U. S. DEPARTMENT OF LABOR
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BUREAU OF LABOR STATISTICS
ETHELBERT STEWART, Commissioner

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MISCELLANEOUS SERIES

ACTIVITIES AND FUNCTIONS OF A STATE DEPARTMENT OF LABOR

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FOREWORD

In addition to the United States Bureau of Labor Statistics and those in the Territories, there are 43 State organizations in the United States having the functions of bureaus of labor statistics.

The original bureau was organized in Massachusetts by virtue of an act approved June 23, 1869. The first commissioner of the Bureau of Statistics of Labor of Massachusetts was Henry K. Oliver, who served until June, 1873, when he was succeeded by Carroll D. Wright, who held the position of Commissioner until the United States bureau was organized in 1885. It will thus be seen that bureaus of this character have been in existence more than half a century.

No functions of the Government are more widespread or are accomplishing more, considering the tremendous financial odds, than are the various bureaus of labor statistics, yet the work of no State organizations or functions is less understood or less appreciated than that of these bureaus. This is partly due to the fact that they have for the most part so little funds that they have not been able to attract the attention to themselves that other organizations more fortunately equipped have succeeded in doing. However, if one compares the economic literature, both periodical and university textbooks, prior to 1869 with that of to-day, one will realize that it is from the material gathered through bureaus of labor statistics that most of the real facts have been secured.

Realizing that the functions of such bureaus were not known—not appreciated nor understood—Massachusetts has for some time been introducing lectures on the functions of its bureau (now incorporated into a department of labor and industries) into the schools of the State, and even has been able to get so far as to have reasonable information in regard thereto incorporated into the curricula of a number of other institutions.

During the summer school season of 1928 the State of New York through Industrial Commissioner James A. Hamilton was able to put a course of lectures on the various functions and purposes of the New York State Department of Labor into the required work of the university summer schools. These lectures were prepared by the chiefs of the various divisions of the New York Department of Labor and delivered in the following universities: University of Rochester, Syracuse University, College of the City of New York, New York University, and Columbia University.

Believing that it is important that the people of the United States should know what a State department of labor is and what its functions are, these lectures (as delivered) are being published in the belief that such publication will be a real contribution to the knowledge of what is being done through this source to advance economic education in this country. It is not claimed that every State is

doing either similar work or the same amount of work that is being done in New York. The purpose of this publication is to show by practical example what State bureaus of labor statistics can do if given a chance.

Statistical methods as now understood and as distinguished from mathematics have been developed beginning with the Massachusetts bureau in 1869 and continued in the United States Bureau of Labor Statistics. To-day a large number of universities in the United States and Europe have in their curricula a course in statistical methods based, in so far as they are not confused with mathematical theories, upon the method developed in the American bureaus. This bulletin is published therefore as a contribution to the study of statistical methods as applied to industrial and economic problems.

Other States that are doing work commensurate with that portrayed here or as good as their opportunities will permit are Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Jersey, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

ETHELBERT STEWART,
United States Commissioner of Labor Statistics.

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NO. 479 WASHINGTON SEPTEMBER, 1928

ACTIVITIES AND FUNCTIONS OF A STATE DEPARTMENT OF LABOR

THE NEW YORK DEPARTMENT OF LABOR AND THE INDUSTRIAL LIFE OF THE STATE

By JAMES A. HAMILTON, PH. D., LL. B., INDUSTRIAL COMMISSIONER.

PRIOR to 1913 the functions of the department of labor were confined essentially to enforcement of the provisions of the labor law for protection of employees with respect to health, safety, and certain other matters, including in connection therewith investigation work relating to the conditions of labor in the State, and promotion of peaceful industrial relations between employers and employees. By chapter 145 in 1913 a very important enlargement of the functions of the department occurred by provision for establishment by it of rules and regulations for carrying into effect the statutory provisions of the labor law, "applying such provisions to specific conditions and prescribing specific means and methods or practices to effectuate such provisions." This new function was essentially that of legislation, the law providing that the rules and regulations just referred to should have the force and effect of law and constitute the industrial code of the State. It was to perform this new legislative function that the industrial board was created. This legislative function has continued in the department of labor until the present time.

The constitution and function of the industrial board as established in 1913 continued without important change until 1915. In 1915, by chapter 674 of the laws of that year, which became effective on May 22, the industrial board was merged in, or succeeded by, the industrial commission of the State. That act consolidated the previously existing workmen's compensation commission with the department of labor and put at the head of the department, exercising all its functions, the industrial commission. The industrial commission thus succeeded to the legislative functions of the previous industrial board combined with the administrative functions of the department previously exercised by the commissioner of labor and the judicial functions of the workmen's compensation commission in the settlement of claims for compensation under the workmen's compensation law. This organization of the department's functions in the hands of the industrial commission continued until 1921.

By chapter 50 of the Laws of 1921, which took effect on March 9th of that year, a redistribution of departmental functions and a reorganization of the responsible departmental machinery was made. The legislative and judicial functions were entirely separated from the administrative functions of the department and assigned to the industrial board, the administrative functions being assigned to the industrial commissioner. This assignment of functions has continued until the present time, and the separation of functions likewise has continued the same, except as follows: Chapter 427 of the Laws of 1926, which inserted article 10 of the new State departments law of that year (which is the article of that law governing the department of labor) and which became effective January 1, 1927, adds a new requirement with respect to the legislative functions of the department by providing that any new rule or amendment or repeal of a rule of the industrial board shall not be effective until approved by the industrial commissioner.

Under the law of 1913 the industrial board consisted of five members, including the commissioner of labor as chairman and four associate members. No qualifications of associate members were set up in the statute. Under the law of 1915 the industrial commission consisted of five members, with the single specification as to qualifications that not more than three should be members of the same political party. The law of 1921 provided that the industrial board should consist of three members without specification of qualifications. Chapter 427 of the Laws of 1926, which increased the number of members from three to five, specified that two members should represent employers, two should represent employees, and one should be an attorney. These specifications, however, were modified by chapter 166 of the Laws of 1927, which did away with the requirement as to representation of employers and employees and left only the provision that one member must be an attorney.

I. Outline of Functions

The department of labor has two general statutes to administer and two general classes of functions corresponding to those laws. Those statutes are the labor law, which is chapter 31 of the Consolidated Laws, and the workmen's compensation law, which is chapter 67 of the Consolidated Laws. The department's functions under the former are administrative and under the latter are judicial and legislative.

Corresponding also in a general way to these laws and functions are two broad divisions of departmental machinery. The industrial commissioner and the various bureaus under his direction constitute the administrative section of the department, while the industrial board is the judicial and legislative section of the department.

A. Administrative Functions

The administrative functions of the department are very well summarized in section 21 of the labor law which defines the general powers and duties of the industrial commissioner. As there listed, these administrative functions include the following:

1. To enforce the provisions of the labor law and of the industrial code.

2. To perform the administrative, but not judicial duties, under the workmen's compensation law.

3. To cause proper inspections to be made of all matters prescribed by the labor law or by the industrial code.

4. To cause investigations to be made of the condition of women in industry.

5. To inquire into the cause of all strikes, lockouts and other industrial controversies, and endeavor to effect an amicable settlement thereof, and to create within the department a board to which a controversy between an employer and his employees may be submitted for mediation and arbitration.

6. To propose to the industrial board such rules or such changes in such rules as he may deem advisable.

7. To provide for the establishment and maintenance of public employment offices for the purpose of securing employment for men, women, and children.

8. To make investigations, collect and compile statistical information, and report upon the conditions of labor generally and upon all matters relating to the enforcement and effect of the provisions of the labor law and of the rules thereunder.

9. To enforce any lawful municipal ordinance, by-law, or regulation relating to any place affected by the provisions of the labor law, not in conflict with the provisions of the labor law or of the industrial code.

10. To investigate the condition of aliens relative to their employment in industry.

B. Legislative and Judicial Functions

The legislative and judicial functions of the department exercised by the industrial board are defined by sections 27 and 28 of the labor law and may be summarized as follows, partly quoting from the statute:

1. The legislative duties are to make, amend, and repeal rules for carrying into effect the provisions of the labor law, applying such provisions to specific conditions and prescribing means, methods, and practices to effectuate such provisions.

Such rules of the board have the force of law. Two classes of rules are provided for.

(*a*) One class is for proper sanitation, and guarding against and minimizing fire hazards, personal injuries, and diseases in all work places under the labor law. In providing for such rules the law declares a broad policy "that all places to which the labor law applies shall be so constructed, equipped, arranged, operated, and conducted in all respects as to provide reasonable and adequate protection to the lives, health, and safety of all persons employed therein, and frequenting the same, and that the board shall from time to time make such rules as will effectuate such policy and intent."

(*b*) A second class of rules is authorized by a provision that "whenever the board finds that any industry, trade, occupation or process involves such elements of danger to the lives, health, or safety of persons employed therein as to require special regulation for the protection of such persons, the board may make special rules to guard against such elements of danger by establishing requirements as to

temperature, humidity, the removal of dusts, gases, or fumes, by requiring licenses to be applied for and issued by the department as a condition of carrying on any such industry, trade, occupation, or process, by requiring medical inspection and supervision of persons employed or applying for employment, and by other appropriate means."

2. The judicial functions of the board are "to hear and determine all claims for compensation under the workmen's compensation law."

II. The Extent of the Department's Field

In a State of the size of New York, the work of such a department is a really vast undertaking. A few figures will illustrate this.

The number of industrial or business firms affected by the laws which are administered by the department is in the neighborhood of 200,000. The number of wage earners affected by its work approaches 3,000,000. These firms and employees are in every variety of enterprise including factories, stores, offices, restaurants, hotels, railroads, mines, quarries, and building construction. The work of the department extends to every part of the State which means that it covers a geographical territory of over 47,000 square miles.

III. The Organization of the Department

With functions so varied and important and with a field of work so large as those outlined above, there must naturally be extensive machinery in the department to meet its wide responsibilities. This machinery may be briefly outlined as follows:

The industrial commissioner is the head of the department and is appointed by the governor. The industrial board consists of five members.

Under the industrial commissioner are the following general offices, bureaus, or divisions:

Deputy commissioner.
Secretary of the department.
Bureau of inspection.
Division of industrial codes.
Engineering division.
Bureau of industrial hygiene.
Bureau of statistics and information.
Bureau of women in industry.
Bureau of workmen's compensation.
State insurance fund.
Division of self-insurance.
Bureau of industrial relations.

There are further divisions within some of the bureaus which added to the above would make a total of about 40 administrative organization units in the department.

The department is organized geographically by division of the State into 5 districts. In each district is a general office of the department. These district offices are located in New York City, Buffalo, Rochester, Syracuse, and Albany. The general offices of the department are in New York City.

Mention should be made of two bodies provided for by law and appointed by the governor composed of unsalaried members who act in the capacity of advisors to the industrial commissioner. One of these is the industrial council. The law provides that five of its members shall be known to represent the interests of employers and five the interests of employees. The council is to consider matters submitted to it by the commissioner and advise him thereon, may

recommend to the commissioner changes in administration, and is to cooperate with the civil-service commission in holding examinations for positions requiring special knowledge or training.

The other advisory body is the advisory committee of the State insurance fund. This is composed of representatives of firms insured in the State fund. Its duties are "to consider the condition of the State fund and to examine into the condition of its reserves, investments, and other matters relating to the administration of such fund."

IV. The Cost of the Department

To perform the foregoing functions over its state-wide territory, and through its necessarily extensive machinery, requires of course a large expenditure of money. During the last fiscal year, the year ended June 30, 1927, the total expenditures of the department were $2,330,820.93. The main items making up this total were:

Salaries	$1,868,530.72
Traveling expenses	148,066.83
Printing	71,204.56
Supplies and furniture	60,763.82
Rent	63,349.84
Postage	55,682.74
Miscellaneous	63,222.42

It is important to observe that one large portion of the expenses of the department is not met by appropriations coming from taxes. This is the expense of administering the workmen's compensation law. By express provision of law this expense is paid by the insurance carriers, or self-insured employers, who must pay the compensation for wage loss and the medical benefits to which injured employees are entitled under the compensation law. This expense is divided among the different payers of compensation each year pro rata according to the amount of their compensation payments in the given year. In the year ended June 30, 1927, the total expense of compensation administration amounted to $1,131,319.52. This was equal to 48 per cent of the total expenses of the department for that year, and leaves the other expenses paid by the taxpayers of the State at $1,199,501.41.

Enforcing the Labor Law and Industrial Code

Among the duties of the industrial commissioner as head of the department of labor which were enumerated, two stand out as constituting the principal functions of the department. One of these is enforcement of the labor law and industrial code; the other is administration of the compensation law.

It will be well at the outset to explain in a word or two what is meant by the industrial code and its relation to the labor law.

The labor law itself sets up various general requirements as to health and safety in work places. It also empowers the industrial board to supplement such general requirements by more detailed regulations fitted to particular conditions in order to make them at once both more effective and reasonable. For example, the law requires in general that all machinery "shall be properly guarded," but in the same section provides that the industrial board may make

rules "to carry into effect" that provision. The board has done this by establishing a set of rules specifying just what kind of guard shall be provided for each kind of machine. In a similar way rules to make other general provisions of the law effective have been established. All these rules together constitute the industrial code.

It is no light task which is laid upon the department to "enforce all the provisions" of the labor law and industrial code. This is indicated by the fact that the regulatory provisions of the law for the protection of employees comprise 14 articles of the statute with 174 different sections, and that over 900 different rules have been established by the industrial board to carry those provisions into effect.

There are not only a multitude of provisions to enforce but a tremendous number and a variety of places in which they must be enforced. This is indicated by the number of work places inspected in the last fiscal year (which ended June 30, 1927) which was as follows:

Mercantile establishments	83, 620
Factories	66, 319
Licensed tenements	29, 351
Buildings under construction	16, 700
Steam boilers	4, 399
Magazines for explosives	1, 559
Quarries	155
Mines	32
Tunnels under construction	20
Total	202, 155

The ordinary process of enforcement under the labor law is first an inspection to find out in what points, if any, the law or industrial code is not being complied with. The noncompliances shown by the inspectors' reports are then made subject of an official order by the department to the employer, or owner of the premises, to comply with the law. Under this process the orders issued by the department afford a measure of the extent of violations of law which have to be corrected. In the last year the total number of orders issued amounted to more than 300,000.

This great volume of orders covered, of course, a great variety of points of law or industrial code rules found not complied with by the inspectors. A very large proportion of them related to administrative matters such as posting of laws or notices, keeping of records, etc. These matters in themselves, of course, do not affect health or safety conditions which it is the purpose of the labor law to safeguard in work places. They simply aid in the proper observance or enforcement of strictly regulatory requirements. They are, of course, necessary to that end and the great number of orders concerning these administrative requirements serves to illustrate the complexities which have to be handled in enforcement work.

When inspections have been made, violations or nonobservance of the law have been recorded and by orders the responsible parties have been notified what they must do to comply with the law, the process of "enforcement" has really been carried only through the first stage. There remains the second part, which is to see that the orders are actually carried out. There are two steps in ordinary procedure used in this part, namely, (1) visit by inspector to ascertain if orders have been complied with and (2) prosecution in court for

punishment by fine when compliance with orders is refused. There is also another mode of enforcement available by law to the industrial commissioner in connection with certain matters which are of such a character as to call for immediate action, namely, peremptory stoppage of work until conditions are remedied.

When the number of compliances secured in a given year is compared with the number of orders issued the most striking fact revealed is that in the vast majority of cases there is no necessity to resort to punitive measures. In the case of the orders relating to administrative matters this is practically 100 per cent true, in most instances compliance being secured at the time of inspection. But in the positive regulatory orders also the proportion of compliances to orders is so high as to permit only one conclusion, namely, that the great majority of employers or owners of premises, whatever may have been their oversight or carelessness originally, will comply with the warning upon being shown what has to be done. This simply signifies that making the safeguards of the labor law realities in work places is very largely a matter of education, as well as compulsion. Illustrating this point is the fact that last year out of the 116,305 definitely regulative orders in factories, in 102,994 the subsequent inspection visit showed compliances.

But there is also the recalcitrant employer or owner who refuses to comply upon order and compliance visit only. With him, not only because he endangers the safety or health of his employees, but also because he represents unfair competition with law-abiding employers, compulsion of a more drastic kind must be employed by prosecution in court as provided by the law. In the last year it was necessary to institute prosecutions in 4,054 cases. Fines were imposed aggregating $33,201.

A figure of special interest in connection with prosecution is the large proportion brought for violation of laws concerning work of children, women, and minors. Over half of the prosecutions instituted last year were for such violations. This reflects the policy of the department of labor to deal especially strictly with violations of the law concerning those matters.

What has been said thus far outlines the procedure and gives some indication of the nature and size of the present task of enforcement of the labor law in this State. The task as it is now represents the present stage of a growth which has been going on for 40 years in this State. It began in 1886 when the first factory act was passed. It is highly suggestive of the growth of the State's efforts to insure that work and work places shall be wholesome and safe to compare the points covered in that first factory law with what the present law and rules cover as to factories. That first act covered only the matters of the age at which children might be employed and the hours which women and minors under 18 might work. To-day a factory inspector has to see that, in addition to much more complete regulations concerning employment of children and hours of work of women and minors, the following matters affecting all employees are in accordance with law:

1. Matters of sanitation, including toilet facilities, cleanliness of rooms, ventilation and heat, lighting, place for meals, drinking water, foot rests, and seats.

2. Accident prevention, including guarding of elevators, guarding of machinery, safety of electric switchboards, etc., safe stairs, platforms, etc., lighting, window cleaning, and first-aid appliances.

3. Fire protection, including structural conditions as to exits, doors, stairways, fire escapes, and partitions; clear means of egress, fire alarms, fire drills, removal of waste, gas jets, smoking, sprinklers, number of occupants, and fire extinguishers.

4. One day of rest in seven.

5. Payment of wages as required by law.

Along with this growth in number of regulations there has been a large increase in this 41-year period in the number of work places to cover. Comparison can be made only as to factories. The census of 1880 showed 42,739 manufacturing establishments in the State, but in 1927 the inspectors covered 66,319 such places. More significant than this is the growth in number of employees in the factories. The census of 1880 showed 531,533 while in 1927 the inspectors found 1,420,321 at work in factories.

So this great system of regulation has grown in size and thoroughness evincing a growth in enlightened public sentiment supporting it and enlarging it for the conservation of human life in industry.

Administering the Workmen's Compensation Law

For more than 14 years now the State of New York has had a system of compensation for industrial accidents. Under this system employees injured by accidents, or by certain occupational diseases, which arise out of and in the course of employment, or their dependents if death results, must be paid by the employer, or his compensation insurance carrier, a percentage of the wages which the injured person was earning, while he is disabled from work, if the disability is over a week, or, if he is killed, to his widow as a life pension, and to dependent children up to a certain age, and it may be also to other relatives if dependent upon him.

This compensation system is administered by the department of labor. There are two broad divisions of work in this administration, one judicial in character, the other administrative in the strict sense. The former consists of the deciding of questions of difference as to whether an injured employee is entitled to compensation and how much he is entitled to. The latter includes all the work of preparing cases for decision. The judicial work of deciding cases is performed by the referees in the department of labor or by the industrial board which is also a part of the department. The administrative work is performed by the bureau of workmen's compensation.

To get a more definite picture of what is involved in the handling of a compensation case let us follow through the principal steps which have to be taken.

An accident happens. It may or may not prove to be compensable and if compensable it may range in all degrees of seriousness from one causing no lost time or medical expense to one resulting in total disability or death or involving long medical or surgical treatment. The first step in determining what is due the injured man is to secure the necessary reports of the case from the employer, employee, and physician or surgeon. The second step is to examine these records, and if necessary prepare the case for hearing by a referee in the first

instance or the industrial board on appeal from referee's decision. This may include not only clerical examination but field investigation, or medical examinations by department medical advisors. The third step is the arrangement and holding of hearings by the referees or industrial board and notifying the interested parties of their awards when made. The fourth step includes checking up of promptness of compensation payment. All of these steps involve attention to many details in each part of the process. These four steps on the purely administrative side might be designated as reporting, examining, hearing, and check-up of payment.

Such is, roughly outlined, the administrative work involved in a compensation case.. An idea of the volume of work to be handled in New York State may be gotten from the following facts for the fiscal year ended June 30, 1927.

The total number of accident reports filed by employers was 518,297. A large majority of these represented only trivial or minor injuries not entitled to compensation, but that total figure will give some idea of the potential size of the job in the first two steps of administration above noted; that is, reporting and examining.

To give an indication of volume for the third step, hearings and notices, it may be noted that 173,535 cases (either for accidents reported in that year or cases pending at the beginning of the year) were put on the calendars for hearings; that 414,125 hearings were held, and that cases were closed to the number of 187,368. This is equal to an average *per month* of more than 14,000 cases indexed for hearing, more than 34,000 hearings, and more than 15,000 closed cases; or at an average *daily rate* of nearly 500 cases for hearing, nearly 1,200 actual hearings, and more than 500 closed cases.

Turning to the fourth step in compensation administration, check-up of payment, which under the law is principally of first payment, the total number of cases closed in which compensation was awarded in the year (excluding disallowed cases) will serve to suggest the volume of work, and that total for last year was just short of 100,000.

One further figure reflecting amount of work may be cited. As above indicated, preparation of cases for decision by referees or the industrial board involves extensive medical examinations and advice as to extent of disability by the department's medical examiners. The amount of this fundamentally important work for proper adjudication of claims may be suggested by the fact that last year over 50,000 such examinations were made.

The judicial work of the department in compensation cases is performed in the first instance by the referees. Every claim for compensation comes before a referee for hearing and decision. In this way it is made certain that every injured wage earner secures all of the compensation or medical benefits to which he is entitled under the law. The referees hold hearings in all the principal localities of the State so that the interested parties may be inconvenienced as little as possible.

After hearing all the parties desiring to be heard and any witnesses presented by any of them, examining the evidence, and if necessary securing advice of department medical examiners as to extent of disability, the referee makes an award deciding whether, and how much, compensation is due. Notices of this are sent to the parties

and compensation is to be paid accordingly. Payment of compensation does not have to wait for any award unless there is a controversy as to the right to compensation or the amount. In the undisputed cases, which the great majority of them are, the law provides that payments shall begin within 18 days after disability begins. In these cases, however, there is ultimately a hearing by a referee to make sure that the claimant has received all that is due him.

