935	100. 00
	22. Dr. O. L. Miller, clinical exhibit at Asheville	47. 45
	24. Campbell Photo Service, Inc., photostats of correspondence from Paterson Mortgage & Title Guaranty Co. for executive committee members	9. 00
	26. Dr. A. W. George, expenses attending Asheville convention	75. 00
	28. Dr. Robert B. Hunt, expenses attending Asheville convention	75. 00
	29. Cash—check sent to Mr. Baker for postage	5. 00
	30. Exchange on Puerto Rican check	. 25
	31. Charles Dermid—officer injured at Asheville, honorarium	100. 00
Nov.	13. Henrietta Love, reporting Asheville conference, original and two copies	376. 00
	13. Cash—postage and telegraph	5. 00
	29. John B. Clark, premium on treasurer's bond from 1-1-36 to 1-1-37	12. 50

¹ Note for auditing committee. This registered warrant, deposited in bank July 22, was later returned unpaid and charged by bank to I. A. I. A. B. C. account. Warrant bears interest at 4 percent from date of issue to date of call, and is being held in office of secretary-treasurer.

Dec.	3.	Caslon Press, printing 500 letterheads.....	\$8. 75
	24.	Campbell Photo Service, Inc., photostatic work in connection with Paterson Mortgage & Title Guaranty Co. certificate.....	8. 80
1936			
Jan.	17.	James M. Dunn, fee for legal work in connection with Paterson Mortgage & Title Guaranty Co. certificate....	100. 00
Feb.	12.	Cash—postage and telegraph.....	5. 00
Mar.	6.	Caslon Press, 1,500 letterheads.....	29. 75
Apr.	2.	National Savings & Trust Co., rental of safety deposit box..	5. 50
	16.	G. Clay Baker—expense to Washington to attend meeting of executive committee.....	106. 50
	23.	G. Clay Baker, postage and telegraph.....	10. 00
	23.	Exchange on Puerto Rican check.....	. 25
	24.	National Savings & Trust Co., mailing Canadian bond for collection.....	1. 13
	28.	National Savings & Trust Co., collection charge on matured Canadian bond.....	. 50
May	6.	J. Dewey Dorsett, expense to Washington to attend meeting of executive committee.....	22. 40
	6.	Donald D. Garcelon, expense to Washington to attend meeting of executive committee.....	60. 00
	6.	Joseph A. Parks, expense to Washington to attend meeting of executive committee.....	50. 00
	6.	A. G. Mathews, expense to Washington to attend meeting of executive committee.....	34. 50
	16.	Cash—postage and telegraph (\$2.65 still on hand).....	5. 00
July	20.	Caslon Press, 500 letterheads.....	16. 75
	21.	G. Clay Baker, postage, telegraph, etc.....	15. 00
	22.	Registered warrant, California Department of Industrial Relations, returned unpaid (see note under receipts).....	50. 00
	22.	U. S. Post Office Department, purchase of U. S. Savings Bonds.....	1, 000. 00
	23.	Cash—to supplement \$1,000 check to purchase five United States savings bonds.....	12. 50
	23.	Exchange on Canadian checks.....	. 50
Sept.	9.	Caslon Press, 500 letterheads.....	16. 75
Total.....			<u>2, 611. 02</u>
Sept.	11.	Balance in bank.....	1, 962. 24

SUMMARY

Receipts

Cash in bank, Oct. 3, 1935.....	\$1, 567. 63
Membership dues.....	1, 900. 00
Interest on securities.....	105. 63
Collection on Canadian bond at maturity.....	1, 000. 00
	<u>4, 573. 26</u>

Disbursements

Reporting Asheville convention.....	\$376. 00
Expenses of doctors and chemical exhibit at Asheville convention.....	361. 57
Clerical services, Asheville convention.....	74. 00
Honorarium to Charles Dermid, officer injured at Asheville.....	100. 00
Express, mimeographed material to Asheville.....	7. 25
Clerical services, office of secretary.....	100. 00
Postage and telegraph (\$2.65 still on hand).....	45. 00
Printing, stationery.....	72. 00
Premium on secretary-treasurer's bond.....	12. 50
Photostatic work in connection with Paterson Mortgage & Title Guaranty Co. certificate.....	17. 80

Legal services in connection with Paterson Mortgage & Title Guaranty Co. to James M. Dunn.....	\$100.00	
Rental of safety deposit box.....	5.50	
Expenses of members attending executive committee meeting in Washington, May 6, 1936.....	273.40	
Tax on checks.....	1.87	
Expense on collection of Canadian bond.....	1.63	
Registered warrant, California Department of Industrial Relations, deposited July 22, returned unpaid and charged to I. A. I. A. B. C. account.....	50.00	
Purchase of United States savings bonds.....	1,012.50	
Total	2,611.02	
Bank balance.....	1,962.24	
		\$4,573.26
<i>Assets</i>		
Cash in bank.....	1,962.24	
Securities:		
United States bond.....	\$500.00	
United States savings bonds.....	1,012.50	
Mortgage certificate, Paterson Mortgage & Title Guaranty Co.....	1,500.00	
	3,012.50	
Cash in postage and telegraph fund.....	2.65	
Total		4,977.39

The following securities are in safety deposit box P-273, National Savings & Trust Co., Washington, D. C.—secretary-treasurer, International Association of Industrial Accident Boards and Commissions:

United States bond no. B-00069192.....	\$500.00	
United States savings bonds:		
1—L—\$50, at \$37.50.....	\$37.50	
3—C—\$100, at \$75.....	225.00	
1—M—\$1,000, at \$750.....	750.00	
	1,012.50	
Paterson Mortgage & Title Guaranty Co. certificate no. 8478, series 435, due Oct. 19, 1933.....	1,500.00	
		3,012.50

Respectfully submitted,

V. A. ZIMMER,
Secretary-Treasurer.

SEPTEMBER 15, 1936.

President BAKER. The report will be received and accepted and ordered placed on file, if there is no question. Are there any motions or resolutions to come before the body?

Mr. ARMSTRONG (Nova Scotia). Mr. President, I beg leave to ask for the consideration of this resolution:

Resolved, That this meeting approve of the recommendation made by the president that a special committee be appointed to report at the 1937 convention on a uniform method of rating eye disabilities, and that this committee make report to the executive committee in time for it to consider same and make suggestions thereon before the next convention.

I move the adoption of this resolution.

[The motion was regularly seconded.]

President BAKER. Is there any discussion?

Mr. McSHANE (Utah). I do not know whether I understand the purpose of that. The organization has already acted upon that in the records, adopting the American Medical Association table in Halifax in 1924. We know it is futile to try to get a uniform method.

because there is not a statutory provision. Dr. Small, in his speech, took some liberties. If he had hit on the right source he might have found some pretty rotten things. We just cannot follow his recommendation, because our supreme court has said that we may not take into consideration under our statute the industrial loss in any case. We have got to take the physical disability as it is. I have no objection to the adoption of this resolution. I think we should approach uniformity as nearly as we can, and for that reason I will not oppose it, but I want to call attention to the fact that uniformity may not be obtained. It may be approached.

Mr. ARMSTRONG. I am fully aware that some of the jurisdictions may not be able to accept this, but I think the association should go on record as to what they think is the proper method of rating eye disabilities. As Mr. McShane has said, this matter was before the convention in Halifax, and also before the St. Paul convention in 1923, and it received a good deal of discussion, but I think it would be well to have this committee go into the matter again and make a report at our next meeting.

Mr. MCSHANE. Mr. Armstrong, may I suggest this amendment? We are already officially committed to the American Medical Association method. Could we say this: That this committee be appointed for the purpose of investigating to see whether or not we should rescind that action or modify it? Is that the purpose?

Mr. ARMSTRONG. Yes; that is the purpose.

Mr. MCSHANE. I accept it.

[The motion was carried.]

Mr. ARMSTRONG. Mr. President, I would also move the adoption of the following resolution:

Resolved, That this meeting approve of the recommendation made by the president that the incoming executive committee be empowered to employ a competent individual or individuals to make a general index of the reports of the proceedings of this association.

I think this is something that is very valuable, and something that we should have. The reports are on file at the different offices; some of them are bound and some are not, but the information contained in these reports are of the greatest value in many cases.

[The motion was seconded and carried.]

President BAKER. Are there any further motions or resolutions? Is the resolutions committee ready to report?