If either party in a case, employer or his insurance carrier who assumes the liability for such payments, or the injured employee, is not satisfied with a referee's decision, he may appeal the case either to the industrial board if question is raised as to the facts, or if a question of law is involved either to the board or to the appellate division of the supreme court of the State.

The judicial work of the board consists of the review of cases so appealed. As a matter of fact, only a small minority of the cases are taken to the board. In the last fiscal year, while the referees closed a total of over 182,000, the cases which were before the board for review numbered approximately 12,000, which is a ratio of about one case appealed to the board to 15 decided by the referees. Of the cases which go to the board, a large majority do not require formal hearing there. These are disposed of either by denial of the review outright or by sending them back to the referees for further hearings. Of the cases before the board last year, 80 per cent were so disposed of.

When the board has decided a case, it is settled unless an appeal on some question of law is taken to the court. In the latter instance, the final step in the determination of compensation claims is the usual argument before the court and decision by the latter as in any civil action.

Having outlined the process of handling compensation cases for the purpose of determining right to compensation and amount thereof, there are two other matters connected with compensation administration to be noted to give a complete review of the latter subject. One of these is promptness of payment, the other is security of payment.

The workmen's compensation law takes cognizance of the fact that if its full purpose of relief to injured employees is to be realized not only just determination of what is due, but prompt payment thereof must be assured. The law accordingly lays down certain requirements on this point, which may be summarized as follows:

If a case is not "controverted," that is, "if the employer or insurance carrier does not controvert the injured workman's right to compensation," payment of compensation must begin within 18 days of the beginning of disability. As there is a 7-day waiting period in New York, this means that the first payment in uncontroverted cases is required to be made within 4 days after the first week's compensation is due. If a case is controverted, upon the making of an award, payment must be made within 10 days thereof. If a case is appealed after award, however, such appeal operates to suspend payment pending a decision.

The law not only sets up these requirements but prescribes penalties if they are not observed. If an employer or insurance carrier fails to make a compensation payment within 18 days after it becomes due, he is required to pay to the injured workman or his dependents an

additional 10 per cent of the amount then due. Such a penalty, it will be seen, has two advantages—it virtually fines the employer, and it reimburses the injured workman for the delay in receipt of his compensation. In addition to imposing penalties for failure in promptness of payment, the law confers power on the industrial commissioner to require an employer or insurance carrier to make a deposit with him "to secure the prompt and convenient payment" of compensation, out of which he may himself make payments to the claimant.

Finally, having made prompt payment a specific requisite, and having backed this up with legal penalties, the law also adds an important point as to procedure to make all this effective by requiring that action on payments must be reported to the department of labor. Employers or insurance carriers must immediately report to the industrial commissioner when compensation payment has begun, or must within the time limit set by law for first payment file notice of controversy giving the reason why compensation is not being paid, and if for any reason compensation payments are interrupted, and when they cease, notice to that effect must be sent to the industrial commissioner.

Lastly, it is necessary for success in practice of a compensation system that not only shall compensation be justly determined and promptly paid, but that it shall surely be paid. The amount of compensation in serious cases may be so great as to be beyond the financial ability of the employer, particularly those running small businesses, to pay it. To meet this possibility the law requires that every employer who is liable to have to pay compensation, to either take out insurance to cover that liability or become "self-insured," as it is called. If an employer insures, he may secure his compensation insurance either in the State insurance fund or in a private stock or mutual company. If he desires to be self-insured, he must satisfy the industrial commissioner of his financial ability to pay compensation and to make the matter entirely secure must place securities in the custody of the industrial commissioner in such amount as he shall require, which may be applied by the commissioner to payment of compensation should the employer himself fail to do so.

One final word as to how the cost of compensation administration is taken care of. It is not paid for out of State appropriations which come out of moneys raised by general taxation. It is divided up each year pro rata among all the employers or insurance companies, who pay compensation according to the amount of compensation they have had to pay in the year in question. Thus the expense of administration, like that for compensation itself, is transferred to industry, where it becomes a part of the cost of production and is ultimately borne by society at large as consumers of the products or services of industry and business.

Industrial-Accident Prevention

Whenever one views the situation in New York State as to industrial accidents and their prevention, broadly and from the point of view of all industries combined and the State as a whole, and over a period of the last few years, he is bound to be impressed with two

things. On the one hand, he will experience a feeling of encouragement as he observes the fact that never before have so many different agencies been engaged in endeavoring to bring about prevention of accidents and never before have so many and so highly developed methods for prevention been employed.

But, on the other hand, his optimism is likely to receive something less than a shock when he begins to examine how far the efforts of all the public and private agencies have succeeded in stemming the tide of industrial casualties. It is true that here and there in individual enterprises particularly, or in single lines of industry, notable reductions in accident occurrence are found to have rewarded earnest and intelligent efforts to reduce it. But, taking the field as a whole and contemplating the grand total of accidents and their cost as the mountain which must be moved, the striking thing is how large the mountain still looms. Let us glance at some of the figures for the last fiscal year of the department of labor, the year ended June 30, 1927.

In the calendar year 1927, the total number of accidents reported to the department of labor was 521,624. This includes all degrees of injuries from the merest scratch occasioning no lost time up to fatal cases. But if we take only cases serious enough to cause disability of over one week the number is impressive enough. In the last fiscal year of the department, which ended June 30, 1927, the number of such cases for which final awards of compensation were made was 98,984. Of these 1,042 were death cases; 41 were permanent total disabilities; 18,518 were permanent partial disabilities; and 79,383 were temporary disabilities of over one week.

The compensation cost of these cases is likewise imposing. In the above cases compensated in the last fiscal year, no less than $28,186,003 of compensation was awarded, not including medical benefits which runs to several millions more. Of this compensation total there was awarded for deaths $6,980,588; for permanent total disabilities, $547,620; for permanent partial disabilities, $14,044,685; and for temporary disabilities $6,613,110.

Truly, in spite of all our safety efforts to date we still have an enormous task of accident prevention before us.

One of the ways by which the department of labor endeavors to reduce the toll of accidents is through its bureau of inspection. Safety inspectors are constantly in the field calling at factories, workshops, mercantile establishments, and other work places pointing out possibilities of accidents arising from dangerous practices upon the part of workers from unguarded machinery, from inadequate lighting, and many other sources. By advice, by instruction, and by issuance of orders, when necessary, many accidents are averted.

The bureau of industrial hygiene of the department of labor also has a corps of safety inspectors who investigate accidents with a view to the determination of their causes and the best method of prevention. Printed bulletins summarizing their findings and recommendations are issued and distributed to employers, safety workers, and other interested persons. The bureau of industrial hygiene has also produced a number of safety films. These are based upon actual working conditions as found in factories and other work places, and have aroused great interest wherever exhibited. In them the workers themselves are the characters and a safety in-

spector of the bureau is the casting director. These films have been exhibited before large numbers of workers by means of two lecturing units who take them into the field, visiting not only the cities but many smaller places as well. This conception of popularizing the work of the department and enlisting the cooperation of others in accident prevention led to a series of lectures in the winter of 1926–27 by the industrial commissioner and his heads of bureaus before teachers in the continuation and vocational schools of New York City, Buffalo, Rochester, Syracuse, Schenectady, and Oswego. The requests for these lectures came from the educational authorities of the State and of the cities, and was a gratifying testimonial to the worth of the labor department's work in accident prevention and other matters as well. Teachers came to these lectures not only from the cities named but from outlying districts as well. The instruction and information thus imparted to teachers can not but be passed on, in some degree, to the boys and girls under their care who are so soon to take their stations in the ranks of industry.

The accident statistics carefully compiled by the department's bureau of statistics and information are eagerly sought by safety workers as a solid basis for discovery of most promising points of attack on the accident problem. Based upon statistics of the compensation cases closed in New York State, the largest industrial State in the Union, nonmachinery accidents are far greater than the number of machinery accidents. Indeed, the proportion runs as high as five to one. Ordinarily accidents are connected in our minds with machinery, but there are many other types of industrial accidents.

Nearly every industry has associated with it its peculiar dust, its peculiar fume, or its peculiar gas, and sometimes one industry will have associated with it all three—dust, fume, and gas.

Some of these dusts, fumes, and gases are harmful. For example, lead dust from any of the innumerable industries where lead is handled produces a disease known as lead poisoning; silica dust (from granite), with its sharp-pointed, minute particles, when inhaled, penetrates the lung tissue and sets up a slow inflammation known as silicosis; carbon monoxide gas injures the red blood corpuscles in the blood in a manner not entirely unlike the injury which would be sustained in a more mechanical way; in like manner the metallurgical fumes, unless conveyed away from the operators, would prove a source of serious irritation to the respiratory system.

Therefore the labor department assists its work of accident prevention with the prevention of the diseases caused by some industries. This is done by requiring the installation of exhaust systems to convey dust, fumes, and gases away from the operators to the open air or to some receptacle.

The value of this work has been so great in the past, and the betterment of the condition of the workers as a result of relieving them from inhaling these various deleterious substances has been such that I am convinced that the decrease in tuberculosis is in part due to this protection afforded the great army of workers in industry.

Not only is this dust, gas, and fume removal a health-saving measure, but in some instances it saves money. For example, the recovery of ground limestone from ball mills, elevators, and conveyors; the trapping of valuable metallurgical smoke; the recovery of enamel dust in connection with sign making; the recovery of material in

boxing and barreling; and the recovery of valuable dusts from floors through vacuum-cleaning devices.

In dealing with the great problem of industrial accidents workmen's compensation is only a palliative; the real cure is in accident prevention.

The State Free Public Employment Offices

Employers and wage earners in New York City know that the State department of labor has supervision over working conditions in factories and mercantile establishments, and when they see a factory inspector they know something about the importance of the work and what he is doing to serve their interests. They know, too, that the bureau of workmen's compensation is a part of the State department of labor, and whenever a worker has the misfortune to be injured he is told something more about the functions of the department. And so it is with the bureaus collecting statistics, making special studies of women and children in industry, settling strikes and other labor disputes, etc.

The question is often asked them, Why is it that so many employers and wage earners in New York City know so little of the fact, or have never even heard, that the State department of labor has a division of employment which finds jobs each year for more than 150,000 men, women, boys and girls? These State public employment offices have been in existence for more than 12 years and in that time have served more than one million and a half persons in the various large cities of the State through a chain of employment offices extending from New York to Buffalo. Of course, thousands of employers who have been visited by the representatives of the public employment offices and who have requested workers from them know something about their work; tens of thousands of wage earners who have received employment without the payment of a fee of any kind know well that the public employment offices are performing a real service for them. However, as our representatives know when they make their calls, there are thousands of employers who know very little about the work of the public employment offices and there are also wage earners who have been in the habit of paying a week's wages as a fee to a private employment agency and they, too, will be glad to know that the State labor department maintains offices where many persons obtain good jobs, without charge. If you were to visit Albany, Syracuse, Rochester, Buffalo, all of which are large cities, you could ask almost anyone you might meet on the street where you could go to get a job and you would be told that there was a State public employment office. In the cities of Dunkirk, Elmira, and Binghamton, it is almost unusual for an employer to hire his help except through the public employment office, because he has learned by experience that the right person is sent to him. Employers in New York City who have made use of the employment offices here are glad to say that very satisfactory workers are supplied to them and wage earners who get jobs through the employment offices often say that the jobs obtained in this way are usually better in pay, in working conditions, and in duration of employment than the jobs they find in other ways.

Employers sometimes ask, "Do you get jobs only for laborers or unskilled workers or can you supply me with stenographers, bookkeepers, and other clerical workers?" Wage earners may say, "I have been told that you find very good opportunities in the commercial world and in industry for boys and girls, but do you get jobs for mechanics and other skilled workers?" To these questions I am glad to say that our records show that our employment offices receive applications for work from every type of workers in every trade, commercial pursuit, or profession that one might mention. Only when there is an unusual shortage of workers do we fail to supply the employer with the exact kind of workers he desires. On the other hand, we do not always find employment for those with special professional qualifications, for high-grade executives, and for persons whose services are not in demand every day. The principal reason for not placing more of these persons at high salaries is that employers in New York City sometimes do not ask us for this kind of help under the mistaken impression that we can not furnish it. Our upstate offices obtain a comparatively large number of positions for professional and technical workers at good salaries. If employers will only telephone or write to the State department of labor employment offices whenever they need help they will be as well pleased with the services as are those employers who are already making use of it. Some employers who first called upon the employment office in New York City 12 years ago continue to use the offices and sometimes when our placement workers telephone to them and ask them if they can make room for an exceptionally good clerk or mechanic they are told by the employer that they rarely have any vacancies because the wage earners sent by our offices are capable, that they have workers who stick to their jobs because they are satisfied with them. Sometimes applicants will call at the employment office and will state that they have not been in the offices for four or five years because they have held the last job from the employment office for that time and they only lost it because the firm moved out of town, on account of a fire, or some other cause not connected with the applicant's fitness for the job.

So much in general about the offices. Now let us note specifically just what benefits such an employment office system offers to employers and to workers. First, then, a message to employers.

1. You save time.—You need not interview a large group of job seekers until you pick a desirable person—and then dismiss disappointed ones, who, perhaps form an unfavorable impression of your concern. We select one or more of the best applicants for you to interview.

2. Your labor turnover is reduced.—We select the right man for the right job, which he accepts because he wants steady work.

3. Your production is facilitated.—Shortly after you telephone us for a worker, a competent worker is sent, and production is resumed on the idle machine. When workers are scarce, our 12 offices comb the State with our clearance system and find your man—without taking him from another employer.

4. You are saved worry and expense.—We caution you about illegal work and hours when sending you women and children. They leave our office with the "proof of age" when necessary. Ask us about the labor and the compensation laws.

5. You receive universal service.—Our employment offices are the only ones that can supply men, women, boys, and girls in all occupations. Emergency workers to substitute during vacations, or for a day, week, or month, are always available.

Turning now to the point of view of the worker, the public employment offices afford him the following advantages:

1. The wages on the new job are his own. A private employment agency usually exacts the first week's wages as its fee. The State charges no fee.

2. The most desirable job, from the many vacancies listed which he is capable to fill, is selected for the applicant—the job he can, and really wants to hold.

3. Work conditions, wages, duration of job, and other conditions are not misrepresented. No fee motive is present; and honest effort is made to match the man with the job and satisfy both the worker and the employer.

4. Collecting the opportunities from every section of the city in the centrally located employment office saves the applicant time and money necessary for a personal visit to many employers.

5. Temporary work is found for him when there is dullness in his own trade. His idle time is shortened.

6. Vocational guidance, trade information, and suggestions concerning suitable employment are given to men and women who wish such advice.

The latest special development in the work of the State employment offices is service for placement of school-teachers. Special arrangements have been made in the 12 public employment offices operated by the State department of labor to furnish competent teachers, whenever requested, to educational institutions. Applications are received from teachers desiring positions not only in elementary and secondary schools but also in colleges and universities.

A teacher who obtains a position through a teachers' agency usually pays a fee ranging from $50 to $100 and a similar fee is paid each time for many years whenever a new position is secured through the agency. No fee of any kind is charged by the public employment bureau of the State department of labor.

When a request for a teacher is sent to this bureau, not only will the appointing official of the school help teachers to save large sums of money now being paid in fees but he will also have a larger selection of competent applicants from which to choose. As the list of employment offices indicates, every section of the State is represented and the combined application files of 12 offices are available.

The fact that no fee is charged induces many teachers to apply who can not afford or do not wish to pay comparatively large sums to obtain a position.

Colleges or normal schools are located in many of the cities in which there are public employment offices and our superintendents have the assistance of the principals and deans in recommending the most suitable graduates for a special vacancy. The aim of our teachers' service is to secure without charge satisfactory positions for teachers and to supply schools with competent teachers.

Much of the shifting of teachers each year is due to inefficient placements. Many teachers accept positions for which they are not specially fitted or in inconvenient locations because they have no

other choice. Other teachers are chosen because there are few applicants available on the files of the teachers' fee agency.

Request for teachers, and applications from teachers for positions may be made at any time during the year either to the nearest employment office or to the chief of the division of employment. School officials and teachers are welcome at all times at our employment offices. Teachers seeking positions are requested to write for the special application form for teachers.

One of the interesting by-products of the work of the public employment offices is the indication its records afford as to the course of unemployment in the community. When there is plenty of employment the number of positions employers wish to fill naturally increases and number of workers seeking positions decreases. Conversely when employment decreases those numbers both move in the opposite directions. Accordingly the course of the ratio between positions offered by employers and persons seeking positions at the public employment offices furnishes a useful barometer, as it were, of the trend of employment and unemployment. This ratio is usually expressed in the form of the number of workers seeking places per 100 places open.

Women in Industry

If the men and women of 30 or 40 years ago who were conscientiously trying to stop the onrushing of women's activities could study for a moment the figures which illustrate the trend of their employment in New York State they would die of apoplexy. Here we find women by the hundreds of thousands engaged in practically every trade and occupation; working as longshoremen, as stevedores, as chauffeurs, as plumbers, as electricians, as plasterers, teamsters, and even as undertakers. These Victorians would be equally disturbed at the number of women who are now engaged in practicing law, or who have become lumbermen and fishermen. The whole trend of the employment of women is toward wider activity and a greater variety of interest.

In the past, before there were such things as factories and shops and offices, women in their homes were the producers of the world. They helped to produce everything that was eaten and worn and used in their community. As the factory system developed and machines were invented, these things were taken out of the home and little industrial units were formed in one or two rooms, to produce the things which had formerly been done in the home. As industry has developed, women have left their homes in larger and larger numbers and followed the machines into the factories and now, instead of two or three people gathered together in one little room or one little shop, we see one roof covering thousands of men and women.

The evolution of industry has led to the increased demand for woman's labor. What to-day needs physical strength and long apprenticeship may be to-morrow within the capacity of a 16-year-old girl. New machinery is directly favorable to the employment of women, and in the last 25 years the employment of women in New York State has practically trebled. To-day in this State alone we have over 1,000,000 women who are working for wages. In the past, women have been chiefly employed as unskilled or semiskilled operators. In addition to the large number still employed in this

capacity, now we find them in the thousands doing skilled work in furniture, in steel and iron, in clay and stone and glass. While we have long been accustomed to women in the field of literature, music and art, it is rather surprising to learn that there are in New York some 3,000 artists, 1,000 editors and reporters, 1,000 physicians, and 100 clergymen; that the number of women lawyers in 1920 was twice that in 1910; that finance long considered a nonfeminine sphere claims 400 women as bankers, 950 as real estate agents, not to mention the large number of architects, chemists, electrical engineers, and designers. The fact is that the woman of to-day who has school or college degrees does not, as the woman of 40 and 50 years ago or even 25 years ago, wish to settle down to a life of dependence and leisure, but rather wishes to make her contribution toward the economic life of the country and to broaden her interest through the rubbing of shoulders with people in the professions and trades.

The development of the employment of women is not due wholly to the desire of women themselves to enter trades and professions, but is due also to the fact that industry and the professions are very much interested in having women accessible for work. The manufacturers and employers realize that they need woman's work and they are reshaping the policies of their own factories in order to meet the needs of women. As for example, in a small industrial town where it is not possible to secure a sufficient number of single women to work in one of the factories, the manager is employing married women. He realizes that in order to have them and keep them he must arrange his hours so as not to conflict with their domestic duties. The factory does not open till noon on Mondays and is closed all day Saturdays. This is typical of what is going on in many industries to-day in order to secure woman's labor.

The fact is that the woman of to-day goes to work either because of economic pressure or because work interests her. Her income may not be necessary to meet the everyday needs of her family life, yet she feels that their standard of living and of life can be raised by her contribution to the family income. This is true of women in all classes.

The woman employed in one of our steam laundries says that, yes, her husband makes enough to support the family but she wants something more for her children than she herself had. She wants a longer period in school for them and more recreation. The same point of view is expressed by the professional woman who goes out to work side by side with her husband. These women see the home, not as a circumference, but as a center of family growth and development.

To some, of course, going out to work means an escape from the daily drudgery and routine of housework, but whatever the force that is absorbing women more and more into professional and industrial life, the fact remains that they are going out as coworkers with their husbands and brothers in increasingly large numbers. The opportunities for the employment of women were never so great as they are to-day.

Women by their own ability and capacity for work are breaking down the century-old prejudice and they are coming into their own.

OFFICIAL STATISTICS AND THEIR SERVICE FOR BUSINESS

By Eugene B. Patton, Ph. D., Director, Bureau of Statistics and Information

The Value of Labor Statistics

THE topic assigned for this lecture embraces an extremely wide scope. The output of statistical material at the present time is enormous. Both public and private agencies have come to realize the value of statistical research. Research work is being done along a multitude of lines, and, in order to reduce the results to workable form, a great amount of time and effort is devoted to tabulation of what may be called the raw material. The final task is then entered upon—that of analysis of the tabulated results. This final step is of the utmost importance. If the analysis and consequent interpretation of the tabulated material is not properly done, false impressions will be conveyed and the value of the entire statistical investigation will be negatived. Erroneous conclusions in statistical analysis lead either to inaction or to wrong action relative to the problem under investigation. When such a situation develops, the latter end of that investigation is worse than the first, and better would it have been had it never been born.

It was stated a moment ago that, both in the private and in the public field, statistical activity is pronounced. To a large extent, the World War must share the responsibility for this development. It is not, of course, meant by this to intimate that statistical investigation and analysis was born during, or as a result of, that conflict. Statistical study and its value have been recognized for a long time. Appreciation of its value was, however, relatively limited as is attested by the long current stock jokes at the expense of statisticians with especial reference to their veracity. The point should not be overstressed, but there has been in recent years what may be termed a rebirth of interest in statistics.

Illustrative of the wide variety of statistical material now available and of service to business men is the monthly publication entitled "Survey of Current Business" issued by the United States Department of Commerce. This survey is devoted to business statistics and contains data not only from Government departments, including foreign as well as State and Federal departments, but from commercial and trade associations, technical periodicals, and private organizations.

Very little of the material is original with the department issuing it. The function of the publication is to assemble statistical material, already in existence but widely scattered, and render it readily accessible. A recent issue listed reports from more than 40 private organ-

izations, from 36 technical periodicals, from more than a hundred commercial and trade associations, as well as the official State and Federal reports of the United States.