REPORT OF THE RESOLUTIONS COMMITTEE

By WILLIAM F. BROENING, *Chairman*

Whereas the members of the International Association of Industrial Accident Boards and Commissions have a full appreciation of the services rendered the association by the officers thereof and the various committees having a part in the purposes of the twenty-third annual convention, as well as a like appreciation for the hospitality and many courtesies extended during our stay in the city of Topeka, Kans., of which it is desired to give expression to and to make an official record of: Now, therefore, be it

Resolved by the International Association of Industrial Accident Boards and Commissions in annual convention assembled in the city of Topeka, as follows:

First. That the thanks of the members of this association and those forming a part of this convention be tendered to G. Clay Baker, president, and Verne A. Zimmer, secretary-treasurer, for the very competent and loyal services rendered during the year just ended, and to the executive and other committees for their services in the work of this convention and the furtherance of the aims and purposes thereof.

Second. That we commend the subject matter selected and submitted for the consideration of this convention and acknowledge gratitude to all those presenting papers and other speakers having a part in the formal program of the convention.

Third. That we hereby give expression to a sense of grateful appreciation to the Commission of Labor and Industry of Kansas, its officers and employees; the Kansas City Claim Men's Association, self-constituted "Ask Me Committee of Topeka"; Park Commissioner Harry Snyder; the police department and other officials of Topeka; the press, as represented by the Topeka Daily Capital and the Topeka State Journal; His Excellency Lieutenant Governor Charles W. Thompson; the Topeka Chamber of Commerce; the WJBW broadcasting station of the Capper publications; the Hotel Men's Association; the management of the Hotel Jayhawk; the Kansas Medical Society; the Shawnee Medical Society; the officers and personnel of Fort Riley, and the Second United States Cavalry; to the people of Topeka, and all others who so graciously contributed to the hospitality and courtesies making for our comfort and enjoyment; and be it further

Resolved, That a copy of these resolutions be sent to each of the persons, organizations, or groups who form a part of the subject matter hereof.

[The motion was seconded and carried.]

Mr. BROENING. There have been submitted to the committee on resolutions two resolutions from the committee on statistics and costs. As far as your committee on resolutions are concerned, we know nothing at all about the subject matter. We are merely submitting them, assuming that, being resolutions, they are to be presented for the consideration of the association through the medium of this committee. We thus offer them. They bear the recommendation of the committee on statistics and costs.

The first one reads:

Resolved, That upon recommendation of the committee on statistics and costs, the International Association of Industrial Accident Boards and Commissions hereby adopts the draft dated August 11, 1936, of the "Proposed American standard for compiling industrial injury rates", a copy of which is attached hereto and made a part hereof, subject to such minor changes as may result from expressions of opinion developed in connection with the poll of the sectional committee of the American Standards Association now being taken by means of letter ballot, or as the result of the overture to the International Labor Office provided for in a separate resolution; said changes to be recommended by the committee on statistics and costs and accepted by the executive committee. It is understood that if any changes in principle seem called for they shall be submitted to vote by the members of the association.

This is submitted by the committee on resolutions without a recommendation.

President BAKER. What will you do with this? There is no motion on this resolution.

The second one reads:

Whereas there was no instrumentality for establishing uniform standards on an international basis at the time, some 10 years ago, when the American

Standards Association was asked to head up the movement to establish an American standard for compiling industrial injury statistics; and

Whereas, by the adherence of the United States to the International Labor Office some 2 years ago, it has now become appropriate to seek consideration of the "Proposed American standard for compiling industrial injury rates", by the International Labor Office, both for possible improvements in the present formulation dated August 11, 1936, and also as a possible contribution to the setting up of statistical standards on an international basis: Now be it

Resolved, That the International Association of Industrial Accident Boards and Commissions, as one of the sponsors, shall, through its executive committee, make immediate overtures to the American Standards Association, the National Safety Council, and the National Council on Compensation Insurance, asking them to join in a recommendation to the United States Department of Labor that it request the International Labor Office to take under consideration the "Proposed American standard of industrial injury rates, August 11, 1936", and take such action as may be deemed appropriate toward the development of an international standard of industrial injury rates.

That is presented in the same manner as the previous resolution, by the committee on resolutions.

[No action was taken on these two resolutions.]

[At the suggestion of Mr. Dorsett it was agreed to include in the proceedings the following report by Mr. Sharkey of the Bureau of Labor Statistics, and President Baker felt that such a review should be submitted for future proceedings.]

Review of Court Decisions and Literature on Workmen's Compensation

By CHARLES F. SHARKEY, *United States Bureau of Labor Statistics*

President Baker has already referred in his presidential address to the progress of workmen's compensation legislation in Canada and the United States during the past year. As indicated, the legislatures of the various States did not consider the subject of workmen's compensation to a very great extent during 1936. However, the courts of the Nation, on the other hand, did render many opinions concerning the interpretation and administration of many of the workmen's compensation laws. The Supreme Court of the United States delivered three opinions on the subject since the meeting of this organization a year ago. Two of the cases concerned the workmen's compensation law of the District of Columbia. One case (*Chapman v. Hoage*, 56 Sup. Ct., 333) held that an insurer was not relieved of liability for compensation in the absence of contrary evidence not to have been prejudicial to the insurer. In this case an employee who was a helper on a delivery truck, subject to the workmen's compensation law of the District of Columbia, was injured in a collision with a street car. He elected to sue the street car company and recovered a judgment which was later set aside by the highest court in the District of Columbia. The employee thereupon sought to continue the suit but the petition was denied by the courts. He then made application for workmen's compensation, but this was denied on the ground that the statute of limitations had run, and his failure, therefore, to proceed to a final judgment operated to discharge the insurer. The United States Supreme Court held that his failure to pursue a third party remedy to final judgment in the absence of contrary evidence did not prejudice the employer's insurer and, therefore, the insurer was not relieved of his liability for

compensation under the District of Columbia act. The former decision, therefore, denying the employee's application for compensation was reversed on January 6, 1936.

In another case (*Del Vecchio v. Bowers*, 56 Sup. Ct., 190), the Supreme Court determined the jurisdiction of the deputy commissioner's decision on the question of fact. In this case a claim for death under the District of Columbia Act had been denied on the ground that the deceased employee had committed suicide. On appeal from the decision of the deputy commissioner, the Supreme Court of the District of Columbia set aside the original award on the ground that the evidence was insufficient to overcome the presumption against suicide. The United States Supreme Court decided that the presumption against suicide has not the quality of affirmative evidence to be taken into consideration with other evidence but that its only province is to control the final result where there is an entire lack of competent evidence. The high court determined that there was substantial evidence upon which the issue of suicide should alone be determined and therefore sustained the deputy commissioner's finding of suicide as opposed to accident, thereby deciding that the lower court should not have disturbed the finding denying compensation to the employee.

In the third case, decided on April 27, 1936, that of *Tipton v. Atchison, T. and S. F. Railway Co.* (56 Sup. Ct., 715), the United States Supreme Court held that the California Workmen's Compensation Act afforded the sole remedy for injury to a California citizen, employed as a switchman in intrastate commerce, caused by defective coupling apparatus on a freight car used in violation of the safety appliance acts and in absence of a definite decision by the State courts limiting the scope of the Workmen's Compensation Act.

Perhaps the most important case decided by a State court in 1936 was one which has occupied the attention of the Ohio courts for several years. It concerned the awarding of workmen's compensation to an interstate bus employee. The employee was engaged as a porter on a bus owned and operated by the Great Eastern Stages, Inc., of Cleveland, Ohio. The injury was sustained by the employee in the State of Michigan while the bus was being operated on an interstate passenger run between Cleveland, Ohio, and Detroit, Mich. The bus company had regularly employed more than three employees and had paid premiums into the Ohio State insurance fund for the coverage of its employees engaged in the interstate bus business. The payments into the fund were computed on a basis of two-thirds of the employee's salary of \$120 per month. The contract of employment was made in the city of Cleveland, the home of the injured employee. The industrial commission of the State in the first instance denied compensation to the employee and upon appeal the court sustained the industrial commission. Later, upon appeal to the State Court of Appeals, the lower court was reversed, and the case thereupon went direct to the Supreme Court of Ohio. The main question for consideration by this court was whether the employee could recover compensation for an injury sustained outside the State of Ohio while employed on an interstate bus line. It was shown by the court that liability for compensation was neither contractual nor tortious but that it grew out of a status which in turn

"springs from the hiring by operation of law." After citing several cases which tended to prove this statement, the court in important and far-reaching consequences spoke as follows:

The contract of hire, having been entered into in Ohio by an employer, having its principal place of business therein, and an employee resident thereof, for service within and beyond this State, gave rise to a legal status which did not end when the employee crossed the State line in interstate commerce as porter on the bus. In performing the required service he went beyond the border clothed with his rights as an employee. By holding the claim compensable this court does not give extraterritorial effect to the workmen's compensation law but rather to the status arising from the contract of hire by virtue of the constitutional and statutory provisions. The contract and resulting status are, however, always subject to the right of Congress to preempt the field by appropriate legislation.