Similarly, the Statistical Abstract of the United States, an annual volume, provides in handy form the available statistical information compiled by Government departments and also a number of private organizations. The titles of the separate divisions in a recent issue of this publication are revealing as to the wide scope of the statistical material there assembled: Area and population; defectives, delinquents, and dependents; vital statistics; immigration and emigration; education; public lands and national parks; climate; Army, Navy, civil service, pensions, etc.; National Government finances; State, city, and local government finances; money and banking; wealth; business finance; prices; wages; Postal Service; telephone, telegraph, and cable systems; electric light and power; public roads and motor vehicles; steam and electric railways; waterways; foreign commerce, both home and noncontiguous; irrigation and drainage; farms and farm products; forests; fisheries; mineral products; and manufactures. More than 800 separate statistical tables are thus assembled.

Both of the above-named publications are of great service to business men in planning production layouts, sales campaigns, purchasing of materials, and other features incident to business operations; and to other kinds of organizations as well, social, philanthropic, religious, and educational, such information is indispensable. A trustworthy statistical basis is essential to the intelligent operation of any organization. Increasingly true is it in modern life that intelligent planning is essential to success in any line of endeavor, and statistics provide the groundwork for such planning.

Many other illustrations could be cited of statistical reports having a direct bearing upon business and its operations than the two already mentioned. These will serve, however, as illustrations of what Government offices are doing in the matter of statistics to be used as a guide for business.

Obviously, the field as suggested by the topic at the head of this paper "Official Statistics and Their Service for Business" is too large to be covered at one time. It seems advisable, therefore, to speak more in detail of one portion of the field, and, naturally, that with which I am most familiar—namely, labor statistics.

Founding of the Bureau of Statistics

In May, 1883, the New York State Legislature by chapter 356 provided for the establishment of a bureau of labor statistics. It is interesting to note the reason for the creation of this bureau, the personnel of which consisted at the beginning of a "commissioner of statistics of labor" and one clerk with salary appropriations of $3,700 and expenses of $3,000. The act stated in section 2 that "The duties of such commissioner shall be to collect, assort, systematize, and present in annual reports to the legislature, within 10 days after the convening thereof in each year, statistical details relating to all departments of labor in the State, especially in relation to the commercial, industrial, social, and sanitary condition of workingmen, and to the productive industries of the State."

From this beginning there has developed the entire New York State Department of Labor with total appropriations for the year ended June 30, 1928, in excess of $2,500,000 and a working staff of 1,036 persons.

Growth of the Bureau

The bureau of statistics, or bureau of statistics and information, as it has been termed since 1913, has also increased in the variety and extent of the information which it has been called upon to furnish, and there has also been an increase in the personnel and consequent necessary appropriations to perform the functions required of it until it now has 60 persons on its staff with a salary budget amounting to nearly $100,000.

The first report of the bureau of labor statistics was on prison labor in New York State; the second on child labor. The third report presented the results of studies on wages and home conditions of workingmen; strikes; boycotting; arbitration; foreign labor; reduction of hours of labor; labor organizations; and a final section containing recommendations upon each of these subjects.

These early reports, prepared by a bureau without adequate facilities, were yet sufficient to induce the legislature to enact the factory law in 1886 with an inspection force (inadequate to be sure) to enforce the long-standing compulsory education law which had replaced the still earlier truancy act. In that same year, 1886, the legislature created the bureau of mediation and arbitration.

The establishment of these two latter bureaus is a good illustration of the service rendered by statistical investigation. Facts were brought out by investigation and presented in such form as to compel action. The replacement of complacency with existing conditions by the real facts in the case provided a basis for intelligent remedial action.

Creation of the Department of Labor

These three bureaus—statistics, inspection, and mediation and arbitration—continued to function separately until 1901. In that year they were consolidated into the department of labor, which, with greatly enlarged scope and powers, functions to-day as the enforcing agent for the entire body of labor legislation, including the labor law, workmen's compensation law, industrial codes, and a number of other related statutes.

Present Work of the Bureau

Without attempting to give a detailed history of the bureau of statistics during the period from 1883 to the present, all of which is a matter of public record in the department reports, nor of its efforts to determine from time to time what investigations and reports would prove most serviceable to the citizenry of the State, let us rather point out some at least of the fields of work, now covered by the bureau, with an explanation of how they came to be decided upon as fit subjects for investigation and the service which they render to the people of the State.

Employment and Pay-Roll Statistics

One of the leading fields in which the bureau now collects and publishes statistical material is that of employment. For many years the bureau had collected returns as to the extent of employment and of unemployment chiefly among organized workers. The information was secured by mail and by personal visits from the secretaries of trade unions. These served a useful purpose in the absence of more extensive and reliable data. But there were serious objections which militated against their acceptance as conclusive on either point.

In the first place, the figures so secured were not representative of unorganized workers, and for that reason failed to give a well-rounded measure either of employment or unemployment. Unorganized workers, who constitute the great bulk of employees in certain trades, were not represented in the returns, and those occupations and localities in which organization was incomplete or partial were not adequately represented.

Again, especially in the larger unions, the secretaries did not have the facilities for an accurate determination of the extent, either of employment or unemployment.

For these and other reasons the New York Bureau of Labor Statistics was led during the industrial depression of 1914–1915 to devise another method for securing dependable statistics upon the extent of employment. This was in direct response to a deeply felt and widely expressed need for such information. The mayor's committee on unemployment in New York City in a written inquiry addressed to more than 2,000 employers asked for figures, taken direct from their pay rolls, as to number employed during one week in December, 1914, and the corresponding week in 1913. Returns made by employers themselves from their own written pay-roll records would, it was felt, be a direct measure of the decline in employment between the two dates.

As a result of this step, Dr. L. W. Hatch, chief statistician of the New York bureau, who had much to do with this committee's inquiry, planned and put into execution in New York State a system of monthly collection of employment and pay-roll reports from manufacturing employers. These reports, dating back to June, 1914, and maintained to the present, constitute the pioneer step in the regular collection of such figures by any bureau, and undoubtedly represent the most dependable current measure of manufacturing employment and earnings New York State has ever known. The value of the figures has since been enlarged by breaking them up so as to show employment and weekly earnings separately for men and for women; separate showings for the leading industrial districts in the State and for the leading industries in each district. Series of index numbers have been developed by months over a period of 15 years showing index numbers of factory employment, of factory pay rolls, of average weekly earnings (the latter also in absolute amount), together with a separate chart and accompanying figures for each of the leading industrial districts. Along with this appear the figures on cost of living collected and furnished by the United States Bureau of Labor Statistics.

The information so obtained and published currently has been found by employers to be of great service to them. Dependable data as to employment, earnings, and cost of living are of great value to individual employers in the conduct of their operations. By comparison of collected and interpreted returns from other employers in their own line of industry and in their own and other competing localities they can learn their relative status as compared with the group. Such information has increasingly cumulative value, and the fact that it appears currently frees it from the prejudice and suspicion of bias that inevitably accompanies material gathered in haste by conflicting interests in an industrial dispute.

This labor-market information, as it is generally termed, is of use as barometric material as to future industrial developments. Naturally the bureau of statistics can not, as a matter of policy, feature the material in our publications in this manner except cautiously, if at all. But trade journals, financial organs, industrial publications of all sorts, and the daily press make extensive use of the material as a guide to the future course of business, and industrial forecasters, a tribe which has had remarkable growth in recent years, make large use of it.

Building Permits and Public Employment Office Returns

In addition to the returns above described, coming direct from employers, the bureau furnishes currently two other specific sets of figures bearing upon the employment situation. One of these is monthly reports as to the number of permits issued for building construction in 23 cities, together with the estimated cost of such construction. This information is presented so as to indicate separately the amount of residential building, with the number of families provided for, the amount of industrial and commercial building, and the amount of public building work. These figures, while not so close a measurement of actual employment as are returns from pay rolls, serve as an indicator of the trend of employment in the building industry.

Employment Office Returns

The public employment offices, operated in nine cities of the State by the department, are designed to bring persons who are out of work and seeking employment into contact with employers who are seeking workers. The range of occupations covered by these employment offices is wide, and constant effort is made to familiarize and popularize employers with the employment service and to induce them to take advantage of it.

The reason for mentioning them here is to point out that each month, in connection with the employment and pay-roll figures, the bureau of statistics presents a summary of their operations. The total number of persons registered seeking work, the total number of workers called for by employers, and the number of workers actually placed in jobs is given, and this information is further shown for separate industries or occupations, and also for each of the nine offices. The information is also classified by sex.

Most significant, perhaps, of the figures is the one computed each month comparing the number of workers registered with the number of places for which workers are sought. This index number is an indicator for the districts served by the offices as to the state of the labor market.

The three items discussed above—namely, employment and pay-roll statistics, employment-office returns, and building permits—taken together indicate the current trend of industrial activity. They do not constitute a complete picture by any means, and the bureau lives in hopes that it will be able to present a more nearly complete picture. But as it is, it is rendering a real service not alone to business but to the workers and all classes of citizens.

Work of the Federal Bureau and of Other State Bureaus

The collection of employment and pay-roll statistics was begun by the Federal Bureau of Labor Statistics shortly after such work had been started by the New York bureau. President Harding's Conference on Unemployment in 1921 brought out that there was no adequate basis for a statement as to the extent of unemployment in the nation as a whole. A committee of the American Statistical Association was authorized in 1921, on the measurement of employment. This committee later published a report recommending that all Federal and State bureaus collecting statistics of employment furnish such statistics to the United States Bureau of Labor Statistics for coordination and publication. It was further recommended that each State collect for itself the necessary information for its own purposes and supply to the United States bureau so much of its data as necessary for a national record.

Publication in the form of index numbers including at least two specific pieces of information—namely, total number on the pay roll and total amount of wages paid to those on the pay roll—was recommended, as well as more refined data such as separation by sex, labor turnover, and other items wherever and as soon as practicable.

In recent years, a number of leading industrial States have inaugurated a system of employment and pay-roll reports, so that comparable data is now available from a large part of the highly industrialized regions of the United States. These States cooperate with the United States Bureau of Labor Statistics by furnishing it with a sufficient portion of their records so that combined they constitute a national index. Incidentally, employers are saved the labor of making out duplicate reports by this cooperation. Also, the United States bureau, being spared the effort of collecting returns from the cooperating States, has its energy released for securing such reports from States where no system of collection is in effect. As a result the volume of returns received by the Federal bureau from the cooperating States and from those collected direct is so large that a truly impressive picture of the extent of manufacturing employment in the country, as a whole, is presented.

These figures are drawn upon for practical purposes of legislative guidance, as witness the report upon unemployment made in February, 1928, by Industrial Commissioner Hamilton, of New York State, to Governor Smith. This report was based largely upon the labor-market returns received by the bureau of statistics and information,

and the governor was quick to urge speeding up of an extensive public building program for partial relief of the situation. Shortly thereafter Congress called for a statistical statement as to employment conditions, and the report furnished by Secretary of Labor Davis was based upon the employment reports collected by the United States Bureau of Labor Statistics.

A sample of the schedule used by the New York bureau in collecting employment and pay-roll information appears on this page. Forms differing in detail but containing the same essentials are in use by the United States bureau and by the bureaus of several States.

OCTOBER, 1927

NEW YORK STATE DEPARTMENT OF LABOR

Bureau of Statistics and Information

ALBANY, N. Y., *October 15, 1927*

GENTLEMEN:

To obtain for public information monthly figures as to changes in employment and wages, this Department requests you to submit the data called for below. No information of any description as to individual firms will be made public. This report should be submitted immediately.

Approved:

James A Hamilton
Industrial Commissioner

Very truly yours,

E. B. Patton
Director

Confidential Report on Employees and Wages

Directions. The figures must be taken from pay rolls or other records. Use that pay roll in which the 15th of October fell.

Please check payroll period		Number of Employees on Pay Roll			Total Wages Paid to—		
		Office	Shop	Total	Office	Shop	Total
1 wk.							
2 wks.	Men						
½ mo.							
	Women						
Ending Oct.	Total						

Operating time during period reported—hours per week.....

Kindly note:

Changes in wage rates between September 15th and October 15th.

Increase—Per cent..... No. of employees affected.....

Decrease—Per cent..... " " " " .....

Labor troubles

Branch factories opened or closed

New products

Date..... Signed.....

Title.....

Accident Statistics

Another major field with which the New York bureau of statistics is concerned is that of accidents compensated under the New York workmen's compensation law. Forty-three of the States and the District of Columbia now have a compensation statute. In connection with such statutes, it should always be borne in mind that the chief end of compensation legislation is not to make payment for injuries sustained (praiseworthy though that be) but to prevent accidents. Prevention is always better than compensation.

The statistical work done by the bureau in this connection is designed to develop not only the size and serious nature of the industrial accident problem, but to point out the places where accident prevention is most needed and where the greatest saving of human life and suffering, as well as money, may be effected. Forward-looking and right-minded employers have long since learned this lesson and look to official bureaus to furnish information, correctly tabulated and properly analyzed, which will serve as a guide in accident prevention.

Size of the Industrial Accident Problem in New York State

The number of accidents reported to the State department of labor for the last five years is given below:

Year ended June 30—	Number reported	Increase over previous year
1923	346,845	53,001
1924	371,708	24,863
1925	374,212	2,504
1926	441,401	67,189
1927	518,297	76,896

A part only of these accidents are serious enough to receive compensation under the law. The number of compensable accidents—that is, those which caused a loss of working time in excess of two weeks up to January 1, 1925, and in excess of one week since that date—were as follows for the five years ending June 30 of each year:

1923	58,078
1924	72,983
1925	76,216
1926	99,673
1927	98,984

Guide for Accident Prevention

In order to attack the problem intelligently, it must be known where these compensated accidents occurred. Summarized according to fields of industry, the accidents compensated were as follows:

Industry	Year ended June 30—				
	1923	1924	1925	1926	1927
Manufacturing	26,429	32,533	31,254	41,245	39,837
Construction	10,230	13,361	15,632	20,464	21,606
Transportation and public utilities	10,973	13,654	13,561	17,627	16,666
Trade	4,750	5,931	6,759	9,218	9,167
Service	4,127	5,589	7,030	9,091	9,559
Other	1,569	1,915	1,980	2,028	2,149
Total	58,078	72,983	76,216	99,673	98,984

Expressed in percentages of the total number of compensated accidents in each year, the following is revealed:

Industry	Year ended June 30—				
	1923	1924	1925	1926	1927
Manufacturing	45.5	44.6	41.0	41.4	40.2
Construction	17.6	18.3	20.5	20.5	21.8
Transportation and public utilities	18.9	18.7	17.8	17.7	16.8
Trade	8.2	8.1	8.9	9.3	9.3
Service	7.1	7.7	9.2	9.1	9.7
Other	2.7	2.6	2.6	2.0	2.2

These tables indicate several things. One is that accidents in manufacturing have decreased in relative importance as compared with accidents in other industries. In the past, the greatest efforts have been made in this field and they have borne fruit. But accidents in construction work have been increasing relatively and indicate the need of more extensive accident prevention work in this field.

The chief aid which statistics can serve in accident prevention lies in information as to the causes of accidents. Some 800 separate causes of accidents are tabulated by the bureau, classified into groups by industries. Space is lacking to reproduce even a summary of such figures but, in general, it may be stated statistical analysis has demonstrated the enormous part which education may play in accident prevention. The mechanical causes of accidents have been made clear and influence brought to bear upon employers to remove these by safeguarding of machinery, providing safe work places, by furnishing proper tools and proper instruction in their use, and in many other ways.

At the same time statistical analysis has demonstrated that the human element plays a greater part in causing accidents than the mechanical element. Safety education, both of employer and worker, has been shown by statistics to be the chief need in accident prevention.

The New York Bureau of Statistics expends a large part of its energies in the recording, analysis, and publication of departmental activities. This is necessary and proper but less of its time is given to research and publication which would be of direct interest to the general public than is desirable.

HOW DOES GENERAL MEDICINE AND SURGERY DIFFER FROM INDUSTRIAL?

By Raphael Lewy, M. D., Chief Medical Examiner

Industrial Medicine and Surgery

TO MY mind the subject of industrial medicine and surgery implies emphasis upon the careful study of the etiology of trauma, upon the temporary and permanent disability in their relation to trauma, and upon the ultimate partial or permanent defects resulting from trauma, as they affect the earning capacity of the individual.

If we refer to the American literature prior to 1914, it is astonishing to discover how little has been written on this subject; therefore, the question would be proper, why the sudden activity in this field after 1914? The answer to this question is as follows:

It is peculiar, yet nevertheless an absolute fact, that events must occur before the mind acts, and then the event is analyzed as to its relationship to the economy. If the event is harmful, by virtue of our ingenuity and acquired knowledge, we prevent its recurrence and if the event is of benefit, we endeavor to make full use of it. The event which preceded the challenge to the medical profession to pay special attention to industrial surgery and medicine was the passing of a law to protect the injured workmen, who prior to the enactment of the law were neglected from a medical and legal compensatory point of view.

With these few preliminary remarks, having differentiated for you between industrial surgery and medicine, as compared with general surgery and medicine, I wish to call your attention to the fact that the paper which you are to discuss at this moment is based upon an observation of a tremendous material, possibly exceeding more than the examination of 100,000 injured persons who have received their injuries in their various vocations.

The conclusions here presented are based upon examinations of men and women, whose injuries have been due to accidents occurring in their industries, and who, at the time of their physical examinations, have had either the remaining evidence of the injury, or the defects consequent upon such injury. We see the cases most frequently after they have been discharged from their surgical care. These patients present at that time either the remaining evidence of injury, or the defects which result from such injuries. The question may be asked, "Can you state from the remaining defects how the injury occurred, and what was the nature of the injury?" Whether there has been an involvement of the superficial tissues or underlying deeper structures, as bones or viscera, nature leaves a distinct

landmark, namely a cicatrix, and if these cicatrices are carefully studied, it is often possible to state the causes and the type of the injury. One must differentiate between the fine, linear, nonpigmented, movable scar, indicative of a superficial wound which healed by first intention; the scar which is adherent to the underlying tissues, and is evidence of slight inflammatory reaction; the scar which is more adherent to the deeper tissues, and is evidence of an infection; and the nonmovable, indurated scar, adherent to the important underlying structures, thus interfering with the mobility of the parts involved. This last scar is evidence of serious infections of the underlying tendons. There remains to mention the deeper indurated adherent scar which is attached to the bones, and is evidence of infection and suppuration, with destruction of underlying tissues.

Causes of Injury

Injury to the human body occurs in one of three ways: First, the human body is the movable object, and is projected against the stationary object; second, the human body is the stationary object and a movable body impinges upon it or against it; and third, man injures his body with the very tools, utensils, and mechanical appliances which he himself has created. I should define a trauma, or accidental injury as one which occurs suddenly, is unforeseen, and not willfully contributed to by the individual who is injured.

Causes of Accidents

Accidents are frequently attributable to the posture which the workman must assume in his vocation. This posture differs, of course, greatly in the various occupations. It is instructive to contrast accidents which occur to men who work above ground, with those occurring to men who work under ground. In the man who works above ground, and, in particular, the man who works at great heights—typified by workers in the various building trades, more especially structural ironworkers exposed to falls by reason of the insecure and narrow platforms upon which they must stand, the injury either causes immediate death in consequence of the destruction of very important vital tissues, or if the injured man has sufficient resistance to overcome the immediate traumatic shock, there remain permanent, partial, or complete irreparable defects. On analysis of these cases, we find that the individual receives either a fracture of the vault or base of the skull, with its serious consequences, or a fracture of the upper part of the spinal column.

The semistooping posture of the man who works in excavations or in tunnels, while using pick and shovel, exposes the lower part of his spinal column. Such a man is therefore most frequently injured in consequence of heavy objects falling upon his back, and is thus exposed to serious crushing injuries to the lower spinal column and pelvis, and to muscular strains of various sorts, at or about the sacro-lumbar region. The disability resulting from injuries in this class of cases is of long duration and is very often irreparable.

There remains to discuss another class of working people—those who produce, and who in the course of their occupations manipulate tools, instruments, and mechanical appliances and who are exposed

to the various injuries to the upper extremities which result in consequence of mild or serious infections in temporary or permanent disability. These defects in this class of workmen are the cause of greater industrial loss than is produced in the workmen in the occupations previously mentioned. These conclusions may be emphasized by the fact that out of 54,034 cases we have examined, 2,271 were infections, mostly involving the upper extremities.

With regard to injuries and infections to the upper extremity, we may set it down that the more serious infections and their grave ultimate defects, follow most often small punctured wounds. Observation of my own large clinical material has failed to reveal a very serious general infection following an extensive lacerated wound, as compared to the previously described smaller wounds, since in large wounds there is no retention and nature takes care of drainage.

Let us describe first an ordinary injury which we daily see in clinics, and which ought to be of insignificant importance if adequate treatment is applied, namely, paronychia, or inflammation at or around the finger nail. This is an ordinary inflammation consequent upon some slight wound, which although sometimes painful, requires only the elevation of the cuticle from the nail, proper drainage, and a wet antiseptic dressing. It should heal without any functional defects of the parts involved, if the surgery is adequate and not needlessly meddlesome.

The next infection is of greater importance, namely, panaritium or felon. This is an infection which occurs most often over the flexor surface of the distal phalanx of the finger, more especially of the index finger. It is generally in consequence of a puncture by some sharp instrument, most often a needle, and therefore occurs most frequently among tailors or needleworkers. The injured person may pay no attention to the injury at first, as the wound is very minute, but within 48 hours, if an infection has set in, there is severe throbbing pain and enlargement of the tissues of the flexor surface of the distal phalanx. The slightest pressure over the infected part causes pain, and sometimes the pain is referable along the forearm up to the region of the axilla.

To understand this infection and its consequences more thoroughly, we must recall that the flexor tendon of the distal phalanx is attached to the base and does not go below that. If it be remembered that phalanx wounds which are the causes of infection, are most often near the tip, and therefore do not involve the flexor tendons, it will be realized why this infection is most frequently a local infection of the tissues of the distal phalanx only. This infection requires adequate deep incision down to the phalanx, with proper drainage, and frequently remains localized at the primary site of infection and does not extend beyond it. The final result of these infections is always an involvement of part of or the whole of the distal phalanx, which either suppurates through the original incision, or else after a certain time a sequestrum forms, which either escapes through the original incision, if such has not entirely closed, or a small bone sinus persists as long as there is a loose sequestrum. In the latter case, the wound has to be reopened and the sequestrum removed. These infections are very painful at the beginning, and require a surgical disability up to eight weeks. There most frequently results either a temporary or permanent defect, or there is a loss of part or all of the distal

phalanx, or in consequence of the suppuration, there is an adherent indurated scar, with some involvement of the distal phalangeal joint.