The Supreme Court of Colorado in the case of the *Industrial Commission v. Ule* (48 Pac. (2d) 803), held that an employee had suffered "an accident" when he died from an unusual exposure of dope poisoning while engaged in the manufacture of an airplane.

The courts of the Nation have had occasion in recent months to determine many cases involving occupational diseases. This has been particularly noticeable in the States of Wisconsin, Illinois, Massachusetts, and North Carolina. In a Wisconsin case (*Jackson Monument Company v. Industrial Commission*, 265 N. W., 63) the court held that an insurance company which carried the risk of an employee engaged in granite work was liable for the entire compensation to the injured employee. Briefly, the facts in this case were that a workman who had been long exposed to silica dust was disabled by silicosis, complicated by tuberculosis, while the premises of the employer were inactive, due to a depression period. Upon resuming operation the employee was recalled and subjected to a medical examination, which found him unable to perform the regular duties. It so happened that between the time of the closure of the plant and its reopening there had been a change in the employer's insurance carrier. The court held that the insurance carrier who originally carried the risk was liable for the disability caused by the long inhalation of silica dust.

An interesting case is reported in Colorado (*London Guarantee & Accident Co., Ltd., v. McCoy*, 45 Pac. (2d) 900) by the Supreme Court of that State. In this case the question arose as to when a murder was an accident arising out of the employment. In this case the court held that a murder was an accident "arising out of employment" when such accident was incurred because of the employment.

Only recently the Supreme Court of Nebraska held that the death of a traveling salesman who was shot by a highwayman while driving from one town to another was compensable under the State act as arising out of the employment. It is pertinent to observe in this case, of the court's observance of the present-day necessity of travelers on the highway. The court showed that a traveling salesman in inviting "a hitch-hiker" to ride in his automobile under the circumstances which were shown in the case did not step aside from his employment and act for himself on business or pleasure of his own. The court observed that the salesman still was within the scope of his employment and, therefore, awarded compensation to the dependents of the deceased employee.

From the State of Oklahoma comes a decision holding that an injury sustained on a Federal military reservation was not covered by the State workmen's compensation act, and, therefore, the employee could not be compensated under the terms of the act (*Utley v. State Industrial Commission*, 55 Pac. (2d) 762). However, a recent act of Congress makes the State workmen's compensation laws applicable to injuries sustained on Federal property.

The subject of injuries to vocational school students has occupied the attention of administrators of workmen's compensation in many States. From the jurisdiction of California we learn that a boy injured while taking apprentice training in a workshop for 4 hours a day, is eligible to compensation as an employee under the State workmen's compensation act. (*Union Lumber Co. v. Industrial Accident Commission*, 55 Pac. (2d) 911).

Other cases which may be deserving of mention are as follows:

1. The court of appeals of Ohio, in a recent decision, held that an organic disease sustained by a truck driver in the course of his employment was not compensable. The court in this case said that, since the condition was not the result of an accidental injury and although occupational in its nature, nevertheless was not enumerated in the State's statute as a compensable occupational disease (*Industrial Commission of Ohio v. George*, 2 NE. (2d) 10).

2. The Supreme Court of Iowa has recently held that a farm laborer operating a sorghum mill on the farm of his employer was engaged in agricultural pursuits, or operations immediately connected therewith, and that an injury sustained by him while operating the mill was not compensable under the Iowa Workmen's Compensation Law (*Taverner v. Anderson*, 261 NW. 610).

Before leaving this subject special mention should be made of an important case which was recently decided in the State of New York (*Szold v. Outlet Embroidery Supply Co.*). The Supreme Court of New York upheld an amendment to the State workmen's compensation law (chap. 258, acts of 1935) which limited medical practice in workmen's compensation cases to certain authorized physicians. Briefly, the facts in the case determining the legality of the amendment concerned one Dr. Eugene Szold, who had been engaged by the Outlet Embroidery Supply Co. to render medical aid to an injured employee. The employer refused to pay for the treatment extended by the doctor to the injured workman. The doctor thereupon brought an action to recover payment for the services which he had rendered. He failed to state, however, that he was authorized by the industrial commissioner to render medical services in accordance with the provisions of the amended law. The court in this case said that the requirement that only authorized physicians may practice in compensation cases was reasonable and within the power of the legislature to make in the interest of the health and welfare of injured employees and also in order that the employers and the community at large may receive the full benefits of the humanitarian law, the cost of administering the act which they are obliged to assume. The doctor contended that he had a common-law right for the collection of his bill against the employer, and that such right was not subject to the limitations of the amended act. The court failed to recognize this contention of the doctor in the following language:

The practice of medicine is a property right, but one which is subject to the most stringent regulations. The right to practice medicine must yield to the paramount right of the State to protect health by any rational means * * *

The rule is well established that a State may, without violating the constitutional rights of an individual, prescribe reasonable regulations for the practice of medicine within its boundaries.

A large amount of published reports and documents have been issued during the past year on the subject of workmen's compensation and related subjects. Perhaps one of the most important contributions in the field of workmen's compensation insurance and administration is the book written by Walter F. Dodd, of Chicago, Ill. The report is a comprehensive one of 850 pages and depicts the results of 6 years' study of the problems involved in the administration of workmen's compensation. The work was performed by Professor Dodd at the direction of the legal research committee of the Commonwealth Fund of New York City. The work of the investigation is limited in its scope and covers the administration of the workmen's compensation law in less than a dozen jurisdictions. In connection with this report it is interesting to note that there is at the present time a more detailed and comprehensive official investigation of this subject being conducted under the auspices of the United States Bureau of Labor Statistics. Considerable progress has been made in this subject by Mr. Marshall Dawson, of the Bureau's staff. Many of us recall the contribution Mr. Carl Hookstadt made to this subject several years ago. The present survey will be more complete and far reaching than the former one, and you as administrators of workmen's compensation laws are hopeful that the field work will be completed soon and the data assembled for publication during the fiscal year. It is reported that Mr. Dawson has so far personally contacted approximately 40 States with workmen's compensation laws and also most of the Canadian Provinces, and his preliminary reports indicate that he has made some pertinent observations in his study. We have already witnessed a few of these reports in the *Monthly Labor Review*, published by the United States Bureau of Labor Statistics, namely, the *Ontario Procedure in Settlement of Workmen's Compensation Claims*; *Cooperation of Workmen's Compensation Administrations With Rehabilitation Agencies*; and *Methods of Financing Workmen's Compensation Administrations and Funds*. If there are any persons who are interested in reading the observations in the subjects already advanced by Mr. Dawson, I invite you to obtain a copy, which is now available.

Another important contribution in the field of workmen's compensation is the work published in two volumes by Douglas A. Campbell on workmen's compensation insurance, principles, and practice. Mr. Campbell is a referee of the California Industrial Accident Commission and has devoted considerable time in the study of workmen's compensation problems.

During the course of the year we have been furnished a report of several investigative commissions on the subject of workmen's compensation. In the State of Oklahoma a report has been published on a survey of organization and administration of the State of Oklahoma. This report was submitted to Governor E. W. Marland by the Institute for Government Research of the Brookings Institution of Washington, D. C. A special section is devoted to the study of the workmen's compensation law in Oklahoma, with certain specific recommendations for improving the administration of the law in that

State. Somewhat similar reports have been filed in Ohio and Maryland. In connection with the workmen's compensation law in the latter State, we have noticed that a monograph on the State law has been published under the pen of Evelyn E. Singleton. The purpose of this work was to outline the development of the workmen's compensation law in Maryland and to describe the operation of the law and to determine the effect of the law on the accident rate in that State.

While the subject of injured relief workers has occupied the attention of some of the administrators of workmen's compensation, and many court cases have been decided during the past year on this subject, it is noteworthy to observe that in a recent issue of the *Columbia Law Review* (April 1936, vol. 36, no. 4) Messrs. Polier and Donner have written a treatise on the status and rights of injured relief workers.

In the study of the dust hazards in industry, the Harvard School of Public Health, through Messrs. Drinker and Hatch, has published a report entitled "Industrial Dust." Special consideration is given in this book to the medical aspects of the problem that will help the engineer in the study of the operation of dust-control apparatuses.

Special mention should be made of the National Silicosis Conference called by Secretary of Labor Frances Perkins on April 14, 1936, at Washington, D. C. At this meeting several hundred representatives of labor and industry, as well as the Government, were gathered to discuss measures for the prevention and control of silicosis and other occupational dust hazards. Several committees were named, and their findings are to be reported at a later date. These committees are designated as the committee on prevention of silicosis through medical control, committee on engineering control, committee on economic, legal, and insurance phases, and the committee on the regulatory and administrative aspect.

Your attention is also directed to the printed leaflets and other data released by the Division of Labor Standards of the United States Department of Labor on occupational diseases and the control of the hazard of such diseases.

In connection with the general subject of literature on workmen's compensation, mention at this point is not inappropriate of the attention given to workmen's compensation and occupational diseases at the recent meeting of the American Bar Association held in Boston, Mass., in August of this year. A section on insurance law presented a report of the standing committee on workmen's compensation and employers' liability insurance law and occupational diseases. The report given in the printed program divides the subject matter of occupational diseases into two parts; the first considers occupational diseases as such, and the second summarizes the current workmen's compensation legislation. Upon a cross examination and scrutiny of the report by the standing committee of the American Bar Association, it is apparent that the report in the main was compiled by insurance executives with no thought or consideration to the point of view which the ordinary workmen's compensation administrator must many times consider in the determination of workmen's compensation law and occupational diseases. I mention this report merely to indicate that some consideration is being given by the legal

profession to the problems confronting those of you who have been charged with the administration of the law.

While not properly classified as a contribution in the literary field, nevertheless, I refer at this time to a work which has been undertaken by a Federal agency to provide and to stimulate a greater interest in the field of workmen's compensation insurance and administration. In order to develop a greater interest not only in workmen's compensation but also in industrial accident statistics, the United States Bureau of Labor Statistics has outlined a plan of assisting graduate students of several recognized schools of economics in the assembling and compilation of statistical data on this subject to be made available to the Bureau. It is reported that the proposals have been received favorably by the institutions of learning and it is the hope of the Bureau that the coming year will produce valuable studies and findings which in the final analysis will be of inestimable value to you as administrators of workmen's compensation.

Mr. ARMSTRONG. I always feel it necessary to say, when I make a report for a nominating committee, that this is merely our recommendation; that the question of who should be president and who should be vice president and who should make up the executive committee is a matter altogether in the powers of this convention. It is only after giving a survey of this whole situation and giving it every thought possible and trying to do what is fair and just, that the committee have arrived at the following recommendations:

REPORT OF NOMINATING COMMITTEE

By F. W. ARMSTRONG, *Chairman*

The nominating committee begs to report and recommend the election for president of Donald D. Garcelon, of the State of Maine; for vice president, A. G. Mathews, West Virginia; for secretary-treasurer, Verne A. Zimmer, Washington, D. C.

Also that the next meeting of the association be held in the State of Maine, time and place to be named by the executive committee.

Also that the other members of the executive committee shall be: Past President G. Clay Baker, Kansas; William H. Wise, Michigan; Voyta Wrabetz, Wisconsin; Frank Langley, Idaho; John Dukes, South Carolina; and F. W. Armstrong, Nova Scotia.

[Upon a motion by Mr. Broening, seconded by Mr. Joy, the report was approved and the above officers were declared elected for the ensuing year by a unanimous vote.

The convention was closed with an exchange of complimentary statements by the incoming and outgoing officers and other members, directed particularly to Mr. Baker in grateful appreciation of the many kindnesses and pleasures enjoyed at Topeka.]

Appendixes

Appendix A.—Officers and Members of Committees for 1936-37

President, Donald D. Garcelon, chairman, Industrial Accident Commission, Augusta, Maine.

Vice President, A. G. Mathews, commissioner, Workmen's Compensation Department, Charleston, W. Va.

Secretary-Treasurer, Verne A. Zimmer, director, Division of Labor Standards, Department of Labor, Washington, D. C.

EXECUTIVE COMMITTEE

Donald D. Garcelon.

A. G. Mathews.

Verne A. Zimmer.

F. W. Armstrong, Nova Scotia.

G. Clay Baker, Kansas.

John H. Dukes, South Carolina.

Frank Langley, Idaho.

William H. Wise, Michigan.

Voyta Wrabetz, Wisconsin.

ADMINISTRATION AND PROCEDURE COMMITTEE

M. J. Murphy, New York, *chairman*.

Wendell C. Heaton, Florida.

Edgar C. Nelson, Missouri.

C. K. Newcombe, Manitoba.

Ira M. Snouffer, Indiana.

Mrs. Emma S. Tousant, Massachusetts.

LEGISLATIVE COMMITTEE

Wm. F. Broening, Maryland, *chairman*.

Thos. M. Gregory, Ohio.

J. C. Joy, Oregon.

John J. Toohey, Jr., New Jersey.

David L. Ullman, Pennsylvania.

L. Metcalfe Walling, Rhode Island.

MEDICAL COMMITTEE

Dr. Allan Woodcock, Maine, *chairman*.

Dr. W. H. Bodenstab, North Dakota.

Dr. James J. Donohue, Connecticut.

Dr. Sidney McCurdy, Ohio.

Dr. George J. Mehler, New York.

Dr. R. R. Sayers, District of Columbia.

REHABILITATION COMMITTEE

Dr. Henry H. Kessler, New Jersey, *chairman*.

A. B. Funk, Iowa.

Charles H. Grantland, Delaware.

Coleman C. Martin, South Carolina.

J. Ney Miles, Arizona.

Mark M. Walter, Pennsylvania.

SAFETY AND SAFETY CODES COMMITTEE

Walter J. Brennan, Maine, *chairman*.

C. H. Fry, California.

Thomas P. Kearns, Ohio.

R. B. Morley, Ontario.

A. E. Smith, Minnesota.

T. A. Wilson, North Carolina.

COMMITTEE ON STATISTICS AND COSTS

Peter T. Swanish, Illinois, *chairman*.

W. F. Bursey, Virginia.

T. Norman Dean, Ontario.

O. A. Fried, Wisconsin.

E. B. Patton, New York.

Sidney W. Wilcox, District of Columbia.

HONORARY LIFE MEMBERS

Former presidents

- 1914-15, John E. Kinnane, Detroit, Mich.
 1915-16, Floyd L. Daggett, Spokane, Wash. (deceased).
 1916-17, Dudley M. Holman, Massachusetts.
 1917-18, F. M. Wilcox, Madison, Wis.
 1918-19, George A. Kingston, Toronto, Canada.
 1919-20, Will J. French, San Francisco, Calif.
 1920-21, Charles S. Andrus, Springfield, Ill.
 1921-22, Robert E. Lee, Maryland (deceased).
 1922-23, F. A. Duxbury, St. Paul, Minn. (deceased).
 1923-24, Fred W. Armstrong, Halifax, Nova Scotia.
 1924-25, O. F. McShane, Salt Lake City, Utah.
 1925-26, Frederic M. Williams, Waterbury, Conn. (deceased).
 1926-27, H. M. Stanley, Atlanta, Ga.
 1927-28, Andrew F. McBride, M. D., Paterson, N. J.
 1928-29, James A. Hamilton, New York, N. Y.; Frances Perkins, New York, N. Y.
 1929-30, Walter O. Stack, The Green, Dover, Del.
 1930-31, Parke P. Deans, Richmond, Va.
 1931-32, Wellington T. Leonard, Columbus, Ohio.
 1932-33, R. E. Wenzel, Department of Labor, Washington, D. C.
 1933-34, Joseph A. Parks, Boston, Mass.
 1934-35, J. Dewey Dorsett, Raleigh, N. C.
 1935-36, G. Clay Baker, Topeka, Kans.