The infection last described is and ought to remain a local infection, provided the surgical treatment is adequate and the maximum defect ought to be from the standpoint of compensation equivalent to the loss of one-half of the index finger. Only then is the defect more serious when the defect occurs in old people. Our observation of these same infections in the aged has shown that there developed marked fibrous changes at the interphalangeal and metacarpophalangeal joints, with serious functional defects. This complication is not an extension of the infection, but is due to immobilization during the period of infection, which evidently acts as a contributory cause of the secondary deformity. Another complication in the aged, following this local infection, is a limited mobility in the shoulder joint. I am not at present prepared to state the causes of this complication.

The infection of the distal phalanges is most often a local condition, very rarely involving the tendons, as these are attached to the base of the phalanges. This latter fact explains why the infection resulting from a punctured wound beyond the distal phalanx becomes more serious as the extension of infection travels along the tendons to and beyond the palmar fascia, constituting a very serious complication. The cases of this last mentioned infection which the writer has seen have resulted without exception in serious partial or total permanent deformities, in which the functional defects involved part or all of the hand.

There is a very virulent infection which follows punctured wounds situated on the flexor surface of the thumb or little finger, most frequently at the proximal phalanges. To understand this serious infection, it is advisable to recall the anatomical topography of the flexor tendons and synovial sacs in the forearm and hand. The flexor tendons of the hand are three in number, the flexor longus pollicis, which is the flexor tendon of the thumb; the flexor sublimis and the flexor profundus digitorum which are the flexors of the other four fingers. These flexors are covered by a synovial sac, which begins in the forearm above the annular ligament, goes beneath the annular ligament and is attached to about the middle of the four metacarpal bones, where it terminates in a blind pouch, with the exception that it sends a fasciculus which covers the entire flexor tendon of the thumb as far as its attachment, and also the entire flexor tendon of the little finger. It is due to this communication of the synovial sac with these tendons and to its close relationship to the annular ligament that a punctured wound involving the flexor tendon of the thumb and little finger causes such intense suffering and the serious infections that extend along the hand and forearm, with their serious ultimate functional defects.

Our experience has taught us that this infection occurs most often among tin workers, butchers, and those who use pointed knives in opening fish or in shucking oysters. It occurs also among scrubwomen. The history and symptomatology of this infection are as follows: Within 6 or 12 hours after the alleged minute injury, which consists most frequently in a small punctured wound, either over the flexor surface of the thumb or little finger, the patient suffers severe pain in the entire hand at and above the wrist joint. The

site of injury is very minute and at this time does not show evidence of an infection. Pressure over this site of injury is not painful now, and even the most careful examination reveals no evidence of a local pus focus. The patient appears to be very ill, has a high temperature, and sometimes a chill. The most important physical sign of the infection is the semicontraction of all the fingers and the inability to extend them. An attempt to force extension causes severe pain along the flexor tendons into the forearm. In consequence of the general condition of the patient and this semicontraction of the fingers he tries to secure relief. Failure to find a local pus focus makes it very difficult to institute the proper treatment. It seems to be the consensus of opinion of surgeons that early operation is advisable. Such was also the opinion of the surgeons of the older schools here as well as abroad, for they were cognizant of the serious complication and serious deformities consequent upon the infections. They advised early large incisions along the tendons of the flexor longus pollicis or along the tendons of the flexor sublimis digitorum of the little finger up to the annular ligament and also incision into and drainage of the synovial sac to the side of the annular ligament. Some suggest that incisions go through the annular ligament exposing the flexor tendons of the forearm.

In my own employment of this treatment during clinical work for many years, my results as to the relief of pain and ultimate functional mobility of the hand were very bad. In common with other surgeons, I found it often necessary to reoperate on these cases until a pus focus could be located, which is most frequently situated beneath the palmar fascia at or about the thenar or hypothenar eminence. These very bad results which I have described, I see to-day in the course of examination of a very large clinical material.

As a result of careful attention to this subject during the last 20 years and from the observations of later clinical work, my belief is that this extensive functional deformity of the hand, wrist joint, and lower forearm can be prevented by converting the septic infiltrative focus into a local pus focus before operating. The best procedure is the application of continuous heat applied over a moist dressing. The continuous heat causes an artificial hyperaemia with a resulting increased local phagocytosis, which causes the early breaking down of the infiltration, converting it into pus. Under such a preliminary treatment preceding surgical interference, and lasting about 4 to 6 days, it is possible to locate the pus focus, and then with proper and adequate incision, to lay it open and drain it. Drainage—not baking—must be emphasized. Since following this treatment the results have been better; that is, instead of a contraction of all the flexor tendons which was formerly observed following the early extensive incision I now find that this modified treatment jeopardizes only one flexor tendon—which is destroyed by the pus focus—and therefore results only in a contraction of one or two fingers. It is also no longer necessary to reoperate, as formerly, because adequate incision and drainage of the local pus focus are sufficient.

To prove that this treatment is based on experience and has merit in its practical application, one need only refer to the treatment of Professor Bier, which is also only a passive hyperaemia, and has been vaunted in septic infiltration as doing the same thing as the treatment above described.

As for future treatment of this infection, it requires surgical care for months, and the cases that we see in our examinations, which represent this type of infection and which are treated by various surgeons in different institutions, present themselves with the same irreparable defects which I saw years ago in my clinical work. The deformities seen now are equivalent almost always to the loss of the entire hand, from a vocational standpoint of view.

As this concludes our consideration of the infections which involve the flexor tendons in consequence of minute injuries and therefore cause the various degrees of functional defects of the most important part of the body, namely, the hand, we must refer to our experience of the so-called surgical plastique, which is performed on these cases with the intention of restoring the function of the hand. Where the defect in mobility results from an indurated scar adherent to the underlying tissues the results, after competent surgical interference, are fairly good, but where the immobility results from the destruction of the tendons themselves, surgical interference although producing a better cosmetic effect has, in the cases that I have examined, not been very beneficial from the standpoint of functional mobility of the hand. The bad results are very often accounted for when the defect of mobility is not only in the tendons but where there are also changes in the phalangeal joints which can not be overcome by surgical procedure.

Infections involving the extensor surface of the hand and forearm are most often of vocational origin and are produced by irritating substances—sometimes chemical, sometimes metallic—causing the so-called furunculoid or pustulo-vesicular infection. We find them among people working in furs and dyes. They are not easily amenable to treatment, recur often, and need not only local treatment, but require autogenous vaccine treatment as well. We have lately had opportunity of studying these cases among munition workers, in whom this pustulo-vesicular infection occurs in consequence of irritation by small metallic particles which are saturated with an oily substance. The infection is painful and in some cases may cause secondary metastasis and prove fatal. We have also seen a few cases of anthrax among workingmen who come in contact with hides or infected wool, and whose infection was most frequently on the side of the face near the angle of the lower jaw. We have observed that early incision of the pustule and vaccine treatment benefit most of these cases. We have also seen two cases of actinomycosis of the face, resulting from the workmen's contact with hides. The infection was preceded by a local trauma of the skin. The infections in both cases were over the tissues of the malar bone.

Remarks on General Infections

Local infections of the tissues of the extremities, which are followed by pus foci, with or without a lymphangitis or a lymphadenitis, although serious from a surgical point of view and requiring a long surgical disability, with certain functional defects of the part involved, are very seldom complicated by general systemic infections. It is the minute local infections, without formation of pus foci, ushered in by a chill, high temperature, and other symptoms, which constitute the serious systemic infections that jeopardize the life of the patient.

Remarks on Hæmatogenous Infections

By hæmatogenous infections we understand those which enter the general system through the circulation and either manifest themselves immediately during the acute infection or may remain dormant for many months.

A suppurative infection of any part of the body may have healed entirely from a surgical point of view, and the individual may not show evidence either by physical signs or subjective symptoms that he suffered from a general infection as a sequel of his original infection. Such an interim may be a long one until the same person meets with a secondary accident to a part of the body distant from his original infection, which had occurred a long time prior. This secondary injury causes a locus minoris resistentiæ and a nidus for the development of the bacteria which were entirely inactive up to the time of this secondary injury.

The writer can cite many such examples long since seen in clinical experience, and again lately in the examinations made for the workmen's compensation commission. It is possible to activate not only a previously dormant hæmatagenous septic infection by an injury, but also a dormant tuberculosis or a syphilitic infection. This is of considerable importance, as they are often points of divergence in discussions and disputes between physicians representing the injured man and the insurance carriers. The question is often brought up whether certain serious infections are attributable to a secondary injury or to a prior infection. The writer's own conclusion is that, whether the injured person has had syphilis or a latent tuberculosis, or a hæmatagenous infection in consequence of a previous infection, if as a result of an injury, his dormant general infection is activated, and in consequence thereof he is disabled he is entitled to compensation for his disability, and if such an infection results in death the death is compensable.

A word about the duration of disability from a surgical and vocational point of view of these infections, in their relationship to the workmen's compensation laws, might be apposite. In ordinary uncomplicated paronychia the usual surgical disability is up to about four weeks, and there is no permanent vocational disability. In panaritium or felon, involving only the distal phalanx, the surgical disability may last as long as 10 weeks, and the vocational defect may be equivalent to the loss of half the finger. In the other serious infections of the hand, beginning either in the thumb or little finger, there may be a surgical disability for as long as six months, and a vocational disability equivalent to the loss of the greater part of the hand.

INDUSTRIAL HYGIENE—PREVENTIVE MEDICINE IN INDUSTRY

By LELAND E. COFER, M. D., DIRECTOR OF THE BUREAU OF INDUSTRIAL HYGIENE

What Is Industrial Hygiene?

INDUSTRIAL hygiene is that branch of medical science which involves the medical, economic, and social condition of the workers in industry; in other words, it looks after the general health and efficiency of the workers in industry. Industrial hygiene in a large sense involves not only the relation of labor to capital but the relation of man to man. The man of means is able in a great measure not only to select his own hours of work and the character of his work place, but also to buy the best food and to obtain rest, fresh air, and sunshine, all making for health and happiness. The employee, on the other hand, is of necessity forced to work under conditions as he finds them and as his power is limited he sometimes requires the assistance of the State to see that his rights are maintained.

The creation of labor-saving devices for machinery tends on the whole to the betterment of the condition of the worker in every way, but, on the other hand, the worker must be charged with the operation of this machinery and he himself will ever remain the most delicate piece of machinery of all, and from the standpoint of humanity as well as business the greatest economy in the long run will center in the care and conservation of this piece of human machinery—the worker.

Some of the large industries have perfected most elaborate and complete industrial hygiene departments which leave nothing to be desired so far as the care they maintain over the health of their employees is concerned.

Some industries, on the other hand, pay little or no attention to the welfare of their employees, while there exists a middle type of industries which are blamed for conditions affecting the health of their employees when in reality some of the bad conditions are due to unsanitary home surroundings or to other causes for which the employers are not responsible.

It is the province of industrial hygiene to adjust these conditions, but I warn you that you must not expect a member of the medical profession to do more than practice industrial hygiene as a part of his practice of public health in general.

For example some one besides the surgeon or medical internist must supply the hospital buildings, operating rooms, laboratories and nurses' homes necessary to the saving of lives on a large scale.

So it is with industrial hygiene, both the employer and the worker has his part to play in the game of health and safety in industry. The employer must provide what the medical man recommends,

and the worker must supply his intelligence and cooperation in the use of whatever is supplied for his protection against disease and accident.

Why Do We as a Nation Need Industrial Hygiene?

Because you must agree that since the Great War our country is becoming more and more an industrial nation, with all that that statement implies, and in consequence certain changes in our incomes, living, manners, customs, and ideals are everywhere evident. Certain it is that those who do not adjust themselves to the new order of things are likely to awaken, to say the very least, to the realization that they are not keeping up with the times.

It seems to be an accepted fact that little or no change has occurred in the general structure of human beings since those days long past when the human race came into existence. Nor is there evidence that much change has taken place in what might be termed our fundamental human nature. But when the question arises as to the modifications which the race has undergone as the result of changes in environment there is another story to tell. For during the 100 years just past, changes have taken place far greater in extent than in the whole period intervening between the beginning of historic times and the present.

Many and various are the reasons given for these changes, too many by far to recount here, but it seems reasonably certain that one of the principal underlying influences is the gradual replacement of the man power of the old times by the machine power of the new. Which is in effect saying that the changes are due to the gradual but steady broadening of the scope of industry, and its development in turn into groups of highly organized specialties or sciences requiring, paying for, and obtaining the best talent in the land in order to produce the best commodity for the lowest cost. Somewhat recently during this period of evolution labor has been organized, labor legislation has been passed, especially with respect to child labor.

Then another set of collateral changes have pervaded industry, such as artificial light, chilled air or heated air, dry air or moist air, artificial ventilation, quick transportation, special kinds of clothes for certain workers, newspapers, amusements, etc.; then changes in food, such as the introduction of tea, coffee, sugar, alcohol, and tobacco. Then during the past 15 or 20 years industrial hygiene has developed as a recognized branch of sanitary science. It is easy to see how these changes, taken as a whole, have reacted all along and are now reacting upon the mental and physical characteristics of everyone, especially those engaged in industrial pursuits.

Why Should Anyone Be Interested in Industrial Hygiene?

Because, whoever he is, whether rich man, poor man, beggar man, thief, doctor, lawyer, or Indian chief, his livelihood depends upon industry in one way or the other. Whether in war or in peace, he must put up a good industrial fight or he goes under. The oncoming capitalists, scientists, artists, and artisans, or, in other words, the children, if they are to compete industrially with other nations, must do so by adding to their knowledge some of the principles of health and life preservation in industry.

In What Terms Should One Think of the Diseases of Industry?

The first thing to be done is to overcome the idea, indulged in by physicians as well as laymen, that industrial hygiene is a detached branch of public health which is peculiar to industry, and which is therefore looked out for by the industrial physician, and which therefore does not need the attention of anyone else.

The rapid evolution in industry is causing new poisons to be exchanged for old in the arts. The lungs are called upon to inhale new and strange irritants, the muscles are forced to new movements, and the nerves to new sensations and strains. The diseases produced, while not necessarily new, and while presenting no new pathological changes, come to us new as to etiology and in the grouping or association of symptoms, and therefore accompanied by demands upon us for originality as to prophylaxis.

I purposely repeat myself when I say that no longer can the physician look upon the industrial diseases in a detached manner as if they are a set of maladies in a class by themselves, to be found in circumscribed groups of workers.

The medical profession as a whole is divided for the purposes of studying and practically applying industrial medicine, into two groups, one group comprising that large army of physicians who are in private practice, the other group being that very small band of medical men who are either plant physicians or medical officers in the service of the Government, State, or municipality who are engaged in industrial hygiene work.

These two groups of physicians naturally see industrial medicine from almost opposite viewpoints. That is to say, the private practitioner views industrial medicine from within outward because patients come to him with symptoms familiar enough to him, but there is something lacking, such as ætiology or history. On the other hand the medical officer who is hired by the Government, State, or municipality to rid industry of diseases caused by it must proceed from without inward, having as his main guide the industry and the diseases or symptoms which he should find as the result of contact with the agents used in such industry.

Examples of the approach of these two classes of physicians to industrial diseases will now be given: First, let us take the private practitioner.

Recently, a physician after treating without apparent improvement a patient with grave gastric disturbance and intense irritation of the optic nerve, called in consultation another physician who happened to have had wide experience in industrial medicine. After listening to the symptoms the first question the consultant asked was concerning the patient's occupation. Upon being told that it was that of undertaker, the consultant knowing that formaldehyde is used in embalming said, "I thought from the first it was a case of formaldehyde poisoning." The separation of the patient from exposure to formaldehyde, which he used in his capacity as an undertaker, was followed by complete recovery.

A distinguished authority in New York on diseases caused by industry was consulted by a very beautiful woman who was suffering from a disfiguring eruption over her neck and shoulders. This woman's social life called for her frequent appearance in the evening

in gowns with very low neck, but being unable to dress according to her wishes on account of the skin eruption she consulted a number of doctors for relief, even going abroad for the purpose, but without benefit. Finally, she consulted the expert in industrial diseases who immediately recognized the eruption and immediately knew that the lady's hair dye was at the bottom of it. The eruption he knew was caused by a certain aniline dye which was formerly made in Germany and was noted for the brilliant blue-black luster which it produced but which was barred by law because of its dangerous, even fatal, qualities.

I will not dwell on what the lady said when the expert declared the hair dye guilty, nor will I decide whether the expert might not have been more gallant to the lady if he had let her keep her hair dye and also her eruption. But he was a cold, honest man. The result was gray hair but a restoration of this lady's fair skin as soon as the eruption was cured.

The reverse of this failure to recognize the eruption of aniline is illustrated by a case recently occurring where five physicians agreed that a worker in an aniline factory was suffering from aniline poisoning. The case was then seen by a physician familiar with aniline poisoning who pronounced it as not due to aniline, but who made the diagnosis of sleeping sickness.

A patient was observed a few days ago who complained of suffocation, coughing, dizziness, nausea, severe headache, and dimness of vision. A careful inquiry elicited that the patient used "banana oil" (amyl acetate) as a spray in which to suspend colors and agents or powders for gilding picture frames, etc. Removal of the cause was followed by quick recovery.

Even the familiar or classical industrial poisonings such as lead poisoning will sometimes prove embarrassing unless the practitioner is either very sagacious or else is familiar with the peculiar pallor of the beginning case of lead poisoning.

A very wealthy and fashionable woman consulted her physician recently over a group of symptoms which so baffled him that he called in consultation another physician who happened to be familiar with the clinical picture of lead poisoning. Close questioning as to the patient's habits revealed the fact that her hobby was to sand paper old paint surfaces of old furniture and to apply fresh paint. In other words, she had the same lead poisoning that dry rubbers of paint surfaces and automobile-body finishers are liable to.

Blumgart of the Harvard Medical School has recently completed some experiments on dogs which show that the absorption of lead by the upper air passages in the form of pulverized lead carbonate is rapid and of a magnitude far in excess of the maximum toxic dose.

A very unusual case of occupational disease was observed recently. A young man formerly very vigorous and ruddy applied for treatment. His case was pronounced as one of marked anemia, but no cause could be ascribed for the condition. Finally, the young man admitted that his sole occupation was to furnish blood for transfusion purposes.

Let this case be considered "sublime" in order that the following case can follow and by contrast be termed "ridiculous." A man made formal claim for compensation for wood alcohol poisoning on

the ground that while working at a circular saw he fell unconscious due to inhaling the vapor from the wood dust or sawdust.

The practical application of industrial medicine to the diseases and conditions caused by industry takes a variety of forms from the elimination of a dangerous agent and the substitution of a safe one, to the careful daily watching of workers in harmful substances for certain symptoms to appear after which they are at once temporarily removed from their dangerous environment. Before going further I will cite an example of each of these recourses to illustrate the kind of service which may be considered as ideal, and which scientific research in industrial hygiene can make possible.

The example of the elimination of a dangerous substance and the substitution of a safe one occurred recently when a certain corporation using considerable benzol retained a physician and chemist to find a solvent which would prevent the recurrence of the considerable number of cases of benzol poisoning which had recently occurred. The result of study and experiment was the discovery of an innocuous substitute for benzol as a solvent and the result has been the elimination from the industry in question of benzol poisoning.

An example of keeping workers under observation for the first appearance of symptoms and removing them temporarily from danger is the recent work of Doctors Minot and Smith.

Tetrachlorethane is used by airplane wing varnishers, artificial silk makers, and airplane tapers. Exposure to its vapors causes a number of distressing symptoms such as abnormal fatigue, headache, vertigo, jaundice, etc. Before Doctors Minot and Smith demonstrated that tetrachlorethane poisoning could be discovered in its early stages by blood examination, workers exposed to this agent would not heed certain premonitory symptoms such as discontent, grouchiness, fatigue, etc., and would continue work until they were forced to lay off, with consequent loss of wages and disorganization of their work.

Doctors Minot and Smith demonstrated that an increase of mononuclear cells keeps almost exact pace with the appearance of tetrachlorethane symptoms. The result is that by periodical blood examination these men can be given a short respite from the agent and recover without either discomfort or loss of time. As more medical men begin to take an interest in occupational diseases discoveries of this kind are going to be more frequent.

Three or four years ago, Harvard University received a large sum of money to investigate lead poisoning. This money was given by a large association of lead producers and manufacturers of lead products in order that all aspects of lead toxicity might be reviewed with the special purpose of providing reliable methods of diagnosis and treatment. The university engaged a competent staff to carry on this work, which has been pursued under the most favorable university conditions without bias of any sort and without restriction of any kind as to how the fund should be spent. The result has been most illuminating. New methods for the determination of lead in body tissues, feces, and urine have been devised, the mechanism of lead anemia thoroughly explored and apparently for the first time well explained, the storage of lead in hard bone thoroughly defined, and the means of mobilization of lead from the bone pictured with a certain degree of exactness. All these efforts have resulted in giving new

methods for treating lead cases, and it is safe to say that it is now at least possible to determine with accuracy whether or not a patient actually has lead in his system.

A second piece of work of similar character has dealt with a thorough examination of means of resuscitation in carbon monoxide poisoning. This was a cooperative enterprise with Yale University financed by the American Gas Association. It has resulted in the oxygen carbon dioxide method of treating gas poisoning, of which we receive increasingly encouraging reports. This also resulted in the standardization of general instruction for treatment of such cases and has helped to suppress much of the fraud and nonsense which has grown up around American apparatus for artificial respiration.

In addition to these rather specific enterprises, progress has been steadily made by the Harvard group in studies upon the best means of quantitating dust in the air and upon the damage done the lungs by different types of dust. These investigations are of a more abstract nature, but have a very interesting relation to general medicine and illustrate the position which research in industrial hygiene can occupy. All of this work has been reported in the Journal of Industrial Hygiene.

The palliative or protective measures are now fairly well known due to the fact that they have been incorporated into codes applying to almost every industry wherein harmful substances are used.

For example, injurious dusts, fumes, vapors, and gases are disposed of by the installation of hoods over the point of operation, which hoods are connected with exhaust systems leading out of doors.