Former secretaries

- 1914-15, Richard L. Drake, Highland Park, Mich.
 1915-16, L. A. Tarrell, Milwaukee, Wis.
 1916-20, Royal Meeker, Hartford, Conn.
 1920, Charles H. Verrill, Washington, D. C. (deceased).
 1921-32, Ethelbert Stewart, Washington, D. C., secretary-treasurer emeritus (deceased).
 1932-34, Charles E. Baldwin, Washington, D. C.

ACTIVE MEMBERS

- United States Division of Labor Standards.
 United States Bureau of Labor Statistics.
 United States Employees' Compensation Commission.
 Arizona Industrial Commission.
 California Department of Industrial Relations.
 Connecticut Board of Compensation Commissioners.
 Delaware Industrial Accident Board.
 Florida Industrial Commission.
 Georgia Department of Industrial Relations.
 Idaho Industrial Accident Board.
 Illinois Industrial Commission.
 Indiana Industrial Board.
 Iowa Workmen's Compensation Service.
 Kansas Commission of Labor and Industry.
 Maine Industrial Accident Commission.
 Maryland State Industrial Accident Commission.
 Massachusetts Department of Industrial Accidents.
 Michigan Commission of Labor and Industry.
 Minnesota Industrial Commission.
 Missouri Workmen's Compensation Commission.
 Nevada Industrial Commission.
 New Jersey Department of Labor.
 New York Department of Labor.
 North Carolina Industrial Commission.
 North Dakota Workmen's Compensation Bureau.
 Ohio Industrial Commission.
 Oregon State Industrial Accident Commission.

Pennsylvania Department of Labor and Industry.
 Rhode Island Department of Labor.
 South Carolina Industrial Commission.
 Utah Industrial Commission and the State Insurance Fund.
 Virginia Department of Workmen's Compensation, Industrial Commission.
 West Virginia Workmen's Compensation Department.
 Wisconsin Industrial Commission.
 Wyoming Workmen's Compensation Department.
 Department of Labor of Canada.
 Nova Scotia Workmen's Compensation Board.
 Ontario Workmen's Compensation Board.

ASSOCIATE MEMBERS

American Mutual Alliance, 230 North Michigan Avenue, Chicago, Ill.
 American Mutual Liability Insurance Co., Boston, Mass.
 W. F. Ames, Bethlehem Steel Co., Bethlehem, Pa.
 Association of Casualty and Surety Executives, 1 Park Avenue, New York, N. Y.
 O. Q. Claffin, attorney at law, 205 Federal Reserve Life Building, Kansas City,
 Kans.
 Consolidated Water Power and Paper Co., Wisconsin Rapids, Wis.
 R. M. Crater, American Telephone and Telegraph Co., New York, N. Y.
 Walter F. Dodd, 30 North La Salle Street, Chicago, Ill.
 Richard Fondiller, consulting actuary, 90 John Street, New York, N. Y.
 E. I. du Pont de Nemours & Co., Wilmington, Del. (7058 du Pont Building).
 Arthur Gaboury, general manager, Quebec Association for Prevention of In-
 dustrial Accidents, Montreal, Canada.
 Industrial Accident Prevention Association, Toronto, Ontario, Canada (J. L.
 Dodington, secretary).
 R. G. Knutson, Hardware Mutual Casualty Co., Stevens Point, Wis.
 Lumbermens Mutual Casualty Co., Mutual Insurance Building, Chicago, Ill.
 (R. E. Howe, vice president).
 Leifur Magnusson, American representative, International Labor Office, Wash-
 ington, D. C.
 National Council on Compensation Insurance, 45 East Seventeenth Street, New
 York, N. Y.
 Pennsylvania Self-Insurers Association, P. O. Box 849, Harrisburg, Pa. (Frank
 Cross, treasurer, care of Sun Oil Co., 1608 Walnut Street, Philadelphia, Pa.).
 Puerto Rico Industrial Commission, San Juan, Puerto Rico.
 Puerto Rico State Insurance Fund, San Juan, Puerto Rico.
 William Schobinger, London Guarantee & Accident Co., 55 Fifth Avenue, New
 York, N. Y.
 E. B. Watson, consulting actuary, 2730 American Insurance Union Citadel,
 Columbus, Ohio.

Appendix B.—Constitution of the International Association of Industrial Accident Boards and Commissions

Revision of September 27, 1934

ARTICLE I

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

ARTICLE II—*Objects*

The object of the association is to bring representatives of the various jurisdictions together at least once a year to discuss the problems and experiences arising out of the administration of workmen's compensation laws.

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, the 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, self-insurer, or association of self-insurers or individuals actively interested in any phase of workmen's compensation 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 all discussions, but shall have no vote either on resolutions or for the election of officers in the association.

SEC. 4. *Honorary life membership.*—Any person who has occupied the office of president or secretary of the association shall be ex officio an honorary life member of the association with full privileges.

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 it may think fit within the definition of membership.

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

ARTICLE V—*Annual dues*

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

SEC. 2. Associate member organizations, self-insurers, or associations of self-insurers shall pay \$50 per annum, except as hereinafter provided. Individual associate members shall pay \$10 per annum, except as hereinafter provided.

SEC. 3. Annual dues are payable on or before July 1 of each year, 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.

SEC. 4. It shall be within the power of the officers and executive committee to change the dues payable by any class of members, provided the maximum shall not exceed the amount stated in this article and that such changes shall be for but 1 year.

ARTICLE VI—*Officers*

SECTION 1. The officers of this association shall be a president, vice president, and secretary-treasurer. Only officials having to do with the administration of a State workmen's compensation law or bureau of labor may hold the office of president or vice president in this association, except as hereinafter provided.

SEC. 2. If for any reason the president or vice president of this association, during the term for which he was chosen, should cease to be an official of any agency entitled to active membership, he may serve out his term of office in this association. But if for any reason a vacancy occurs, the executive committee shall appoint a successor for the remainder of the term.

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

ARTICLE VII—*Executive committee*

SECTION 1. There shall be an executive committee of the association, which shall consist of the president, vice president, the retiring president, secretary-treasurer, and five other members, elected by the association at the annual meeting.

SEC. 2. The duties of the executive committee shall be to formulate programs for all annual and other 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. A quorum of the executive committee shall consist of at least four persons, the president or the vice president, or the representative of one of these, the secretary-treasurer or his representative, and two other members of the executive committee.

ARTICLE VIII—*Amendments*

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, referred to a special committee, and cannot be voted upon during the same day in which it was introduced. A two-thirds vote of the members present and voting is required to change the constitution.

Appendix C.—List of Persons Who Attended the Twenty-third Annual Meeting of the International Association of Industrial Accident Boards and Commissions, Held at Topeka, Kansas, September 21-24, 1936

CANADA

Manitoba

G. E. Carpenter, director, Workmen's Compensation Board, Winnipeg.
Charles K. Newcombe, chairman, Workmen's Compensation Board, Winnipeg.
Mrs. Chas. K. Newcombe, Winnipeg.
J. W. Schleichauf, general claims agent, Canadian Pacific, Winnipeg.

Nova Scotia

F. W. Armstrong, vice chairman, Workmen's Compensation Board, Halifax.

Ontario

A. W. Crawford, chairman, Minimum Wage Board, Department of Labor, Toronto.
T. N. Dean, statistician, Workmen's Compensation Board, Toronto.
George A. Kingston, commissioner, Workmen's Compensation Board, Toronto.
Mrs. George A. Kingston, Toronto.
R. B. Morley, general manager, Industrial Accident Prevention Association, Toronto.
George Wilkie, chairman, Workmen's Compensation Board, Toronto.

PUERTO RICO

Ramon Montaner, manager, State Insurance Fund, San Juan.

SWITZERLAND

David Vaage, chief of safety service, International Labor Office, Geneva.

UNITED STATES

Connecticut

Frank E. Glynne, Hartford Accident & Indemnity Co., Hartford.
Mary A. Glynne, Hartford.

Delaware

C. W. Dickey, manager, compensation division, E. I. du Pont de Nemours & Co., Wilmington.
Charles H. Grantland, Industrial Accident Board, Wilmington.
Donald R. Morton, E. I. du Pont de Nemours & Co., Wilmington.

District of Columbia

Charles E. Baldwin, 1359 Oak Street NW., Washington.
Clara M. Beyer, Assistant Director, Division of Labor Standards, United States Department of Labor, Washington.