Injurious environment is being and should be constantly studied with a view of determining under what conditions of temperature, ventilation, and light the worker can do his best, both for himself and his employer. It appears that a temperature for physical work varying between 55° and 65° F. is associated with the largest output and the fewest accidents. It has also been found that the conditions for everyone are most favorable when there is some variation in the temperature and some air movement. Lighting has been shown to affect industry, since production will fall off and accidents and fatigue will increase when the lighting intensities are allowed to drop below a certain limit.

On the other hand, there is more to be accomplished in making a study of the relation of improper ventilation, noise, and odors to industrial output both within and without the confines of good health and economy.

Injurious exercise is being more carefully studied with a view of relieving muscle strain and fatigue by attention to posture, with especial reference to the providing of adjustable chairs, stools, or benches for workers. Then, too, rest periods and the alternating of work are being tried out more and more. The influence of rythm is also being studied; that is, the adjusting of the rythm of the machinery to the rythm of the worker.

The laws of certain States require the reporting of certain diseases and poisonings which are compensable, yet there are a number of diseases which are compensable but not reportable, also many poisonings and diseases directly traceable to occupation but which are neither reportable nor compensable.

The workmen's compensation law of the State of New York provides that compensation shall be payable for disabilities sustained or death incurred by an employee resulting from the following occupational diseases:

Description of diseases	*Description of process*
1. Anthrax.	1. Handling of wool, hair, bristles, hides or skins.
2. Lead poisoning or its sequelæ.	2. Any process involving the use of lead or its preparations or compounds.
3. Zinc poisoning or its sequelæ.	3. Any process involving the use of zinc or its preparations or compounds or alloys.
4. Mercury poisoning or its sequelæ.	4. Any process involving the use of mercury or its preparations or compounds.
5. Phosphorus poisoning or its sequelæ.	5. Any process involving the use of phosphorus or its preparations or compounds.
6. Arsenic poisoning or its sequelæ.	6. Any process involving the use of arsenic or its preparations or compounds.
7. Poisoning by wood alcohol.	7. Any process involving the use of wood alcohol or any preparation containing wood alcohol.
8. Poisoning by nitro-, hydro-, and amido-derivatives of benzene (dinitro-benzol, anilin, and others) or its sequelæ.	8. Any process involving the use of a nitro-, hydro-, or amido-derivative of benzene or its preparations or compounds.
9. Poisoning by carbon bisulphide or its sequelæ.	9. Any process involving the use of carbon bisulphide or its preparations or compounds.
10. Poisoning by nitrous fumes or its sequelæ.	10. Any process in which nitrous fumes are evolved.
11. Poisoning by nickel carbonyl or its sequelæ.	11. Any process in which nickel carbonyl gas is evolved.
12. Dope poisoning (poisoning by tetrachlor-methane or any substance used as or in conjunction with a solvent for acetate or cellulose) or its sequelæ.	12. Any process involving the use of any substance used as or in conjunction with a solvent for acetate of cellulose.
13. Poisoning by formaldehyde and its preparations.	13. Any process involving the use of formaldehyde and its preparations.
14. Chrome ulceration or its sequelæ.	14. Any process involving the use of chromic acid or bichromate of ammonium, potassium, or sodium, or their preparations.
15. Epitheliomatous cancer or ulceration of the skin or of the corneal surface of the eye, due to tar, pitch bitumen, mineral oil or paraffin, or any compound, product or residue of any of these substances.	15. Handling or use of tar, pitch bitumen, mineral oil, or paraffin or any compound product or residue of any of these substances.
16. Glanders.	16. Care or handling of any equine animal or the carcass of any such animal.
17. Compressed-air illness or its sequelæ.	17. Any process carried on in compressed air.

18. Miner's diseases, including only cellulitis, bursitis, ankylostomiasis, tenosynovitis, and nystagmus.	18. Any process involving mining.
19. Cataract in glassworkers.	19. Processes in the manufacture of glass involving exposure to the glare of molten glass.

In order properly to administer the above provision of law it is necessary to make repeated surveys of certain groups of industries or occupations involving the important hazards such as lead.

For example, in surveying the lead hazard in New York State which is now being done by the Bureau of Industrial Hygiene of the New York State Department of Labor it is necessary to distribute the field force throughout the following occupations which are exposed to lead.

Occupations Exposed to Lead

Acid finishers (glass).
Amber workers.
Art-glass workers.
Artificial-flower makers.
Babbitters.
Batteries (dry).
Bench molders (foundries).
Blacksmiths.
Blooders (tannery).
Bookbinders.
Bottle-cap makers.
Brass founders.
Brass polishers.
Braziers.
Brick burners.
Bronzers.
Browners (gun barrel).
Brush makers.
Buffers (rubber).
Burners (enameling).
Cable makers.
Cable splicers.
Calico printers.
Canners.
Cartridge makers.
Celluloid makers.
Chargers (zinc smelting).
Color makers.
Color workers (lead and zinc).
Colorers (white) of shoes.
Compositors.
Concentrating-mill workers (zinc and lead).
Cut-glass workers.
Cutlery makers.
Decorators (potteries).
Diamond polishers.
Dye makers.
Dyers.
Electroplaters.
Electrotypers.
Embroidery workers.
Emery-wheel makers.
Enamel makers.
File cutters.
Filers.
Floor molders (foundries).
Galvanizers.
Glass finishers.
Glass mixers.
Glass polishers.
Glaze dippers (potteries).
Glaze mixers (potteries).
Glost-kiln workers.
Gold refiners.
Grinders (metal).
Grinders (rubber).
Heater boys (riveters).
Imitation-pearl makers.
Incandescent-lamp makers.
Insecticide makers.
Japan makers.
Jewelers.
Junk-metal refiners.
Labelers (paint cans).
Lacquer makers.
Lead burners.
Lead-foil makers.
Lead miners.
Lead-pipe makers.
Lead-salts makers.
Lead smelterers.
Linoleum makers.
Linotypers.
Linseed-oil burners.
Lithographers.
Litho-transfer workers.
Match workers.
Mirror silverers.
Mixers (rubber).
Monotypers.
Musical instrument makers.
Nitric-acid workers.
Nitroglycerin makers.
Painters.
Paint makers.
Paint removers.
Paper hangers.
Patent-leather makers.
Petroleum refiners.
Photograph retouchers.
Pipe fitters.
Plumbers.
Polishers.

Pottery workers.
Printers.
Putty makers.
Putty polishers (glass).
Reclaimers (rubber).
Red-lead workers.
Refiners (metal).
Riveters.
Roofers.
Rubber workers.
Saggar makers.
Sandpaperers (enameling and painting autos).
Screenworkers (lead and zinc smelting).
Sheet-metal workers.
Shellac makers.
Shot makers.
Slip makers (potteries).
Slushers (porcelain enameling).
Solderers.
Stainers (shoes).
Steel engravers.
Stereotypers.
Storage-battery makers.
Sulphuric-acid workers.
Table turners (enameling).
Tannery workers.
Temperers.
Tile makers.
Tin-foil makers.
Tinners.
Toy makers.
Transfer workers (potteries).
Tree sprayers.
Type founders.
Typesetters.
Wall-paper printers.
Welders.
White-lead workers.
Wood stainers.
Zinc smelters.

Now the manner of the approach of the medical officer or industrial hygiene physician to industrial disease will be discussed. To do this in a satisfactory manner there must be organization. There must be men and women physicians who, in addition to their hospital service or experience in private practice, have studied industrial hygiene and have become qualified in industrial hygiene research. In addition there must be available mechanical engineers, chemical engineers, chemists, expert machinery inspectors, expert factory inspectors, draughtsmen, and expert accident inspectors. Perhaps the simplest way to convey a bird's-eye view of the general field of industrial disease is to give a cursory classification of them.

Time is too limited to go into the many ways in which these diseases have been wrongly classified by a number of writers, but it is generally accepted that a classification according to the causes of disease is the most practical. This will probably appeal to the average practitioner who is mainly interested in the cause and effects of the disease and not so much in the exact manufacturing process during which it was developed.

Those effects of occupation that are specific will be grouped as follows (classification of Gilman-Thompson):

(1) Injurious substances. This group includes the largest number of occupational diseases in which we are interested for the present and is further subdivided as follows:

Metallic poisons such as antimony, arsenic, brass, chromium, lead, mercury, etc.

Toxic gases, vapors and fumes and liquids such as amyl acetate, wood alcohol, aniline, benzol and derivatives, petroleum, etc.

Irritant dusts and fibers.

(*a*) Insoluble inorganic dusts such as flint, silica, sand, coal, brick and marble dust, emery, metal filings, etc.

(*b*) Soluble inorganic dusts such as soluble arsenic, mercury, lead, etc.

(*c*) Organic dusts and fibers such as dust from handling wood, bone, shells, fur skins, brooms, straw, flour, grain, etc.

(2) Injurious environment. This group includes those diseases of industry caused by unsanitary environment, as bad ventilation, overheated air and defective lighting. The difficulty is to decide where the "industrial" element begins or ends. There are exceptions of course such as the overheated air of certain mills, mines and factories, and the disease caused by the compressed air in caissons and foundations, known as caisson disease.

(3) Injurious exercise. This group is composed of those diseases of occupations that are caused by overexercise of some particular part of the body or group of muscles, such as writers' cramp, the palsies of telegraph operators, and those who work in constrained positions such as miners.

(4) Organic germs (anthrax, glanders, etc.).

The above classification viewed in more detail:

1. Injurious Substances

Metallic poisons include:

Antimony. Used in preparation of type and white metal, aniline dyes, and pottery glaze. Inhaled as a vapor (oxide), as a dust (metal), and acting locally as a skin irritant causes coryza, dyspepsia, intestinal colic, anemia, nephritis, skin eruptions, and cardiac depression.

Arsenic. Used in mining and smelting arsenical ores, hide curing, paint making, and in foundries and in the manufacture of shot, glass, aniline, etc. Inhaled as a vapor and dust causes acute intoxication, irritation of eyes, headache, vomiting, gastric pain, diarrhea, muscular weakness, cramps in legs, cardiac depression, fainting, convulsions, and collapse. Also causes chronic intoxication, nausea, vomiting, epigastric pains, malnutrition, bleeding gums, loss of hair and nails, dryness of skin, skin eruptions such as eczema, conjunctivitis, nervous symptoms, peripheral multiple neuritis, anæsthesia, and paralysis.

Brass. "Brass founders ague" due in acute stage to copper and zinc and in the chronic forms to copper. Symptoms: Depression, chills, nausea, vomiting, profuse sweating, muscular pains, and degenerative changes.

Chromium and its salts, as lead chromate, chrome, carmine, etc. Used in photo-engraving, in making chrome steel, bleaching, aniline colors, and wax. Inhaled as a dust, irritating respiratory passages and skin and causing necrosis of the superior maxilla, chronic bronchitis, chronic conjunctivitis, chronic gastritis, and chronic nephritis. Lead chromate causes eczema, deep ulcers of the skin and mucous membranes, and ulceration and perforation of the nasal septum.

Copper. Copper ore is associated in smelting with lead and arsenic which latter cause more serious poisoning than the copper itself. Inhaled as a dust it irritates the respiratory passages causing intestinal cramps and diarrhea, a greenish blue line on the gums, and chronic bronchitis, vomiting, and gastritis.

Lead. Used as lead alloys, lead sulphide, and lead sulphate. This is the most important of all the metals as the causative factor in producing industrial poisoning. It is used in fully 150 trades including paints, batteries, printing, soldering, lead pipe and similar articles, rubber, type metal, shot, etc. It enters the body as a vapor

from superheated lead; as a dust by inspiration, and through the mouth by unclean hands, and as a fluid of lead salts which irritates the skin. Chronic lead poisoning affects many different organs, notably the arteries, nerves, and kidneys. Slow absorption of lead gives rise to arteriosclerosis, chronic neuritis, and chronic interstitial nephritis, with deposit of a lead line on the gums and the presence of lead in the urine. These symptoms are associated with chronic anemia, chronic gastritis, constipation, loosening of teeth, pains in the joints, paralysis, abdominal cramps, andcolic. Temporary blindness or loss of hearing, smell, and taste may occur.

Mercury (in its many forms). The industries wherein persons are exposed to it include mining in mercury and gold mines, smelting, extraction of gold and silver, gilding, silvering and bronzing, making of mirrors, thermometers, felt hats, dyeing of hair, and photography. Enters the body as a vapor through the respiratory system and as a solid through the skin or by conveyance to the mouth by fingers. It causes chronic inflammation of the gums and mucous membranes of the mouth, loss of teeth, necrosis of the jaw, ulcers in the mouth and pharynx, chronic gastritis, emaciation, and tremors of the hands and muscles of the face.

Toxic gases, vapors, fumes, and liquids include:

Alcohol amyl. Used in preparing fruit essences, aniline dyes, and amyl nitrite. Enters the body through the respiratory passages. Causes headache, vertigo, tinnitus aurium, dyspnoea, lowering of arterial blood pressure, faintness, nausea, and vomiting.

Amyl acetate. Used as a solvent of enamels. Causes nervous symptoms, headache, fullness of the head, giddiness, palpitation of the heart, fatty degeneration of the liver, and inflammation of the respiratory passages.

Alcohol methyl. Used in making of varnish, polish, denaturation of spirits and dyestuffs. Inhaled as a vapor causes vertigo, dyspnoea, and general inflammation of entire respiratory mucosa. Polishers of furniture acquire inflammation of skin of hands and arms. Blindness and fatal paralysis of the heart may occur.

Aniline and its derivatives (such as intraniline). Encountered in the manufacture of aniline colors. Enters the body through inhalation and by absorption through the skin by saturation of the clothing. The symptoms of acute intoxication are muscular weakness, vertigo, pallor, cyanosis of the lips, slow pulse, contraction of pupils, fainting, strangury, collapse, possible death in coma or convulsions. The symptoms of chronic intoxication are chiefly nervous, disturbances of sensibility and equilibrium, tinnitus aurium, nausea, vomiting, diarrhea, eczema and furunculosis.

Benzol and its derivatives. Used in manufacture of rubber, resin, dyeing, aniline making, and many other industries. Enters the body as a vapor irritating the air passages. It causes headache, vertigo, anemia, muscular tremor, scarlet lips, cyanosis, irritant cough, fatty degeneration of liver, kidneys, and heart.

Carbon bisulphide. Encountered in making ammonium salts, dissolving of fats, in treating rags, bones, and raw wool, paraffin work, and in the vulcanization of rubber. It causes an acute intoxication with paralysis of the central nervous system, destruction of red blood corpuscles, somnolence, and fatal coma. The chronic intoxication causes vertigo, pruritus, cough, rapid pulse, mental excitation

followed by deterioration. Special nervous symptoms are chills, absence of reflexes, cramps, tetany, tremors, paralysis, and muscular atrophy. Serious general symptoms arise from absorption by contact with the hands.

Carbon monoxide. Persons especially exposed to this gas are workers in garages and in industries where gas flames are used. It is noticed in brick kilns, lime kilns, smelting furnaces, and in illuminating gas plants. It causes acute poisoning—slow pulse, elevation of blood pressure, cardiac paralysis, vertigo, tinnitus aurium, nausea, redness of skin, dyspnœa, anæsthesia, incontinence of urine and feces, subnormal temperature, coma. The chronic poisoning is manifested by gastritis, anemia, nasal and bronchial catarrh, and furunculosis.

Chlorine. Used to bleach linen and paper and in the manufacture of chloride of lime and of chlorine and disinfectants; also used by photographic workers. Enters the body as a gas through the respiratory system. It causes an acute poisoning, large quantities causing cardiac paralysis, smaller quantities causing burning and stinging of the skin with formation of blisters, papules. Causes cough, dyspnœa, bronchitis and spasm of the glottis. In chronic poisoning there is gastritis, anemia, nasal and bronchial catarrh, and furunculosis.

Dinitrobenzol and other nitro compounds of benzol and its homologues. Encountered in aniline making, dye making, and the mixing of explosives. Enters the body as a vapor through the respiratory system. The symptoms are gray blue discoloration of the skin which finally becomes cyanotic. Methæmoglobin formation, anemia and general debility, albumin in the urine, skin eruptions, visual disturbances, dyspnœa, odor of bitter almonds in breath.

Nitrous gases and nitric acid. Used in nitrification in chemical works, celluloid works, preparation of sulphuric acid, picric acid, aniline, and electroplating. Enters the body as a gas through the respiratory system. It causes irritation of air passages, cough, labored respiration, inflammation of the eyes, corrosion of the teeth, erosion and perforation of nasal septum.

Phosgene. Used by phosgene and dye makers. Enters the body as a gas causing destruction of lung tissue, emphysema and edema, myocardial insufficiency due to the emphysema, pleural thickening and adhesions, chronic bronchitis, mild diffuse bronchiectasis, nocturnal dyspnœa, and polycythemia.

Petroleum. Encountered by oil-well workers, petroleum refiners, paraffin workers, and furniture polishers. Enters the body through the respiratory tract and has a local action on the skin. Causes inflammation of the skin, acne, suppurating ulcers, papilloma, numbness and irritation of the schneiderian membrane, headache, sensory disturbances, and affections of the respiratory organs.

Sulphuretted hydrogen. Is found in sewers, tanning establishments, and artificial silk plants, in coal-gas manufacture, and in the body emanations of closely crowded workers. It enters the body as a gas through the respiratory system, frequently mixed with other harmful gases. It causes headache, debility, vertigo, nausea, disturbances of digestion, sallow complexion, and emaciation, slowing of the pulse, conjunctival catarrah, and tendency to the formation of boils.

Acids:

Hydrochloric acid. Found in various chemical processes. Enters the body as a gas through the respiratory system. Causes violent coughing, dyspnœa, bronchitis, destruction of teeth, contraction of throat, and coma.

Hydrocyanic acid, or prussic acid, and potassium cyanide. Occurs in industry in connection with the preparation of cyanogen, photography, dyeing cloth, printing, etc. Enters the body as a gas through the respiratory system, in liquid or solid form through the skin. It causes acute poisoning, indigestion, vertigo, dyspnœa, strangulation, palpitation, nausea and vomiting, convulsions, frequent micturation, bluish color of skin and mucous membranes, dilated pupils, and death in sycope. Chronic poisoning causes vertigo, hesitating gait, and gastro-intestinal disorders.

Dusts and fibers:

Irritant dusts and fibers. Cause irritation of all the respiratory passages and of the eyes and skin. In some instances the metal dusts enter the mouth as well as the lungs and are swallowed and absorbed. Irritating dusts are of three classes:

(*a*) *Insoluble inorganic dusts* (irritating the respiratory passages): Flint, silica, sand (e. g., sand blasts, sandpaper), carbon, (e. g., coal, soot), brick, marble, granite, terra cotta, cement, asphalt, enamel, glass, quartz, lime (e. g., gypsum plaster), meerschaum, phosphates (e. g., fertilizers), guano, emery, diamond dust, metal filings (e. g., lead, brass, iron, steel, etc.), pumice, and ashes.

Metallic dust. Is met with in some kinds of mining, although the dust met with in any particular kind of mining does not necessarily contain the special metal being mined. Most of the dust in mining for metals arises from the operations of digging and blasting through the rock to reach the metal. In copper and tin mining, the ores contain lead, arsenic, and antimony, but the miners do not seem to suffer from the effects of these substances. In lead mining (galena) miners suffer from lead poisoning. The same may be said of mining for mercury. Some mines are very damp, so that there is little dust, and dampness may be the hazard. The depth, and consequently the heat, may constitute the hazard in some mines. In others the labor of going in or out and the work in constrained positions are the principal predisposing causes of disease. Dry and wet grinding is conspicuous above all others for the suffering it entails.

(*b*) *Soluble inorganic dusts* (liable to be swallowed and absorbed): Soluble arsenic, mercury, lead and silver compounds; metal filings of lead, brass, and zinc. Those most exposed to mineral dust are miners, potters, glass cutters, and stonecutters. The inhalation of dust is a predisposing cause of tuberculosis in those who work in it—"miners' phthisis," "grinders' phthisis." Steel dust is the most dangerous. Siliceous dust, which is encountered by potters, is also exceedingly injurious. Anthracosis, as distinct from tuberculosis, may exist. This is characterized by an infiltration of carbonaceous matter in the lung tissue, with fibroid proliferation.

(*c*) *Organic dusts and fibers* arising from handling or manufacture of wood, bone, and shell; from fur, skins, hides and leather, brooms and straw, flour and grain, tobacco, jute, flax (linen), hemp, cotton, wool (worsted, etc.), felts and carpets, rags and paper, horsehair, and street sweepings.

Organic Germs

Anthrax externally may occur in animal handlers, tanners, brush makers, butchers, meat inspectors, etc. It occurs as malignant pustule, beginning as an inflamed pimple or boil, afterward becoming a papule which discharges a thick bloody serum, later forming a gangrene. A painful lymphangitis with hard edema extending over the neck and arm. Local phlebitis in the edematous area, chilliness, anorexia, vomiting, prostration, high temperature, and feeble pulse. External anthrax occurs also as malignant edema. A spreading inflammation of loose connective tissue accompanied by sloughing and gangrene. Constitutional symptoms those of pyemia. Anthrax internal is characterized by high fever, pains in head and back, vomiting, constipation, pain and tenderness in the abdomen, rapid, feeble pulse, palpable spleen, dyspnœa and cyanosis. May be hemorrhage from bowels. When lungs are involved there may be additional symptoms—cough, pain in the chest, and suffocation.

Harmful Conditions of Environment

1. Air compression and rarefaction.—In building tunnels, laying deep foundations, etc., it is necessary for the work to be carried on under great air pressure in order to prevent the entrance of water into the excavation. The workers are passed by degrees into the compressed air by sitting for intervals in compartments into which air is pumped to the desired density. The first sensation of compression is felt on the ear drums, which may be relieved by swallowing. The greater part of the danger of working in compressed air lies in hasty decompression. While under compression the blood and tissue fluids dissolve an increased amount of air, the gases of which are released when the pressure is suddenly removed. The bubbles thus formed cut off the blood supply from various parts of the body by blocking up the capillaries. The symptoms are weakness, vertigo, pains in back and legs "bends," paralysis of legs and arms, painful constriction of the chest, cerebral hemorrhage and aphasia, coma, subcutaneous hemorrhages, and impairment of hearing.

2. Excessive humidity.—The moisture present in the air where persons are working has a very marked influence on the health and efficiency of the workers.