Marshall Dawson, United States Bureau of Labor Statistics, Washington.
 Dr. Alice Hamilton, medical consultant, Division of Labor Standards, Washington.
 Charles L. Hodge, Division of Labor Standards, United States Department of Labor, Washington.
 Dr. R. R. Jones, Division of Labor Standards, United States Department of Labor, Washington.
 Swen Kjaer, United States Bureau of Labor Statistics, Washington.
 M. D. Kossoris, United States Bureau of Labor Statistics, Washington.
 Marie Leffingwell, Division of Labor Standards, Washington.
 Leifur Magnusson, American Representative, International Labour Office, Washington.
 Mrs. Margaret T. Mettert, Women's Bureau, United States Department of Labor, Washington.
 A. Louise Murphy, Division of Labor Standards, Department of Labor, Washington.
 Dr. R. R. Sayers, United States Public Health Service, Washington.
 Charles F. Sharkey, United States Bureau of Labor Statistics, Washington.
 H. L. Stanton, Rehabilitation Service, United States Office of Education, Washington.
 Mrs. Jewell W. Swofford, chairman, United States Employees' Compensation Commission, Washington.
 R. E. Wenzel, Division of Labor Standards, Department of Labor, Washington.
 Sidney W. Wilcox, United States Bureau of Labor Statistics, Washington.
 Verne A. Zimmer, Director, Division of Labor Standards, Department of Labor, Washington.

Florida

Wendell C. Heaton, chairman, Florida Industrial Commission, Tallahassee.
 Mrs. Wendell C. Heaton, Tallahassee.

Idaho

Catherine Langley, Boise.
 Frank Langley, chairman, Idaho Industrial Accident Board, Boise.
 Mrs. Frank Langley, Boise.
 William Langley, Boise.

Illinois

Dr. J. A. Britton, 606 South Michigan Boulevard, Chicago.
 Dr. N. L. Brookens, University of Chicago, Chicago.
 Daniel D. Carmell, assistant attorney general, 205 West Wacker Drive, Chicago.
 R. E. Howe, Lumbermen's Mutual Casualty Co., Mutual Insurance Building, Chicago.
 Dean Keefer, National Safety Council, 20 North Wacker Drive, Chicago.
 Dr. Philip H. Kreuzer, 300 North Michigan Boulevard, Chicago.
 Joseph L. Lisack, member, Industrial Commission, 205 West Wacker Drive, Chicago.
 Mrs. Elsie W. Martens, Master Reporting Co., 540 Michigan Avenue, Chicago.

Indiana

Ira M. Snouffer, chairman, Indiana Industrial Board, Indianapolis.
 Mrs. Ira M. Snouffer, Indianapolis.

Iowa

A. B. Funk, commissioner, Industrial Commission of Iowa, Des Moines.
 Frank E. Wenig, commissioner of labor, Des Moines.

Kansas

Dr. H. A. Alexander, 706 Kansas Avenue, Topeka.
 Dr. Lewis W. Angle, 600 Huron Building, Kansas City.
 R. M. Armstrong, auditor, Seymour Packing Co., Topeka.
 Mrs. R. M. Armstrong, Topeka.
 O. V. Ashley, adjuster, Sheffer Cunningham Co., Wichita.
 B. G. Baird, inspector, commission of labor and industry, Topeka.
 G. Clay Baker, chairman, commission of labor and industry, Topeka.

- Mrs. G. Clay Baker, Topeka.
 R. A. Barber, Phoenix Indemnity Co., Lawrence.
 Dr. L. F. Barney, Kansas City.
 Dr. Albert Beam, Americus.
 Dr. C. W. Beasley, Lyndon.
 Dr. A. E. Bence, Brown Building, Wichita.
 Dr. George W. B. Beverley, Central Building, Topeka.
 William A. Biby, chamber of commerce, Topeka.
 Mrs. William A. Biby, Topeka.
 Dr. W. D. Bishop, 3113 Brown Avenue, Kansas City.
 Dr. Clyde D. Blake, Hays.
 Dr. C. E. Boudreau, El Dorado.
 Dr. W. F. Bowen, Central Building, Topeka.
 Dr. G. E. Brethour, Dwight.
 Dr. A. J. Brier, Central Building, Topeka.
 Marie Brindell, secretary, Kansas Commission of Labor and Industry, Topeka.
 Dana C. Brown, Kansas Commission of Labor and Industry, Topeka.
 Mrs. Dana C. Brown, Topeka.
 Dr. Earle G. Brown, State board of health, State House, Topeka.
 Sylvan Bruner, attorney, Pittsburg.
 Dr. E. S. Busby, Topeka State Hospital, Topeka.
 Dr. W. P. Callahan, 1108 Brown Building, Wichita.
 Valda V. Campbell, Kansas Workmen's Compensation Commission, Topeka.
 Dr. Orville R. Clark, 1264 Fillmore Street, Topeka.
 Arthur L. Claussen, Central Building, Topeka.
 Mrs. Arthur L. Claussen, Topeka.
 Esther Connors, secretary to highway patrol, Masonic Temple, Topeka.
 John H. Crawford, Kansas Commission of Labor and Industry, Wichita.
 Mrs. John H. Crawford, Wichita.
 H. C. Cunningham, Central Building, Wichita.
 Dr. Howard C. Curtis, Beacon Building, Wichita.
 W. W. Deadman, Lone Star Cement Corporation, Bonner Springs.
 Murton Earl, assistant secretary, Kansas Safety Council, Topeka.
 Dr. M. C. Eddy, 1301 Main, Hays.
 Dr. E. S. Edgerton, 909 Schweiter Building, Wichita.
 Loraine Edmunds, commission of labor and industry, Topeka.
 Dr. R. G. M. Ehlers, division of child hygiene, Kansas State Board of Health, Topeka.
 Don H. Elleman, attorney, Columbus.
 Wray Enders, St. Margarets Hospital, Kansas City.
 Dr. J. L. Evans, 729 Beacon Building, Wichita.
 Dr. C. H. Ewing, Larned.
 Dr. W. J. Feehan, 600 Huron Building, Kansas City.
 Dr. C. M. Fitzpatrick, Salina.
 J. F. Fletcher, manager, Kansas Compensation Rating Bureau, Topeka.
 Mrs. J. F. Fletcher, Topeka.
 Dr. F. Focannon, Emporia.
 Leo Fruit, Commission of Labor and Industry, Topeka.
 L. B. Frye, 315 W. H. K. Building, Wichita.
 Roy H. Galvin, Commission of Labor and Industry, Parsons.
 Mrs. Roy H. Galvin, Parsons.
 Dr. L. B. Bloyne, 338 Brotherhood Building, Kansas City.
 Jesse W. Greenleaf, corporation commissioner, Statehouse, Topeka.
 Miss Vera M. Greenwood, Kansas State Employment Service, Statehouse, Topeka.
 Dr. W. H. Greider, 1616 Western Avenue, Topeka.
 Dr. Lawrence Growney, 700 Central Avenue, Kansas City.
 Dr. J. F. Gsell, 911 Beacon Building, Wichita.
 Daisy L. Gulick, director of women's work, Commission of Labor and Industry, Topeka.
 Dr. C. W. Hall, 100 West First Street, Hutchinson.
 Dr. Marvin Hall, 704 Kansas Avenue, Topeka.
 Dr. J. F. Hassig, 409 Huron Building, Kansas.
 Dr. A. E. Hiebert, Security Benefit Association, Topeka.
 H. W. Hoffmann, Kansas Indemnity Co., Lawrence.
 Dr. J. G. Hughbanks, Independence.
 J. H. Jenson, commissioner, Commission of Labor and Industry, Topeka.