Damp air will prevent the evaporation of moisture from the body and will therefore affect the body temperature, and high humidity tends to increase the effects of high temperature. Moist cold air has the effect of undermining the general vitality of the organism, weakening its resistance to diseases of the respiratory passages and of predisposing to neuralgic and rheumatic affections. Excessive humidity characterizes many occupations such as workers in laundries, cloth preparers, artificial ice makers, textile workers, etc. The effects are respiratory diseases, neuralgia, and rheumatic affections.

3. Excessive light.—This occurs frequently from undue exposure to the arc light, furnace glare, glowing metal on glass, and the X ray. Blacksmiths, electricians, furnace workers, glass blowers, and X-ray workers are exposed and they are liable to cataracts, retinitis, conjunctivitis, dermatitis, ulceration and exfoliation of the skin, and cancer.

Occupational Injuries

1. Injuries to the blood as nitrous oxide and carbon monoxide by forming permanent union with the hemoglobin.

2. Injuries to nerves, muscles, and bones as strain, fatigue, cramp, faulty positions, "occupation neuroses," "writer's cramp," "telegraphers' cramp" and "piano-players' cramp," and "miners' cramp."

This very brief outline of the diseases caused by industry will show the magnitude of the field and you will find the literature on the subject correspondingly large and wonderfully complete. The knowledge of the diseases caused by industry easily within our reach is fully 10 years ahead of its practical application. Our task now is to find out to what extent our knowledge is applied in our State and to what extent it needs to be applied. I do not believe this can be accomplished by police power alone. But it can be accomplished if the medical profession and the school teachers of the State will aid in our efforts to recognize the early appearances of the diseases caused by occupation and to carry on a campaign of education tending to their reduction.

HOW THE INDUSTRIAL CODE IS MADE

By Thomas C. Eipper, Industrial Code Referee

WHEN in 1886 the factory law was originally enacted in New York State, the duties of the factory inspector and his one assistant consisted principally in weeding out from the workshops any children under 13 years of age that were found employed there and in preventing the overworking of women under 21 years of age and of boys under 18 years of age. There were no provisions in the law regarding health and safety.

In 1887, however, amendments to the statute materially enlarged the powers and duties of the office of factory inspector and increased the working force from 2 to 10 inspectors. This amended act was the first on the statute books of the State to safeguard the lives and limbs of the workers.

It provided that proper automatic trapdoors be installed at all floor openings through which an elevator passes, so as to form a substantial surface when closed, and so constructed as to open and close by action of the elevator in its passage, either ascending or descending and it required that where elevator shafts or hoistways were used they must be substantially inclosed.

The act required that handrails be placed on all stairways in manufacturing establishments, stairs be properly screened at the sides and bottom, and that doors had to be so constructed as to open outwardly and could be neither locked, bolted, or fastened during working hours.

On the outside of all factory buildings three or more stories in height, fire escapes had to be erected, connecting with each floor above the first, well fastened and secured, and of sufficient strength.

It was made the duty of the owner of a factory to install automatic shifters or other mechanical contrivances on machinery for the purpose of throwing belts on or off pulleys, and to furnish proper safeguards for all gearing and belting. Females under 21 years of age and males under the age of 18 were prohibited from cleaning machinery while in motion.

It took cognizance of sanitation of factories and the health of the workers, by providing that suitable and proper wash rooms and water-closets be provided for females and that the toilet facilities used by them be separate and apart from those used by males; that water-closets be screened and ventilated, and at all times be kept in a cleanly condition. Dressing rooms for women and girls were ordered in factories by an amendment to the act in 1890.

In 1889 provision was made for the installation of exhaust fans to carry off dust from emery wheels and grindstones and dust-creating machinery.

The law in relation to machinery and apparatus was amplified in 1890 by an amendment which provided that "all vats, pans, saws, gearing, and machinery of every description" in factories "shall be properly guarded."

That which is termed the labor law came into existence in 1897, when the legislature codified the various acts relating to industry. Among other subjects the statute embraced the inspection of factories, bakery and confectionery establishments, mines, mercantile establishments, and tenement-house work. It continued the health and safety provisions which were in force at that time.

Then in 1911 came the State factory investigating commission appointed to inquire into the conditions under which manufacturing was carried on in the cities of the first and second class. The creation of the commission was the outcome of a disastrous fire in a business establishment in New York City in which 145 employees, mainly women and girls, lost their lives. As a result of that investigation there was in 1913 a reorganization of the department of labor. Fundamental changes were made in its functions. Theretofore its duties were exclusively executive, confined to the enforcement of the labor law. Under the reorganization large legislative functions were committed to the department in the creation of an industrial board with powers to formulate and adopt necessary legislation, having the full force of law, to supplement the health and safety provisions in the labor law. The various rules enacted and promulgated by the board constituted the State's industrial code.

Enforcement of the Labor Law and Industrial Code Rules

Hon. James A. Hamilton is the industrial commissioner, he is the administrative head of the department, enforces all provisions of the labor law and industrial code rules. A bureau of inspection with inspectors throughout the State inspect regularly all factories and mercantile establishments and wherever a violation of the labor law or industrial code rules is found an order is issued to the owner or occupant to comply with the law or rules within a time specified in the order. Director Gernon, of the bureau of inspection, will address you in a few days and tell you all about the work of that bureau.

The Industrial Board

The industrial board consists of five members, at least one of whom shall be an attorney and counselor at law duly admitted to practice in this State. The members are appointed by the governor, by and with the advice and consent of the senate, one of whom is designated by the governor to act as chairman. Miss Frances Perkins is chairman of the board.

Powers of the Board to Make Rules

To know the full requirements of the labor law it must be read with the rules of the industrial code, as the rules supplement corresponding provisions of the labor law.

Section 28 of the labor law provides that the board may make, amend or repeal rules for carrying into effect the provisions of the

labor law, applying such provisions to specific conditions and prescribing means, methods, or practices to effectuate such provisions; for guarding against and minimizing fire hazards, personal injuries and disease, with respect to the construction, alteration, equipment, and maintenance of places to which the labor law is applicable; the arrangement and guarding of machinery, the places where and the methods and operations by which trades and occupations may be conducted and the conduct of employers, employees, and other persons, in and about factories and mercantile establishments, it being the intent that all places to which the labor law and industrial-code rules are applicable shall be so constructed, equipped, arranged, operated and conducted in all respects as to provide reasonable and adequate protection to the lives, health, and safety of all persons employed therein and frequenting the same, and the board *shall make such rules* as will effectuate said policy and intent. The rules of the board shall have the force and effect of law and enforced in the same manner as the labor law.

Purpose

Industrial-code rules are supplementary to the labor law and are intended to prescribe in detail and in specific terms, corresponding requirements of the labor law, which in some sections is specific, but in others broad and general; to make provisions for safeguarding such conditions that are not covered specifically by the labor law; and to make rules for safeguarding conditions where it is found that there is involved an element of danger to the lives, health, or safety of persons, through the introduction, from time to time, of new types of machinery, apparatus, new processes, and methods by which operations are conducted.

Procedure

The procedure for making rules as prescribed in the labor law is as follows: The commissioner may appoint committees composed of employers, employees, and experts to formulate rules or changes therein. Before any rule is adopted, amended, or repealed there shall be a public hearing thereon, notice of which shall be published at least once, not less than 10 days prior thereto, in such newspaper or newspapers as the board may prescribe and, where it affects premises in the city of New York, in the City Record of the city of New York. At least three affirmative votes shall be necessary for the adoption, amendment or repeal of any rule, provided, however, that a new rule or an amendment or a repeal of a rule shall not be effective unless and until approved by the industrial commissioner. Every rule adopted and every emendment or repeal thereof shall be promptly published in the bulletins of the department of labor and, where it affects premises in the city of New York, in the City Record of the city of New York. Unless otherwise prescribed by the board, all rules, amendments, and repeals thereof shall take effect 20 days after the first publication thereof, and certified copies thereof shall be filed in the office of the department of state. The usual practice of the board is to fix a date on which new rules become effective.

Only the industrial-code rules relating to sanitation and safety conditions and safety in buildings under construction are applicable to the city of New York. The legislature in 1916 in amending the charter of Greater New York created a bureau of standards and appeals and a board of appeals, and conferred upon the former powers to make, amend, and repeal rules regarding the enforcement of those provisions of the labor law which relate to the construction, alteration, structural changes, plumbing and drainage, elevators, fire escapes, adequacy and means of exit in all buildings except tenement houses, within the city of New York, and such rules shall take the place of the industrial code and of any rules relating to the labor department of the same subject and matter.

Formulating Rules

Whenever Industrial Commissioner Hamilton or the board finds any industry, trade, occupation, or process involving danger to the lives, health, or safety of persons employed therein unprotected by the labor law or industrial-code rules, the commissioner directs the division of industrial codes to prepare proposed rules for such conditions. The division consists of two referees and a stenographic force; one of the referees acts as chairman of the advisory committee appointed, alternating with the other, who becomes chairman of the next committee constituted. An advisory committee is appointed by the commissioner to assist the division in this work. Upon receipt of such instructions from the commissioner, the chairman communicates with associations of employers and of industries, labor organizations, underwriters representing insurance interests, chambers of commerce, and other associations and societies, requesting the names of three men who will serve on the advisory committee; the commissioner selects one name, sometimes two, from such list, to represent the various interests. The chairman communicates also with experts, technical and practical men well qualified and experienced in the particular subject and selects suitable men from the engineering staff of the bureau of industrial hygiene of the department of labor and the director of the bureau of statistics whom the commissioner then appoints. The men so chosen constitute the advisory committee for that code. Meanwhile, the chairman collects and assembles all data and information obtainable from the various States and code-making bodies relating to the subject and calls a meeting of the committee, which is held in a committee room adjoining the offices of this division in the building of the department of labor at New York. At such meeting the work of the committee is organized, the scope and nature of the work outlined, suggestions are noted, and to facilitate progress and thoroughly cover every subject, the chairman appoints subcommittees, selecting from the advisory committee such men as are by profession, training, or practical experience best fitted for the particular subject, and appoints as chairmen of the subcommittees men with such qualifications and who have also had experience on code committees.

The chairman of the advisory committee is an ex officio member of all subcommittees. All data, suggestions, and information in the hands of the chairman is given to the chairmen of the various subcommittees who then proceed with the work of formulating rules.

The subcommittee chairman drafts rules, sends a copy to each member of his committee, then holds a meeting to review and discuss them, and when all the proposed rules are completed and agreed to a copy is sent to the chairman of the advisory committee, who has a sufficient number of copies made, sends one to each member together with a notice of a meeting of the advisory committee, allowing sufficient time for members to look them over carefully and be prepared to discuss them intelligently. At the meeting the chairman reads the rules one by one to the committee, each rule being discussed separately, until all are in accord. When there is a difference of opinion, many times an agreement is reached by amendment; if not, then after a reasonable discussion a vote is taken. If it results in a tie and some rule seems necessary, it is recommitted to the committee or a new subcommittee appointed by the chair to draft a new rule, keeping in mind the arguments for and against the proposed rule. Further meetings are held until all rules are agreed to and the code is completed. Many times subcommittees while preparing rules visit various factories or places to which the rules will apply, to inspect conditions, observe operations and note whether or not a proposed rule is practicable and affords adequate protection. This is especially true in revising our rules for guarding dangerous machinery. There is such a vast number of different types and so many different kinds of machines used for the same class of work, it was found that specifications for the construction of a guard which provided safety for one machine, was not practicable on another, therefore many inspections had to be made before adequate protection for safety was found for all.

The services of the members of these committees are rendered gratis and it shows a fine spirit of cooperation and unselfishness on the part of industry, manufacturers, merchants, labor organizations, and others to give their time or that of the best men in their employ to assist in the construction of these rules; such services are invaluable and can not be purchased. The actual and necessary railroad and hotel expenses to attend meetings are paid by the State but many who serve do not render a bill for such.

Public Hearings

A provision of the labor law makes it mandatory to hold public hearings on all proposed industrial-code rules, the purpose of which is to afford the public and all interested in the rules, an opportunity to express an opinion, to make constructive criticism and suggestions, or to voice an approval.

Six copies of the proposed code, one for the commissioner and one for each member of the board are then handed to Industrial Commissioner Hamilton, who transmits them to the industrial board for action. After the board reviews the rules, it adopts them tentatively, fixes a date and place to hold public hearings, which is usually Buffalo, Rochester, Syracuse, New York, and sometimes Albany, names the newspapers in which a notice of such hearings shall be published and directs the division of industrial codes to make the necessary arrangements together with printing and distributing the proposed rules, which is usually done about four weeks before the public hearings. All members of the board are present at the public

hearings and the two industrial code referees are in attendance to arrange and care for the details incidental to such hearings and to listen to the speakers. A stenographer is present to record the proceedings of the hearing. The names of all those attending are taken and made a part of the proceedings. At the hour appointed for the hearing the chairman addresses those present, explains the purpose of the rules and the public hearings, and invites discussion and suggestions. After all have been heard that wish to speak the meeting is adjourned. There is invariably a good attendance at all hearings, and at a recent hearing on a proposed new code more than 200 were present and it lasted over three hours. Sometimes representatives appear at a hearing from some chamber of commerce, or a real estate board, or merchants' association, or contractors' or builders' organization appoint a committee to review and check up the rules and ask for time and privilege of filing a brief. This is always granted.

Action by the Board

After such hearings have been held and the minutes transcribed the industrial board holds executive meetings to consider the rules. It usually invites the industrial-code referee who was chairman of the advisory committee and a small committee of those who had most to do with formulating the rules to sit with them to explain the intent of any rules which could possibly be misinterpreted. With a copy of the minutes of the public hearings before them, each rule is carefully considered and those that are satisfactory are adopted, others, if they think wise, are amended and a date fixed upon which they shall become effective, after which a copy of the rules as adopted by the industrial board is transmitted to the industrial commissioner for his action thereon, as the rules can not become effective unless and until approved by him; the secretary of the board then sends a certified copy of the code as adopted to the secretary of state to be filed at the capitol, a copy to The Bulletin, published by the department, and if the rules affect New York City, a copy to the City Record of New York City for publication.

Variations

The legislature recognized that because of the different types of factory buildings and buildings occupied as mercantile establishments and the equipment of such places and the varied conditions in which work and business even of the same character must be conducted, there would be practical difficulties in some instances in conforming strictly to the letter of the law or industrial-code rule, so it delegated power to the industrial board that if there shall be practical difficulties or unnecessary hardship in carrying out a provision of the law or rule of the board affecting the construction or alterations of buildings, exits therefrom, the installation of fixtures and apparatus or the safeguarding of machinery and prevention of accidents, the board may make variations from such requirements if the spirit of the provision or rule shall be observed and public safety secured. Any person affected may petition the board for such variation. The board fixes a day for a hearing of such petition. If the board permits such variation it shall be by a resolution adopted by at least three votes.

Petitions for variations affecting new buildings or to the extension or remodeling to the extent of 50 per cent of an existing building are referred to the division of industrial codes to hold hearings, prepare reports and recommendations to the board; petitions for variations or modifications from violations in existing buildings are referred to the bureau of inspection for inspection and recommendation to the board.

Until 1919 the industrial-code rules were published in one volume, since which time they have been issued only in bulletin form, each subject segregated.

So far industrial-code rules comprising 29 bulletins have been adopted and are now in force, each subject being published in separate form, and may be obtained at the division of industrial codes, 124 East Twenty-eighth Street, New York City.

The first industrial-code rule adopted, No. 1, related to the hours of labor and employment of women in canneries; it was adopted and made effective June 27, 1913. This was followed by rule No. 2, inclosure of factory stairways, adopted October 1, 1913, effective October 1, 1913, and rule No. 3, storage of combustible material about factory stairways, adopted August 18, 1913, effective October 1, 1913; thereafter no rules were adopted until 1916, for fire escapes as means of exit. Since that date the work of formulating rules has progressed rapidly and the division of industrial codes with the assistance of advisory committees is now engaged in revising rules in the following codes: Guarding of dangerous machinery; removal of dust, gases, and fumes; first-aid kits; window cleaning; and preparing rules for automobile spray painting; printing and allied trades; and rules for the manufacture, storage, and handling of explosives.

The work of formulating new industrial-code rules will go on indefinitely as conditions, devices, apparatus, and other influences on trade and industry develop, so that the hazards to those employed or to those frequenting places of employment or industry will always be at a minimum.

THE FUNCTIONS OF THE INDUSTRIAL BOARD

By Victor T. Holland, Executive Assistant to the Industrial Commissioner

THAT I may be able the more clearly to present to you what the functions of the industrial board are, I am going to give you briefly an outline of the organization of the Department of Labor, of which the industrial board is a part.

In the recent reorganization of the State government the one hundred and eighty and odd scattered departments, bureaus, boards, and commissions were consolidated into 18 departments. The department of labor is one of these.

The head of the department of labor is the industrial commissioner, who is appointed by the governor. The industrial commissioner has entire charge of the administration of the labor laws and the compensation laws.

In this course you will hear of these laws from other lecturers, who will tell you of the laws covering factories, mercantile establishments, places of public assembly, mines, quarries, tunnels, women and children in industry, etc., and the workmen's compensation law. The workmen's compensation law has ramifications extending directly or indirectly into practically every home in the entire State. Because of this and because of the way in which this law and the other ones known as the labor laws affect all of the people of the State, I always think of the labor department with its varied activities as "the human interest department of the State government."

The industrial board as at present composed is made up of five members appointed by the governor. These appointments must be approved by the senate of the State legislature. One of the members must be an attorney. The terms of the members are for six years, and the members of the industrial board, as well as the industrial commissioner, must under the law give their entire time to the duties of the office. I feel really that that provision of the law was not necessary, because the burdens that are placed upon the members of the industrial board and the industrial commissioner are so many and so exacting that it would be a human impossibility for any one of them to do anything other than the duties laid down for them by the law itself. Even as it is, any one of them will tell you that the days of the year are all too short for them.

Section 27 of the labor law defines the powers and duties of the industrial board in the following language:

> The industrial board shall have power, subject to the provisions of section twenty-nine of this chapter, to make, amend, and repeal rules for carrying into effect the provisions of this chapter, applying such provisions to specific conditions, and prescribing means, methods, and practices to effectuate such pro-

visions. It shall have power to hear and determine all claims for compensation under the workmen's compensation law in the manner provided by this chapter of the workmen's compensation law; to require medical service for injured employees as provided by the workmen's compensation law; to approve claims for medical service or attorney's fees, to excuse failure to give notice either of injury or death of an employee, to approve agreements, to modify or rescind awards, to make conclusions of fact and rulings of law, to certify questions to the appellate division of the supreme court, to enter orders in appealed cases, to determine the time for the payment of compensation, to order the reimbursement of employers for amounts advanced, to assess penalties, to commute awards to compromise actions for the collection of awards, to require or permit employers to deposit the present value of awards in the aggregate trust fund of the State fund, to determine by rule the assignment of a minor's right to sue a third party, to require guardianship for minor dependents, to hear and determine claims under the occupational disease act, to order physical examinations, to take testimony by depositions, and to have and exercise all other powers and duties, exclusive of purely administrative functions, originally conferred or imposed upon the workmen's compensation commission by the workmen's compensation law or any other statute, and by chapter six hundred and seventy-four of the laws of nineteen hundred and fifteen conferred and imposed upon the State industrial commission. For the purpose of exercising such powers and performing such duties, the industrial board shall be deemed to be a continuation of the state industrial commission; and all proceedings under the workmen's compensation law pending before such commission are hereby transferred to the industrial board without prejudice to the rights of any party to such proceeding. Any hearing, inquiry, or investigation required or authorized to be conducted or made by the industrial board may be conducted or made by any individual member thereof, and the order, decision, or determination of such member shall be deemed the order, decision, or determination of the board from the date of filing thereof in the department, unless the board on its own motion or on application duly made to it modify or rescind such order, decision or determination.

Section 28 gives the industrial board authority to make various rules pertaining to industries, using the following language:

Rules of the industrial board may be made for—

1. The proper sanitation in all places to which this chapter applies and for guarding against and minimizing fire hazards, personal injuries, and diseases in all places to which this chapter applies with respect to—

a. The construction, alteration, equipment, and maintenance of all such places, including the conversion of structures into factories, factory buildings, and mercantile establishments.

b. The arrangement and guarding of machinery and the storing and keeping of property and articles.

c. The places where and the methods and operation by which trades and occupations may be conducted and the conduct of employers, employees, and other persons.

It being the policy and intent of this chapter that all places to which it applies shall be so constructed, equipped, arranged, operated, and conducted in all respects as to provide reasonable and adequate protection to the lives, health, and safety of all persons employed therein, and frequenting the same, and that the board shall from time to time make such rules as will affectuate such policy and intent.

2. Whenever the board finds that any industry, trade, occupation, or process involves such elements of danger to the lives, health, or safety of persons employed therein as to require special regulation for the protection of such persons, the board may make special rules to guard against such elements of danger by establishing requirements as to temperature, humidity, the removal of dusts, gases, or fumes, by requiring licenses to be applied for and issued by the department as a condition of carrying on any such industry, trade, occupation, or process, by requiring medical inspection and supervision of persons employed or applying for employment and by other appropriate means.

3. The rules may be limited in their application to certain classes of establishments, places of employment, machines, apparatus, articles, processes, industries, trades, or occupations or may apply only to those to be constructed, established, installed, or provided in the future.

4. The rules of the board shall have the force and effect of law and shall be enforced in the same manner as the provisions of this chapter.

5. No provision of this chapter specifically conferring powers on the board to make rules shall limit the power conferred by this section.

Section 29 of the labor law provides that the rules which the board makes shall constitute what is called the industrial code. To adopt a rule, amend a rule, or repeal a rule, there must be three affirmative votes—a majority of the industrial board membership.

Before any rule is adopted or repealed or any amendment is made, public hearings have to be held, notices have to be given through newspapers, and all parties who are in interest must have an opportunity to appear and voice their approval or disapproval of any proposed change.

Section 30 of the labor law deals with "variations," providing that "if there shall be practical difficulties or unnecessary hardship in carrying out a provision of this chapter or a rule of the board thereunder affecting the construction or alteration of buildings, exits therefrom, the installation of fixtures and apparatus or the safeguarding of machinery, and prevention of accidents, the board may make a variation from such requirements if the spirit of the provision or rule shall be observed and public safety secured." Such action by the board—namely, the action upon an application for variation from a rule or an order previously made—is taken after a hearing has been held.