Mrs. J. H. Jenson, Topeka.
 Dr. L. D. Johnson, Chanute.
 Dr. H. Penfield Jones, 107 East Eighth Street, Lawrence.
 Dr. C. E. Joss, National Reserve Building, Topeka.
 Cecil Keating, Commission of Labor and Industry, Topeka.
 C. C. Keller, Wilson & Co., Kansas City.
 Nellie Kennedy, Commission of Labor and Industry, Topeka.
 Thomas Kensett, Seymour Packing Co., Topeka.
 Dr. G. L. Kerley, Central Building, Topeka.
 Dr. Willard J. Kiser, 901 Brown Building, Wichita.
 Dr. J. L. Lattimore, Mills Building, Topeka.
 Harry H. Loomis, Mercer Casualty Co., Topeka.
 Mrs. Harry Loomis, Topeka.
 Dr. Forrest L. Loveland, Mills Building, Topeka.
 Dr. L. D. Mabie, Huron Building, Kansas City.
 J. C. Marsh, Commission of Labor and Industry, Topeka.
 Mrs. J. C. Marsh, Topeka.
 Beth Martin, Commission of Labor and Industry, Topeka.
 Dr. B. H. Mayer, Ellsworth.
 Dr. F. E. McCord, county health officer, 612 Jackson Street, Topeka.
 Dr. W. C. McDonough, Topeka.
 John W. McElroy, Universal Adjustment & Insurance Co., Topeka.
 Mrs. John W. McElroy, Topeka.
 Richard B. McEntire, attorney, Topeka.
 Dr. Karl Menninger, 3617 West Sixth Street, Topeka.
 Louise Meyer, Sheffer-Cunningham, adjusters, Wichita.
 Dr. George E. Milbank, Beacon Building, Wichita.
 Lloyd S. Miller, South Western Bell Telephone Co., Topeka.
 Mrs. Lloyd S. Miller, Topeka.
 Dr. Milton B. Miller, Central Building, Topeka.
 Dr. W. M. Mills, 515 Mills Building, Topeka.
 Dr. C. J. Mullen, 514 Brotherhood Building, Kansas City.
 C. G. Munns, executive secretary, Kansas Medical Society, Topeka.
 Mrs. C. G. Munns, Topeka.
 William A. Murphy, commission of labor and industry, Manhattan.
 Mrs. William A. Murphy, Manhattan.
 Dr. C. C. Nesselrode, Huron Building, Kansas City.
 Opal Nichols, commission of labor and industry, Topeka.
 Crystal Niemeir, commission of labor and industry, Topeka.
 Dr. M. L. Perry, superintendent, State hospital, Topeka.
 Dr. P. A. Pettitt, Paola.
 Dr. W. A. Phares, Schweiter Building, Wichita.
 R. C. Plyley, Kansas Workmens' Compensation Commission, Topeka.
 Mrs. R. C. Plyley, Topeka.
 Joseph J. Poizner, Kansas State compensation officer, Works Progress Administration, Topeka.
 Dr. P. M. Powell, 823 Kansas Avenue, Topeka.
 Dr. M. E. Pusitz, Mills Building, Topeka.
 Gwen Putney, convention office, 2830 Pennsylvania Avenue, Topeka.
 Dr. Omer M. Raines, 514 Mills Building, Topeka.
 Dr. E. C. Rainey, Kansas Gas & Electric Co., 929 Beacon Building, Wichita.
 Dr. H. L. Regier, Huron Building, Kansas City.
 Dr. W. E. Regier, Whitewater.
 Gordy L. Reynolds, Missouri Valley Bridge & Iron Co., Leavenworth.
 Dr. Charles Rombold, Union National Bank Building, Wichita.
 Frances E. Ryan, office of secretary of state, Topeka.
 Dr. L. L. Saylor, National Reserve Building, Topeka.
 Dr. J. C. Shaw, 1401 Buchanan Street, Topeka.
 Warren Shaw, office of insurance commissioner, Topeka.
 Dr. George Seitz, Salina.
 Dr. W. A. Smiley, Junction City.
 Dr. Leo A. Smith, Topeka.
 Irwin Snattinger, attorney, National Bank of Topeka Building, Topeka.
 Fred St. John, commission of labor and industry, Topeka.
 Dr. L. S. Steadman, Junction City.
 Dr. L. F. Steffen, 612 Jackson Street, Topeka.
 Dr. W. B. Steward, 508 Central Building, Topeka.

H. W. Tharp, Employers Mutual Casualty Co., 200 Ellis Singleton Building, Wichita.
 Duckworth Tootle, Miltonvale.
 Dr. C. S. Trimble, Emporia.
 Tom Van Cleve, attorney at law, Commercial Bank Building, Kansas City.
 Maynard Van Dyke, 409 Huntoon Street, Topeka.
 Dr. D. C. Wakeman, 1035 Jackson Street, Topeka.
 F. E. Washburn, Leavenworth.
 Ollie E. Watson, Kansas Commission of Labor and Industry, Wellington.
 Sam Webb, adjutant general's office, Topeka.
 Mrs. Sam Webb, Topeka.
 Mildred Williams, commission of labor and industry, Topeka.
 C. I. Winson, attorney, 518 W. K. E. Building, Wichita.
 Dr. H. H. Woods, Central Building, Topeka.
 C. W. Yeager, Fidelity & Casualty Co. of New York, Main and Douglas Streets, Wichita.
 Dr. C. L. Youngman, Harveyville.

Maine

D. D. Garcelon, chairman, Industrial Accident Commission, Augusta.
 Mrs. D. D. Garcelon, Augusta.

Maryland

William F. Broening, chairman, Maryland State Industrial Accident Commission, Baltimore.

Massachusetts

Leslie P. Henry, American Mutual Liability Insurance Co., Boston.
 T. A. McGehearty, Liberty Mutual Insurance Co., 10 Park Square Building, Boston.

Michigan

L. J. Carey, general counsel, Michigan Mutual Liability Co., 163 Madison Avenue, Detroit.
 William H. Wise, compensation commissioner, Commission of Labor and Industry, Lansing.

Minnesota

Dr. A. W. Adson, Mayo Clinic, Rochester.
 E. A. Northby, State compensation officer, Works Progress Administration, 525 Minnesota Building, St. Paul.
 J. D. Williams, industrial commissioner, Department of Labor and Industry, St. Paul.
 Mrs. J. D. Williams, St. Paul.

Missouri

E. R. Adams, Ocean Accident & Guaranty Corporation, 1202 Federal Reserve Bank Building, Kansas City.
 George A. Bailey, Hartford Accident & Indemnity Co., 912 Baltimore Street, Kansas City.
 Oscar Borgquist, Kansas City Public Service Co., 728 Delaware Street, Kansas City.
 Paul E. Bindley, Missouri Workmen's Compensation Commission, 950 Dierks Building, Kansas City.
 Dr. Eugene C. Black, 632 Professional Building, Kansas City.
 C. A. Braeckeveldt, chief engineer, Western Insurance Co., 916 Walnut Street, Kansas City.
 Dr. G. K. Campbell, Professional Building, Kansas City.
 R. G. Clemmer, Travelers Insurance Co., 603 Title and Trust Building, Kansas City.
 L. R. Cooley, Travelers Insurance Co., 602 Title and Trust Building, Kansas City.
 W. F. Coulter, Hartford Accident & Indemnity Co., 912 Baltimore Street, Kansas City.
 Lee Cummins, Empire Mutual Insurance Co., 604 Fairfax Building, Kansas City.
 Dr. Rex L. Diveley, Professional Building, Kansas City.