It is through the department of labor that the great humanitarian measure—the workmen's compensation act—is administered. The compensation law is intended to give quickly pecuniary relief to injured workmen. I shall not go into the history of this legislation other than to tell you that after the first workmen's compensation law had been declared unconstitutional the constitution of the State of New York was amended, and the law was again enacted and has now been in operation since July 1, 1914. This legislation met with the greatest possible opposition in its early history. That opposition has very largely disappeared at the present time, and I do not believe now that any employer in the State of New York would, if the opportunity presented itself to him, return to the old order of things. Employers of labor who come under the provisions of the compensation act, I am certain of my own knowledge, feel that this way of handling claims of injured workmen is greatly to be preferred to the old scheme. The workers themselves, I know, also feel that the workmen's compensation act is just, fair, and provides protection for them that was never before provided.

Year by year from its beginning—14 years ago—the compensation law of the State has been broadened and extended and enlarged until at the present time it is without doubt the most liberal in its terms of any compensation act in the United States. Amendments passed by the last legislature have extended the coverage of the act until now there are few employments that do not fall within the scope of the law.

It is in the handling of the claims arising under this law that the industrial board's time is greatly taken up, although, of course, the compensation work is not by any means all of the work. The code making referred to above and the granting of variations from the requirements of other laws also take a heavy toll of the time of the board members.

I shall tell you first of the codes and the variations. Under section 28 that I quoted above the board makes special rules covering particular industries. These rules form the industrial code of the State. We have codes on dangerous machines, on scaffolding and building, on laundries, foundries, and many other special classes of industry. The laws themselves make general provisions and the board supplements these laws with rules that once adopted have the same effect as the law. The codes go into greater details than the statute, and, generally speaking, the requirements of the code are more severe than the law itself.

Code making is the subject to be handled by another speaker, so I shall not detail this to you.

Granting of variations is another subject that the board has to give much time to. Briefly this may be said to be the acceptance by the board of a substitute for the requirement of the law or code. A simple example of this is the following: A door, under the law and code, is required to open outwardly and to be 3 feet 8 inches wide. The person to whom this order has been directed finds it impossible to swing the door outwardly, but he can swing it inwardly if the width of the door is reduced. So he asks the board to accept a door 3 feet 6 inches wide swinging inwardly, showing that this change from the order will in nowise endanger life. After an inspection and a hearing the board acts on the request and either grants the application for a variation or denies it.

It is probably in connection with the workmen's compensation law that the board is most widely known because all of the hearings on claims arising under this act are held in the name of the board. I told you a few minutes ago that I always think of the labor department as the human-interest department of the State government. It is largely because of compensation work. To us come the lame and the halt and the blind. The sorrowing men and women and children injured in the course of their employment daily come to our offices throughout the State. They come by the many hundreds and throughout the entire year, six days per week; every day in the year, except of course the holidays, we are attending to their claims.

While the employees of the department may be moved by sympathy—and some of the cases are of such a kind as to strike deeply—all of these claims must be adjudicated on a strictly legal basis, according to law. For in addition to the injured worker, there are the employers and the insurance companies whose rights must also have consideration. And it is in the adjudication of these claims that the industrial board is kept busy day in and day out. Of course, with the hundreds of thousands of claims being presented each year, it would be humanly impossible for a board of five members to dispose of all of them. And so the law provides that there shall be referees appointed. In the department there are 28 referees. They hold hearings daily all over the State—in the big centers, New York, Albany, Syracuse, Rochester, Buffalo, and also in the smaller communities—the hearings being held in as many places as possible that the injured person may as quickly, as conveniently and as inexpensively as possible have his claim passed upon. It is not my intention to burden you with statistics nor to bore you with a lot of detail, but a certain amount of the latter will be necessary, I feel, to give you a

picture of what the work of handling compensation claims is like. So I shall take the case of a man who is hurt while at his work and follow this through to a termination. Let us assume that Richard Roe, working as a machinist, gets his hand in a machine to-day and is so badly hurt that he can not work. Under the law the first thing for him to do is to report the accident to his immediate superior. The quicker the report is made, the better it is for all concerned, but the injured person under the law *must* make the report within 30 days both to his employer and to the industrial commissioner. At once the employer must furnish a doctor and the necessary treatment. Within 10 days the employer is required to make a report of the accident in writing to the department of labor. This report may be sent to the main office at the capitol in Albany or it may be sent to any of the branch offices. Of course the great majority of employers have insurance companies carry their compensation insurance just as they do their other insurance.

The insurance company is notified at once by the employer, and it is generally through the insurance company that the injured receives his medical treatment.

Section 25 of the compensation law provides that the first payment of compensation becomes due on the fourteenth day of disability, and the employer or his insurance company has four days thereafter in which to make payment. In other words, if a man were injured on June 1, his first compensation payment would be due on June 14, and the carrier under the law would have to pay it on that day or within four days thereafter. It is then provided in the law that all following payments during the disability shall be paid every two weeks. This same section provides that the compensation "shall be paid periodically and promptly in like manner as wages and as it accrues and directly to the person entitled thereto without waiting for an award by the industrial board, except in those cases in which the right to compensation is controverted by the employer."

Compensation is not paid for the first week of disability except where the injury is so serious that the claimant is disabled for more than 49 days. This first week during which no payment is made is known generally in the department as the "waiting period." In the event that the injured person is disabled for more than 49 days, then he receives compensation for the first week.

Injured workers sometimes become confused between a notice of injury and a claim for compensation. They are separate papers. The law provided up to the 1st of July of this year that the right to claim compensation "shall be barred unless within one year after the accident, or if death results therefrom within one year after such death, a claim for compensation shall be filed with the commissioner." In other words, if an injured worker did not file with the department of labor a claim for compensation within 12 months after his accident, he could not, if objection were made, sustain his claim. This has now been amended by giving the industrial board the power by unanimous vote of the members qualified to act to permit the filing of the claim for compensation after the expiration of one year from the date of the accident but not exceeding two years after the date of the accident when it shall find that such filing shall be in the interest of justice.

Of course, every accident is not paid for, because the employer or the insurance company has a right under the law to controvert an injured person's claim for compensation. Claims are controverted for many reasons. Included in these are contentions by the insurance company or by the employer that the man did not receive his injury in an accident while in his employment; that the condition from which he suffers was not due to the accident (causal relation that is generally designated) and that notice was not properly given; that because of failure to give notice within the time specified the carrier had been prejudiced in his rights, etc.

When the first paper reaches the department, it is given a number and placed in a manila folder. This paper may be the report of the accident, the report of a doctor, or any of the other papers necessary. Thereafter all papers that have to do with this particular case are kept together in the same folder and each has the same number. In the hypothetical case we shall assume that the accident was a clear-cut one, and the insurance company at once bagan paying compensation. Under the law the injured worker is entitled to two-thirds of his average weekly wages with a maximum of $25 per week during the time that he is wholly disabled and $20 maximum during partial disability. Upon the beginning of payment the insurance company files with the department a form setting forth what it is doing in the way of payment, the rate, how long it has paid, when compensation payments began. Thereafter, when for any reason it stops payment, it files a second form, a notice that payment has been stopped because the man has recovered or for some other reason. A hearing is held as soon as possible after the accident; generally this is done within 14 days. At that hearing the referee hears all parties who may desire to be heard. Witnesses are produced, are put on the stand, and testify under oath as to their knowledge of the accident and other vital facts. The doctor who attended the man is sworn—although not always, as the doctor's sworn reports in the file are accepted very often without the necessity of the doctor being present. In the cases in which the injured person's claim is opposed or controverted, a hearing is fixed for a certain day, and on that day a trial is had. These trials give all interested parties their day in court, and on the evidence that is submitted to him the referee makes a determination. This determination is the award. On the facts that have been presented the referee may award the claimant disability for a certain period of time at a certain rate or he may hold that the contention of the insurance company that the man at the time was outside of his employment is correct and that the man was not therefore entitled to compensation. That being the case, he dismisses the claim—disallows it on the ground that at the time of the accident the man had taken himself outside of his employment. Of course, there are other reasons for which a claim may be disallowed.

These decisions by the referee may be made at the conclusion of the taking of the testimony, or if the case presents a knotty problem, the referee will reserve his decision. The testimony will be transcribed by the hearing stenographer, who attends all of these hearings, after which the referee will read it over carefully, looking up the cases that have been cited in support of both sides and make his decision.

Our hearings are held in courtrooms, in fire houses, in police courts—all sorts of places. The hearing rooms are furnished by the localities in which the hearings are held. The department does not have funds to pay rentals for these places, but the communities very generously cooperate with us to provide proper and suitable rooms. The hearings differ considerably from trials in courts of record. The work is done at a much higher speed. It is nothing unusual for a referee to have 50, 60, 70, or even as high as 100 cases that he must pass upon in a day's time. These cases present not easy simple questions, but many of them are very very difficult. Picture if you will a small room crowded to its capacity with claimants, witnesses, lawyers, doctors, employers, and representatives of insurance carriers. Included in the claimants are men and women in all walks of life. Cases are called in rapid succession and disposed of with celerity. In the cities, of course, where there are branch offices, the referee's work is in the department itself, although here and there throughout the State even where there is a branch office space is so limited that outside rooms have to be secured. In Syracuse it is necessary to get outside space at times.

The case which was cited above is of the class that we call disability cases. Then there is the class of case that is called a schedule loss case. An example of this is the case of a man who receives an injury to his eye, is disabled, and eventually loses the vision of the eye. For such a disability the law says the injured is entitled to 160 weeks of compensation. Let me say in this connection that every member has a fixed valuation laid down in the law. The greatest of these is the arm, with a valuation of 312 weeks. The other values laid down are:

	Weeks		Weeks
Leg	288	Great toe	38
Hand	244	Second finger	30
Foot	205	Third finger	25
Eye	160	Toe other than great toe	16
Thumb	75	Fourth finger	16
First finger	46		

Besides the above list there is provision made for compensation for the complete loss of the hearing of one ear, which is for 60 weeks, while for the loss of hearing in both ears compensation is fixed at 150 weeks.

Percentage losses are also permitted to be made. Heretofore the law provided that compensation for an arm or a leg if amputated at or above the elbow or knee should be the same as the loss of the entire arm or leg, but if amputated between the elbow and the wrist or the knee and the ankle the compensation was the same as for the loss of the arm or foot. This now has been changed by an amendment of the last legislature, so that a percentage loss may be made for amputations above the wrist and above the ankle. Another provision is made that the loss of binocular vision, or the loss of 80 per cent or more of the vision of the eye is the same as for the loss of the eye.

Another class of cases is the death case. This is the case in which the injured dies as a result of the injury sustained in his accident. In these cases the law provides that the dependents of the deceased are entitled to compensation benefits, the first of which as laid down in the law are funeral expenses not to exceed $200. A surviving wife or dependent husband is entitled to 30 per cent of the average

wages of the deceased. This compensation is paid during widowhood or widowerhood with two years' compensation in one sum upon remarriage. If there are surviving children of the deceased under 18 years of age, the law provides that each child shall be entitled to 10 per cent additional, with a limitation that the total amount shall not be in excess of 66⅔ per cent of the average wages of the deceased. Death benefits to the children cease when the children become 18 years of age. In the cases of the subsequent death or remarriage of the surviving wife or dependent husband, any surviving child of the deceased under 18 years of age at that time who had previously been drawing 10 per cent compensation is entitled to have his compensation increased to 15 per cent. In the event the deceased left no surviving wife or dependent husband and no child under the age of 18 years, or if the amount payable to the surviving wife or dependent husband and to children under the age of 18 years be less in the aggregate than 66⅔ per cent of the average wages of the deceased, then provision is made for the support of grandchildren or brothers and sisters under the age of 18 years if they were dependent upon the deceased at the time of death. The amount allowed to them is 15 per cent; further for the support of each parent or grandparent of the deceased if dependent upon him at the time of the accident, 25 per cent of such wages, but in no case shall the aggregate amount payable be in excess of 66⅔ per cent. The maximum amount of wages that may be considered in a death case is $150 per month. Another type of case that comes before the department is that of facial disfigurement. In this connection the compensation act says the board may award proper and equitable compensation for serious facial or head disfigurement not to exceed $3,500. These awards are in addition to awards made for disability and are made in cases where persons are badly scarred on the face or head. These scars must constitute serious facial disfigurement.

Generally the referees hear the cases in the first instance, although very often the board members themselves do preside on the first trials of a claim, but the large part of the board's work, in so far as the compensation is concerned, is in connection with requests made by one party or the other for a review of the referee's finding from awards that may have been made by the referees.

Returning to the case of Richard Roe, let us assume that in that case there was a dispute as to the length of his disability or that there was controversy as to the proper wage rate at which the award should be made. The evidence having been presented, the referee made the award at $21.30 per week for a period of 15 weeks, being satisfied of the rate and of the length of time the man was disabled. That gave the injured person a total award for his injury of 15 times $21.30, or $319.50. The insurance company contended that the rate was too high and that the length of disability was not properly established. In that case the insurance carrier has two procedures to take; one of these is appeal his case to the industrial board and the other is appeal it to the appellate division of the supreme court. He can take one or both of these procedures; as a rule when an appeal is taken the insurance carrier avails itself of all the rights given and files the notice of appeal to the appellate division and also asks the industrial board to review the award. The case is then presented to the industrial board, and the industrial board either finds with the referee

or against him. Assume in this case that the referee's finding was sustained; thereafter the insurance company may go on with his appeal to the appellate division and, further, may go to the court of appeals of the State.

Each year each referee of the department hears thousands of cases and makes thousands of awards that represent disbursements of millions of dollars; all of these awards are made in the name and with the authority of the industrial board. The board members themselves are sitting constantly as an appellate body listening to the appeals that are made to it by dissatisfied employers, insurance carriers, or dissatisfied claimants.

I know I have not been able to draw for you the vivid picture of compensation work that I wanted to in order to convey to you something of the magnitude of the work of the industrial board, but I hope that I may have given you a sort of an idea of it all. These hearings are open to the public. Daily in your city they are being heard, and may I suggest that you supplement this rather sketchy presentation of mine by attending a hearing and seeing for yourselves just how the industrial board functions in so far as the handling of compensation claims is concerned.

THE INSPECTION BUREAU AND ITS MEANING TO INDUSTRY

By James L. Gernon, Director, Bureau of Inspection

Enforcement of the Factory Inspection Law

TO COMPREHEND fully what is involved in the task of enforcing the labor laws as they relate to the many diversified industrial establishments in New York State it is necessary for those interested to clearly visualize the vast proportions that the industrial establishments in New York State have assumed. While it is known in a general way that New York State is the Empire State and the leading industrial and commercial State in the United States, one is amazed at the lack of knowledge which exists as to the industrial importance of the State among a large proportion of the people who should be better informed. However, this general statement does not properly convey to those interested just how large are the number or how important are the industrial establishments in New York State. It is therefore an interesting fact that there are in this State the following number of industrial establishments which the bureau of inspection is required to inspect:

Tpye of Establishment	Number	Employees
Factories	66,364	1,409,976
Mercantile establishments	78,864	409,059
Buildings under construction	19,591	319,186
Mines, tunnels, quarries, and magazines	1,918	----------
Boiler inspection	4,255	----------
Places of public assembly	768	----------

Labor laws were enacted to protect the health and safety of the employees and incidentally, in some features of the work, to protect the public. Section 200 of the labor law declares that "All places to which this chapter applies [meaning the labor law] shall be so constructed, equipped, arranged, operated, and conducted as to provide reasonable and adequate protection to the lives, health, and safety of all persons employed therein."

The power is granted to the industrial board to make rules to amplify and carry into effect the provisions of the labor law. While the present labor law makes ample provision to afford protection to the employees in industrial establishments, especially the hazardous employments, such was not always the case.

Child Labor and Illiteracy

On July 1, 1886—42 years ago—factory inspection was inaugurated in New York State. In the year 1883 the State bureau of labor statistics was established by legislation. Prior to that time the laws affecting labor were part of the general law, such as the railroad law, the school law, etc., or were embodied in the civil and penal codes.

There were at that time a few laws on the statute books which indicated the State's interest in the life and work of children. In 1853 the New York State Legislature enacted what was called the "truancy law" to prevent idleness and street running on the part of children 5 to 14 years of age and required children to attend school at least four months each year. During the remainder of the year they were permitted to stay at home or engage in lawful occupations (ch. 185). This act was revised in 1874 by the compulsory education law (ch. 421), which was the beginning of compulsory education in New York State, and required all children in the State between 8 and 14 years of age to attend school (or receive equivalent instruction at home) for a period of at least 14 weeks each year. It specifically prohibited their employment out of school hours unless they had attended school that length of time in the preceding year. This law forced many of the children who had idled their time in the streets and those employed to attend school at least 14 weeks each year.

In 1885 the report of the bureau of labor statistics to the legislature showed the result of its investigation relative to the enforcement of the provisions of the compulsory education law. It was very evident that in the absence of special officers to enforce these provisions the law was a dead letter in such parts of the State where child labor was profitable in factory production. We have here a clear illustration of what happened in the early efforts of the State to promote the welfare of children of tender age when legislation was enacted and no adequate provision made for its enforcement. Since this early effort we have seen many instances where legislation was enacted, but because adequate means for the enforcement of such measures were not provided the result of the enactment was nil.

An investigation conducted in 1885 by the bureau of labor statistics demonstrated that the truancy and compulsory education laws enacted 10 years previously had been of little effect in improving conditions in a practical way. Although these laws had produced some improvement, the conditions existing at that time were far from satisfactory.

The report of the bureau of labor statistics led to the enactment in the following year (1886) of the first factory law in this State and was known as chapter 409 of the laws of 1886. Among other provisions it prohibited the employment of children under 13 years of age in any manufacturing establishment, making no exceptions for children of needy families. It will be noted that the school law required children to attend school until 14 years of age, while the factory law permitted children 13 years of age to be employed. After 18 months' operation of the factory law the factory inspector appointed for the enforcement of the law reported that he had sent some 2,000 children to school.

Inception of Factory Inspection

The first labor law, which was passed May 18, 1886, was entitled "An act to regulate employment of women and children in manufacturing establishments and to provide for the appointment of inspectors to enforce the same." It provided that no child under 13 could be employed and every child under 16 was obliged to be recorded in a book kept for that purpose by the employer and have on file a certificate, duly verified by the parent or guardian, stating the age and place of birth of such child; and the certificate and book record were obliged to be produced when required by the inspector.

It further provided that a printed notice be kept posted in a conspicuous place in every workroom showing the number of hours per day for each day of the week for children under 16 years, male minors under 18 years and women under 21 years, and prohibited work for a period longer than 60 hours per week *unless for the purpose of making repairs*. It also stipulated that outside of cities of the State a factory employing less than five persons or children was not considered a manufacturing establishment.

To enforce these provisions one factory inspector and one assistant factory inspector were provided. No money or provision was made for providing an office for these inspectors. Small as was the force, the conditions found and reported soon focused attention on the problems of child labor, illiteracy, and also illegal hours of employment of children and females under 21 years of age.

The report of the work of these two inspectors clearly centered attention on the fact that because of the lack of enforcing agencies the compulsory education law was not enforced in New York State. This condition naturally encouraged the employment of child labor to a degree that was beyond conception. The protection afforded children engaged in industry to-day is far in excess of what it was in the early eighties, and it should be noted that very little progress was made in this direction until the State provided an enforcing agency of factory inspection. At first the force was inadequate for the task but sufficient to bring the deplorable condition which existed to the attention of the public and the legislature. Their work proved conclusively that children of tender years were deprived of the opportunity for even the rudiments of an education and were forced into industry because their labor was considered profitable.

The first report of the factory inspector cited conditions found in one textile mill in the State employing 3,200 employees, 1,200 of whom were children under 16 years of age. The management of the mill admitted that when the law was enacted more than 200 children under 13 years of age had been discharged. It should be noted that the law only required as proof of age "a certificate duly verified by the parents or guardian." A large number of the 1,200 children claiming to be 13 years of age were under 13, many of the parents having made false statements as to the ages of their children.

The management of the plant stated in explanation of the retention of those children under 13 years "That if the law was enforced to the letter immediately it would result in a stoppage of a great part of the machinery and consequent idleness of hundreds of older employees."

The report of the inspectors showed that illiteracy was actually alarming. Thousands of children born in this country, or who came

here in early childhood, were unable to write; many were unable to read, and still other thousands could do little more than write their own names. One-third of the affidavits examined by the inspectors in factory towns were signed with a cross mark. It was clearly shown that the problem of child labor and compulsory education was very closely allied and with the proper agencies for the enforcement of either law many children would have been taken from the factory and placed in schoolrooms.

The report of the State superintendent of public education for the year 1885 showed that there were 1,685,100 children of school age in the State of New York, that 1,041,089 attended school; therefore 644,011 were receiving no education or were employed in industrial establishments. With this condition existing was it amazing to learn from the first report of the factory inspector that "even the height of the machinery has been apparently regulated for the express purpose of utilizing the labor of the youngest children"? Many of the children found employed were just past the legal limit of 13 years and they had been employed for from 5 and 6 years and had never attended school.

It was after this practical effort to limit these violations concerning child labor and illiteracy among the large number of children found employed in the early eighties that the inspection bureau was conceived and created.

In 1889 the legislature raised the statutory age limit for factory employment to 14 years and at the same time prescribed the educational requirements (ability to read and write simple sentences in English), together with requirements for physical fitness. These requirements placed New York State in advance of other States and countries at that time.

Since then amendments have been made from year to year until to-day children under 14 years of age are absolutely prohibited from employment, and the employment of children between 14 and 17 is carefully regulated.

Although the labor law had been improved, adequate help to enforce its requirements was not provided and because of the intolerable conditions then existing the legislature of 1895 authorized the Reinhard legislative investigation of female and child labor in New York City. The report of this investigation is contained in two substantial volumes of the findings of the committee and resulted in the enactment in 1897 of many beneficial amendments to the labor law.

From the time of the earliest attempts to enact child labor laws, and each attempt to develop and improve the other features of the labor law the argument has been made by those in opposition "that this kind of legislation would drive manufacturing out of the State of New York." Regardless of these protests New York State has steadily grown in industrial and commercial importance and still retains its right at the present time as it did in the earlier years to be known as the Empire State, and with this growth because of the many wise provisions of the labor law the industrial workers, both children and adults, have advanced in intelligence and efficiency and it is within reason to say that the intelligence of the industrial worker of this State was never at a higher standard than it is at the present time.