- T. A. Duckworth, Employers Mutual Insurance Co., 604 Fairfax Building, Kansas City.
- Dr. F. L. Feierabend, Argyle Building, Kansas City.
- Dr. C. B. Francisco, Argyle Building, Kansas City.
- C. I. Frieze, Travelers Insurance Co., 603 Title and Trust Building, Kansas City.
- Spencer Givens, commissioner, Missouri Workmen's Compensation Commission, Jefferson City.
- E. W. Harris, Travelers Insurance Co., Kansas City.
- R. H. Hawley, Travelers Insurance Co., Title and Trust Building, Kansas City.
- Dr. William H. Hines, 522 Professional Building, Kansas City.
- C. O. Huber, Hartford Accident & Indemnity Co., Kansas City.
- E. G. Hundley, 1205 Midland Building, Kansas City.
- C. J. Iverson, Aetna Casualty Insurance Co., 600 Dierks Building, Kansas City.
- J. J. James, Missouri Workmen's Compensation Commission, Jefferson City.
- F. J. Jursits, Lone Star Cement Corporation, Federal Reserve Bank Building, Kansas City.
- Paul P. Kinsey, Liberty Mutual Insurance Co., New York Life Building, Kansas City.
- D. C. Kline, Travelers Insurance Co., Title and Trust Building, Kansas City.
- G. E. Kohl, Employers Mutuals, 604 Fairfax Building, Kansas City.
- M. J. McQueen, member, Missouri Workmen's Compensation Commission, Jefferson City.
- John W. Mitchell, 1205 Midland Building, Kansas City.
- R. C. Moore, Central Surety & Insurance Co., 1737 McGee Street, Kansas City.
- Thomas A. Murray, Maryland Casualty Co., 544 Lathrop Building, Kansas City.
- Dr. J. Park Neal, 736 Argyle Building, Kansas City.
- Edgar C. Nelson, chairman, Workmen's Compensation Commission, Jefferson City.
- Mrs. Edgar C. Nelson, Jefferson City.
- W. H. Newhard, Hartford Accident & Indemnity Co., 912 Baltimore Street, Kansas City.
- Dr. D. M. Nigro, Argyle Building, Kansas City.
- Dr. M. J. Owens, Rialto Building, Kansas City.
- Albert L. Plummer, Aetna Casualty Insurance Co., 600 Dierks Building, Kansas City.
- Leo T. Schwartz, American Mutual Life Insurance Co., 1204 Commerce Building, Kansas City.
- Orin H. Shaw, member, Workmen's Compensation Commission, Jefferson City.
- Dr. Walter L. Small, 520 Argyle Building, Kansas City.
- J. P. Spillman, Bituminous Casualty Corporation, 200 Elmhurst Building, Kansas City.
- A. M. Stephenson, American Mutual Liability Insurance Co., 402 Fidelity Bank Building, Kansas City.
- Leslie A. Stewart, Central Surety & Insurance Co., 1737 McGee Street, Kansas City.
- Frank C. Stiles, Maryland Casualty Co., 544 Lathrop Building, Kansas City.
- Dr. Frank R. Teachenor, Kansas City.
- C. E. Whisman, Employers Mutual Insurance Co., 604 Fairfax Building, Kansas City.
- Albert Wiebe, Lumbermen's Mutual Casualty Co., Board of Trade Building, Kansas City.
- Winston H. Woodson, 1900 Fidelity Bank Building, Kansas City.
- George E. Wright, 1205 Midland Building, Kansas City.
- William E. Wright, 1303 R. A. Long Building, Kansas City.

Nebraska

- C. E. Jackman, judge, Workmen's Compensation Court, Lincoln.
- Lawrence F. Welch, judge, Workmen's Compensation Court, Lincoln.

New Jersey

- Stephen J. Lorenz, deputy commissioner, Bureau of Workmen's Compensation, Trenton.

New York

- Elmer F. Andrews, industrial commissioner, Department of Labor, 80 Center Street, New York.
 Robert M. Crater, American Telephone & Telegraph Co., 195 Broadway, New York.
 Joseph P. Craugh, assistant attorney general, Department of Labor, 80 Center Street, New York.
 Dr. J. A. Goldberg, New York Tuberculosis and Health Association, 386 Fourth Avenue, New York.
 Dr. George J. Mehler, medical division, Department of Labor, 80 Center Street, New York.
 Mrs. George J. Mehler, New York.
 Dr. William M. Mehl, chairman, New York State Commission for the Blind, 417 Franklin Street, Buffalo.
 Michael J. Murphy, director, division of workmen's compensation, Department of Labor, 80 Center Street, New York.
 E. B. Patton, director, division of statistics, Department of Labor, 80 Center Street, New York.
 H. F. Richardson, secretary-treasurer, National Council on Compensation Insurance, 45 East Seventeenth Street, New York.
 William Schobinger, attorney, London Guarantee & Accident Co., New York.
 T. A. Walsh, American Optical Co., 70 West Fortieth Street, New York.

North Carolina

- J. Dewey Dorsett, chairman, North Carolina Industrial Commission, Raleigh.

North Dakota

- Dr. W. H. Bodenstab, Workmen's Compensation Bureau, Bismarck.
 W. C. Preckel, commissioner, Workmen's Compensation Bureau, Bismarck.

Ohio

- H. D. Bangert, consulting actuary, 2730 American Insurance Union Citadel, Columbus.
 Carl C. Beasor, statistician, Ohio Industrial Commission, Columbus.
 Thomas M. Gregory, chairman, Ohio Industrial Commission, Columbus.
 Thomas P. Kearns, Industrial Commission of Ohio, Columbus.
 Dr. Sidney McCurdy, Columbus.
 E. E. Watson, consulting actuary, 2730 American Insurance Union Citadel, Columbus.

Oklahoma

- A. R. Daugherty, Indian Territory Illuminating Oil Co., Oklahoma City.
 H. W. Giessing, safety engineer, Commerce Mining Co., Miami.
 Dr. E. M. Gullatt, 106 East Thirteenth Street, Ada.
 M. D. Harbaugh, secretary, Tri-State Zinc and Lead Ore Producers Association, Miami.
 Glenn L. Harrison, Oklahoma Industrial Commission, Oklahoma City.
 C. M. Harvey, Jr., secretary-treasurer, Commerce Mining Co., Miami.
 D. A. Howard, Empire Companies, Bartlesville.
 Charles C. Julien, attorney, Empire Co., Bartlesville.
 R. G. McKinney, attorney, compensation department, Phillips Petroleum Co., Bartlesville.
 Arthur A. Odell, Barnsdall Oil Co., Tulsa.
 Samuel H. Riggs, Indian Territory Illuminating Oil Co., Bartlesville.
 C. L. Stinnett, compensation manager, Shell Petroleum Corporation, Mayo Building, Tulsa.
 C. L. Swim, manager, insurance department, Skelly Oil Co., Tulsa.
 F. E. Wheeler, adjusting department, Empire Oil Co., Bartlesville.
 C. R. Wright, insurance and claims department, Empire Oil Co., Bartlesville.

Oregon

- J. C. Joy, commissioner, Oregon Industrial Accident Commission, Salem.

Pennsylvania

W. F. Ames, Bethlehem Steel Co., Bethlehem.
 Dr. H. E. Bricker, Philadelphia Rapid Transit Co., Philadelphia.
 William H. Chesnut, Baldwin Locomotive Works, Philadelphia.
 Walter Linn, secretary, Pennsylvania Self-Insurers' Association, Philadelphia.
 R. L. Pickett, supervisor, Philadelphia Rapid Transit Co., 810 Dauphin Street, Philadelphia.
 Raymond Scott, claim supervisor, General Accident, Fire & Life Assurance Corporation, Philadelphia.
 Mrs. Raymond Scott, General Accident, Fire & Life Assurance Corporation, Philadelphia.

Rhode Island

L. Metcalfe Walling, director, Department of Labor, Providence.

South Carolina

John H. Dukes, chairman, South Carolina Industrial Commission, Columbia.
 Mrs. John H. Dukes, Columbia.
 Isaac L. Hyatt, commissioner, South Carolina Industrial Commission, Columbia.
 W. C. Johnston, secretary, South Carolina Industrial Commission, Columbia.
 Mrs. W. C. Johnston, Columbia.
 Coleman C. Martin, vice chairman, South Carolina Industrial Commission, Columbia.

Texas

H. Fred Martin, member, Industrial Accident Board, Austin.
 Mrs. H. Fred Martin, Austin.
 W. B. Toff, vice president, Commercial Standard Insurance Co., Fort Worth.

Utah

O. F. McShane, commissioner, Industrial Commission of Utah, Salt Lake City.

Virginia

W. H. Nickels, commissioner, Industrial Commission of Virginia, Richmond.

West Virginia

R. M. Hartman, secretary, Workmen's Compensation Commission, Charleston.
 A. G. Mathews, member, Workmen's Compensation Commission, Charleston.
 Mrs. A. G. Mathews, Charleston.

Wisconsin

R. G. Knutson, assistant claim manger, Hardware Mutual Casualty Co., Stevens Point.
 Mortimer Levitan, attorney general, Industrial Commission of Wisconsin, Madison.
 Harry R. McLogan, commissioner, Industrial Commission of Wisconsin, Madison.
 Mrs. Harry R. McLogan, Madison.
 Harry A. Nelson, director, workmen's compensation department, Industrial Commission of Wisconsin, Madison.
 J. J. Plzak, claims manager, Consolidated Water Power & Paper Co., Wisconsin Rapids.
 Dr. O. A. Sander, 710 North Parkington Avenue, Milwaukee.
 Dr. A. J. Weber, 213 West Wisconsin Avenue, Milwaukee.
 Voyta Wrabetz, chairman, Industrial Commission of Wisconsin, Madison.
 Mrs. Voyta Wrabetz, Madison.

Wyoming

P. J. Coady, manager, Workmen's Compensation Commission, Cheyenne.
 Mrs. P. J. Coady, Cheyenne.

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