Development of the Labor Law

With the advent of factory inspection it was soon very evident that child labor, illiteracy, and illegal hours were not the only conditions to be corrected in industry. About this time warning was given as to the unsafe conditions in case of fire and the necessity of providing safe means of escape; the urgent need for all doors from factories to open outwardly and to remain unlocked. It was recorded that "it was the practice of owners or managers of industrial establishments to lock the doors and keep the keys in their pockets." Added to this was the menace to health because of the insanitary conditions which prevailed very generally.

Although the attention of the legislature was called to all these conditions little attention was paid to them until on November 10, 1888, the public was shocked by the details of a catastrophe in the city of Rochester resulting from a fire which caused the destruction of the Steam Gauge and Lantern Works of that city, resulting in the death of 35 and the injury of 14 persons. An investigation made by the authorities revealed the fact that the appalling result of that fire was due to improper stairways, defective fire escapes, and hoistways not properly inclosed. It is worth noting here that although there were many more serious factory fires than this one, it was not until the appalling loss of life occurred to factory workers, as, for example, fires such as occurred in the cities of New York and Binghamton, that attention was given to making factory buildings safe in case of fire, and to do this it took from 1888 to 1913, or a period of 25 years, to accomplish such results.

The investigation in the early eighties directed attention to the disheartening outcome of industrial injuries due to unguarded machinery and other causes, as the frightful loss sustained and the suffering resulting from those injuries had been unheeded for a great number of years. Here again we have a demonstration of how difficult it is to bring about industrial reforms, as it took more than a quarter of a century to make changes in the law to provide compulsory compensation for industrial injuries.

An examination of the history of State factory inspection shows that each officer appointed by the different governors of the State indicated from time to time the improvements in the labor law that were necessary to make the law ample to afford proper protection to those employed in industry. While many changes were made in the law in this manner considerable difficulty was experienced in securing what was required. Usually, after failing to heed the recommendations of the different heads of the department, the improved legislation was not secured until after a serious disaster had occurred or conditions complained of were so acute as to require the appointment of a legislative commission or committee to examine into the conditions. In many instances real progressive steps in improving the labor law were taken as the result o a report of legislative investigations.

The first of these was the Reinhard legislative investigation of female and child labor in New York City, that committee having been created by a resolution of the assembly in the year 1895.

The second was generally known as the Wainwright Commission, taking its name from Senator J. Mayhew Wainwright, the chairman.

This commission was created by chapter 518 of the laws of 1909 to inquire into the question of employers' liability and other matters. It was this commission that provided the first compulsory compensation act—(chapter 674 of the laws of 1910), which act was declared unconstitutional by the court of appeals, March 24, 1911. Among other matters considered by this commission were the causes of industrial accidents and the inadequacy of the factory inspection force.

The third was the factory investigating commission, created by chapter 561 of the laws of 1911, entitled "An act creating a commission to investigate the conditions under which manufacturing is carried on in the cities of the first and second class in the State." This commission made an exhaustive study of industrial conditions and carried on their work for several years. As a result of this work progressive steps were taken relative to improving the labor law as to safe means of escape from factory buildings in case of fire, and providing an increase in the force of inspectors to apply the provisions of the laws enacted.

The fourth was the legislative committee empowered in 1920 to study the labor law and submit a plan for its recodification and revision. The recodification and reorganization bill was signed by the governor on March 9, 1921. This committee not only revised the labor law, but made provisions for the reorganization of the department of labor which resulted in a large reduction of the force, and the inspection force particularly. On April 15, 1921, the reduction of the inspection force was larger than that of any other branch of the department activities and it was so noticeable that it was necessary for the legislature of 1922 to make provisions to restore the inspection force to what it had been in the early part of 1921.

The fifth was the New York State Industrial Survey Commission, authorized by a concurrent resolution of the legislature on March 9, 1926. This commission has carried on investigations and recommended changes in the compensation law, but have not yet completed their labors. The time of the commission has been extended to report to the legislature in March, 1929.

There is here stated as briefly as possible a mere outline of the history of the creation of the bureau of inspection and the development of the labor law. It will be seen from this outline that its task is an essential part of the work connected with the industrial problem affecting the industry of the State. The inception of this work and the reports made of existing conditions in industry have been a means of developing most of the activities in the several branches of the department of labor as they exist to-day.

What Does Inspection Mean?

Inspection means a visit to industrial or mercantile establishments and other places to which the law applies, thoroughly covering the premises and making a survey of the buildings where necessary. This survey includes a floor plan of the building, indicating the exits or means of escape, including stairways, horizontal exits, outside stairs, etc., elevators, hoistways, and other features covered by the law and code rules. In addition to the survey of the building a report giving complete details of the conditions of the building as to its

compliance with the law and all violations of the law is made on the building and inspection cards.

In instances where violations are found orders are issued to the employer or owner of the building to correct the conditions to which the orders relate. A time for compliance is fixed in the notice of orders. If compliance is not secured with the orders issued on the first compliance visit, which is not made until the expiration of the time fixed in the original notice of orders, the inspector must see someone in authority and fix a time for compliance. If the order is not complied with at the time of the second visit the department is empowered to prosecute the violator.

The number of cases presented to court for failure to comply with the orders issued in comparison with the large number of establishments inspected, or the orders issued and compliances secured, is very small. The essential feature of this method is that the inspector is required to explain to a proper person in connection with the premises each order that is to be complied with, and state in each report the person to whom the explanation of the orders was made. He must tell him how to comply with the orders issued. The name of the person appears on the form containing the orders sent to the firm or owner of the building to whom the orders are issued. Should the orders be received by some one other than the person to whom the orders were explained at the time of inspection he can readily refer to the person named in the notice and get the necessary information. This plan aids both the person receiving the orders and the department by reducing needless correspondence seeking information relative to the orders issued.

Educating the Employer and Employees

One of the chief activities of the inspection force is the educational work it performs and accomplishes, first, by acquainting the employer as to the requirements of the labor law and the code rules advising him how to comply in a legal way with the orders issued, at the least possible expense but in a manner that will mean a substantial compliance with the law; second, calling the attention of the employer or employees to the necessity of safe practices in industry; to providing proper guards to prevent industrial injury on hazardous machines, and the safe practices to use in the operation thereof; to the hazards of the particular plant and to industry generally.

There are those who do not favor inspection work. Usually in this class are those who do not believe in protecting the employee. The records of the results accomplished by the State inspection bureau of the department of labor as shown by the reports of industrial injuries tabulated by the statistical bureau of the department of labor demonstrate that by the constant inspection of industrial plants and the corrective orders issued and compliances secured we are reducing the number of injuries. Further, we are preventing thousands of injuries that would happen if the machinery and other hazardous conditions were not properly corrected. It should be borne in mind that there is no way of compiling figures as to what might have been had the law not been enforced. We do, however, know the appalling cost and suffering due to industrial injuries that are happening regardless of all that is being done to safeguard industrial workers. If all of

these efforts and safeguarding of hazardous conditions were not provided, what might happen in the way of industrial injuries would be astounding.

It is sometimes claimed that there is greater value in educational work in preventing industrial injuries, or making industry safe for those employed, than that accomplished through the authority exercised by the State inspectors in compelling observance with the provisions of the labor law and the code rules. We have the opportunity to observe both sides of this question, and many firms are doing excellent safeguarding work and have carefully worked out plans to educate employees. Still, on an inspection, orders are issued to improve these plants because of the failure to observe many conditions that are a menace to employees.

Education is a potent factor for achieving good results where such education is absorbed, and in this connection it should be remembered that we are not dealing alone with the few well-conducted plants, but with many thousands of places where the owners may know how to make a certain product and, outside of this, either know nothing of safe practices or safeguarding machinery, or care nothing for either. As we find conditions, educational work imparted by the State inspectors and other agencies is not always absorbed by either the employer or the employee; at least this is true to a very large degree. It is conceded education is good for those who are capable or willing to learn the best method to make their industry safe and as free from industrial injuries as possible. Most of the employers cooperate with the inspection bureau in bringing their establishments into compliance with the law and thus protecting their employees as far as it is humanly possible. Many go further than the provisions of the law in their efforts to protect employees. Many employers cooperate with the bureau of inspection because they know it is good business and pays profits; some comply with the law and its requirements because it is the law, some reluctantly and others willingly.

There is another class that refuses to be educated until it is learned that there is a possibility of going to court for punishment. There is still another class that does nothing until taken to court. The latter class is small in comparision with the number that do comply with the law or the orders issued, but as a class they are persistent and going to court seems to have no deterrent effect.

The Labor Law and Industrial Code Rules

To fully understand what is involved in the enforcement of the labor law in New York State it must be understood that the bureau of inspection of the department of labor is both the educational agency and the means of enforcing the many provisions of the law and industrial code rules. The law and code rules are applicable to factories, mercantile establishments, mines, tunnels, quarries, steam boilers, buildings under construction, places of public assembly, etc. The labor law consists of 18 articles, containing 221 separate sections of the statutes. These provisions of the law are amplified by 30 industrial code bulletins, including the State standard building code, and these codes consist of 1,007 separate rules. Each of the rules has the force and effect of the law itself. Many

of the rules were made for the purpose of protecting the employee from industrial injury.

The enforcement of all of these provisions of the law and code rules as they apply to industries is a difficult task and requires the inspector to be familiar with all of their requirements as they may be applicable to the different types of establishments that he may have to inspect in the performance of his duties.

During the report year ended December 31, 1927, we issued orders and secured compliances in the various classes of inspection work as shown in the following table:

Kind of inspection work	Orders	Compliances
Factories	169,240	166,524
Mercantile establishments	110,938	110,172
Buildings under construction	27,924	27,743
Places of public assembly	69	54
Mines, tunnels, quarries, and magazines	1,406	1,336
Boiler inspection	4,459	[1] 4,890

[1] Including compliances with orders that were pending at the beginning of the year.

The results accomplished as shown by these figures indicate in the main that employers are cooperating with the bureau of inspection by complying with the orders issued. As a matter of fact, the results as presented here would not be achieved if it were not for the fact that the bureau is a State agency with power to go to court if employers will not comply with the law's requirements.

Reducing Hazard of Machinery

It will be noted from the figures given that the greatest amount of the inspection work is in connection with factories, mercantile establishments, and buildings under construction. It is in these three branches of the inspection work that we issue the greatest number of orders and naturally secure the largest number of compliances. The largest amount of machinery exists in the factories of the State. Considerable machinery is used in mercantile establishments and there is some machinery operated in connection with large building construction operations.

In order that some idea may be gained as to the importance of the factories and mercantile establishments, it is well to understand that we inspected 66,364 factories and 78,864 mercantile establishments during the year ended December 31, 1927. In both classes of this work the largest number of orders issued related to sanitation and machinery, as appear in the following tabular statements:

Inspection of factories

	Orders issued	Orders complied
Whole number	**169,240**	**166,544**
Elevators and hoistways	5,117	4,934
Machinery and apparatus	35,819	[1] 36,060
Total	40,936	[1] 40,994
Sanitation	39,176	38,686

[1] Including orders that were pending at the beginning of the year.

It will be noted here that the orders for sanitation in factories almost equaled the number of orders issued for elevators and hoistways, and machinery and apparatus.

Inspection of mercantile establishments

	Orders issued	Orders complied
Whole number	**110,938**	**110,172**
Elevators and hoistways	2,244	2,238
Machinery and apparatus	1,686	1,552
Total	3,930	3,790
Sanitation	33,322	22,710

It will be observed that the orders for sanitation in mercantile establishments far outnumbered the orders issued for elevators and hoistways and machinery and apparatus.

In all of the work performed by the inspection bureau where orders are issued and compliances are to be secured we have a very satisfactory condition. In no instance is there a better showing than that in connection with orders issued to guard machinery. These orders are considered important because the machines are hazardous to the employees and if not immediately complied with result in industrial injury.

We have the right under the law to tag as unsafe a machine that is not properly guarded and is hazardous. Consequently we have two means of securing compliance where the orders issued are not readily complied with by the person or firm to whom they are issued. We can tag the machine and stop its operation or we can prosecute for a violation. In comparison with the orders issued and the compliances secured relative to the machinery orders, the number of instances where we have to tag machines or prosecute is small. Most of the employers realize that machinery should be guarded and immediate compliance is necessary. We have been issuing orders against machinery for a number of years. Because of the policy followed by the inspection bureau we have made an impression upon factory owners as to the necessity of keeping their machinery properly safeguarded.

It should be understood that in comparison with all equipment in industrial establishments the number of machines in industry far outnumbers all other types of equipment. It would be quite natural to suppose that machinery was the most potent factor in causing injury, but such is not the case. A tabulation made by the bureau of statistics of the department of labor as published in the Industrial Bulletin of February, 1928, shows a study of five years of machine accidents. This study states as to machine accidents: "They have been increasing much more slowly than most other types of industrial accidents. They have shown a more marked improvement in the number of permanent injuries compared with the number of temporary injuries. They have caused fewer amputations and severe crushing injuries." It further states: "The most important fact showing that there has been a very substantial reduction in the severity of machine accidents is that there was an increase of only 26 per cent in the number leaving workers with permanent injuries to hands,

fingers, arms, or eyes. At the same time the number of all permanent partial injuries has increased 80 per cent. Thirty-six per cent of all such injuries were caused by machines in 1922–23 and 25 per cent in 1926–27." This study further shows in connection with power presses and power saws: "In these two groups an improvement was most evident. It is very significant that the best results were obtained where the hazards were most serious."

A previous statistical study of compensated industrial accidents in New York State as to the causes of injuries reveals the following interesting comparisons covering the quinquennial period 1923–1927:

Cause	Percentages, year ended June 30—				
	1923	1924	1925	1926	1927
All causes	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Handling objects	25.7	26.6	26.2	27.7	28.0
Falls of persons	15.9	16.0	17.9	18.3	18.3
Machinery	15.8	14.8	13.6	13.6	13.2
Vehicles	8.0	8.5	8.9	9.0	9.0
Hand tools	6.6	6.5	7.3	7.6	7.6
Falling objects	6.7	6.5	7.1	6.5	6.3
Stepping on or striking against objects	4.9	4.5	4.1	4.3	5.0
Other causes	16.4	16.6	14.9	13.0	12.6

These figures are significant, for they show in considering the vast amount of injuries for which compensation was awarded that only 13.2 per cent of the total number (98,984) in 1927 were credited to machinery, a reduction as compared with 1923 of 2.6 per cent, the proportion in the latter year having been 15.8 per cent of 58,078 compensated cases, the whole number for all causes. Accidents occasioned by the handling of objects were far in excess of those occurring in connection with machinery, the ratio in 1927 being 28 per cent as compared with 25.7 per cent in 1923. Falls of persons were second in the group of causes—18.3 per cent in 1927, against 15.9 per cent in 1923. Accidental injuries caused by hand tools occupy fifth place in the above groups, with 7.6 per cent in 1927 compared with 6.6 per cent in 1923.

A careful study of these figures emphasizes the fact that accidents as a result of the handling of objects, falls of persons and the handling of tools, which in 1927 alone constituted more than one-half (53.9 per cent) of the whole number for which awards were made, afford a fertile field in which to train workers to stand, walk, sit, lift, or see and to use tools properly. There can be no question that many of these injuries occurred because employees were not properly instructed or did not know the hazards of the operation at which they were working, or were not possessed with sufficient skill to protect themselves from injury.

A person of ordinary ability would only have to visit some of the establishments in the locality in which he lives to observe abundant proof of these conditions. When industry can teach those conducting it to give proper attention to these fundamental steps we will have made a real step forward in protecting workers from injury. The workers will be relieved of much of the suffering and their families will not be subjected to the financial loss and misery resulting from industrial injury.

Cost of Industrial Injuries

The cost of industrial injuries is an indication of the appalling amount lost, much of which should be reduced by intelligent instruction and direction of industry. Industrial injuries reported to the department of labor for the year ended June 30, 1927, were 518,297, of which 98,984 were of a serious nature or compensable, which means the injured persons were disabled and had lost time in excess of the first seven days of the injury, for which seven days' lost time they are not paid unless the term of disability is in excess of 49 days. The awards in these cases amounted to $28,186,003. Add to this the medical cost, which would bring the total cost to insurance carriers to over $35,000,000. The injured employee, or his dependents in death cases, pay even more for industrial injuries both in the form of reduced remuneration during the period of disability and in the loss of one week's remuneration in cases where the disability does not exceed 49 days.

Statistics show that the average wage rate for injured employees exceeds the average compensation rate paid for industrial injuries by over $15 per week, so that for every week of compensation awarded, the injured employee or his dependents lose at least $15. Approximately 2,300,000 weeks of compensation were awarded in the aggregate during the year ended June 30, 1927, so that the total loss by injured employees or their dependents may be approximated at $35,000,000 more, bringing the total cost of industrial injuries to $70,000,000. Other factors, although of smaller magnitude, are very significant in further increasing the already burdensome cost of accidents. Even the seemingly minor injuries which are not compensable, involve a substantial cost to the injured employee. For example, in the report year over 400,000 such injuries were reported, averaging approximately two days of lost time for which the employee received no compensation. The value of this lost time may conservatively be approximated at well over $4,000,000 in addition. Of some significance in this connection is the cost to the injured employee for the first week of disability in cases of temporary disability not exceeding 49 days. Certainly, therefore, the total cost of industrial accidents in the State of New York to the insurance carrier and injured employee may be placed in round numbers well over $75,000,000 per year.

Even this large amount of money does not show all of the economic waste. The employer suffers loss in productivity and spoilage.

Industrial injuries occurring in a plant affect the other employees; this loss is due to other employees stopping work because of injuries; the loss of profits on services to an injured employee; injury to machinery, tools, material or property; and the training of a new employee.

One insurance company recently made an analysis of 5,000 specific accidents taken at random from their file. The analysis of the cost to the employer due directly to these accidents shows four times the total cost represented by compensation, liability claims, and medical treatment. Assuming that the ratio of cost is not as high as shown in the analysis of these 5,000 cases, it may be readily understood that even if the ratio were half of what was shown in this instance, it would be an enormous loss. Added to that resulting in the payment of

compensation, medical cost and lost time to the employee, it would be readily conceded that there is a great possibility through intelligent direction of industry to prevent industrial injuries and save many millions of dollars.

Equipment, Maintenance, and Efficiency

While mention has been made of the progress of reducing the cost and seriousness of injuries due to machinery it should be understood that inspection by the State does not cover all machinery used in the State. We have no power to inspect machinery or apparatus used in transportation, longshoring and agricultural work, but the record of industrial injuries due to machinery covered all machinery in the State, including machinery that is not subject to inspection by the State inspection bureau.

It should be known that in the inspection of mercantile establishments the labor department is limited to all cities in the State. In the towns and villages of over 3,000 inhabitants the labor law and code rules are required to be enforced by the boards or departments of health or health commissioners of those localities, but in reality the law and code rules are not enforced in such places. Even if those health departments or health officers were inclined to do the work for which they are responsible, they are not properly equipped with knowledge of the labor law or the proper method of safeguarding machinery, elevators, hoistways, etc., to properly apply the labor law and code rules. They should not be expected to do this line of work, as they are skilled in the methods of protecting the public health, and to do that in the average town and village they would have all the duties they could be expected to perform. To hold them responsible for the enforcement of the labor law is unjust, and it is very evident that it was the intention of those responsible for placing this duty on the department of health or health officers that they would not be able to perform the duties and thus release those conducting mercantile establishments in those towns and villages from observing the law. However, as provided in the labor law, "Any health officer failing to perform his duties is subject to the charge of malfeasance in office and shall be suspended or removed by the authorities having power to appoint or remove such officers, otherwise by the governor."

There is no valid reason why the labor law and the code rules relative to mercantile establishments should not be enforced by the State department of labor in towns and villages having health officers who have neither the time nor the inclination to perform these duties. The compensation law applies to mercantile establishments in these towns and villages of the State. Industrial injuries are occurring in connection with these establishments. They add to the total cost of industrial injuries reported in this State, but nothing is done to protect the employees or reduce the number and the cost of the industrial injuries in these localities.

If as the figures show the cost of compensation for falls of persons in industry is equal to the cost of injuries due to the vast amount of machinery used in industry there is reason for finding out what is basically wrong. Numerous injuries charged to machinery are the result of falling or stumbling on or coming in contact with moving

machinery. Many such injuries are the result of failure to provide sufficient working space at the point of operation of the machinery, or are due to unsafe floors or slippery or littered floors. The wearing of the right kinds of shoes is most important in industry. Feet free from pain and the ability to stand or walk correctly while performing work are necessary in order to reduce the hazards of many lines of work.

It is most essential that proper attention be given to the maintenance of machines, tools, and equipment, and providing and maintaining proper lighting facilities for industrial operation and workng space. Many injuries are the result of poor lighting and are also caused by machines, tools, and equipment that are not properly maintained or are in poor condition.

Where edge-cutting tools are used more injuries are caused by dull tools than by sharp tools. This fact should be impressed upon employers and employees, who should make it their business to insist that all tools and other working devices and apparatus are in suitable working condition before they are used.

Training Employees

Strange as it may seem, industry generally has not yet learned how to instruct workers to properly perform hazardous operations. In too many instances workers do not know or have not been taught by the management how to stand, walk, sit, lift, or see in order to do hazardous work or move about the premises where such work is being carried on. If we tell you that much of what is happening in connection with industrial injury is due to lack of proper instruction in the operation of hazardous machines, and the carrying on of their work in connection with hazards in operation, you may no doubt regard such a statement as an exaggeration; nevertheless it is true. However, many progressive firms have had wisdom enough to teach their employees those fundamentals for their protection and for the protection of others working in the operations carried on, but this is not done to the extent that it should be carried on in industry generally.

Proper industrial training has potential possibilities for improving industrial conditions in the limitation of industrial injuries. Basically there is every reason why a worker, either skilled or unskilled, should be properly trained in the art of working skillfully at his vocation. It will mean he has a better chance to work and to escape injury. There would be no unskilled worker if the educational force and industry did all they should to protect the worker and to promote efficiency. In the present day of mass production skill is required in all work—even that type of work formerly classified as unskilled labor.

In the past few years people have been alarmed at the increase in the number of industrial injuries reported. There are several reasons that can be given for these increases. The main reason is the increase in rapidity with which many industrial occupations are carried on in comparison with former years. Many people fail to realize that industry has changed from what it was a few years ago. The celerity with which industry moves in the present day of mass production means that workers need to be possessed of greater skill, keen sight, good health, and steel nerves if they hope to keep pace with the army of the employed and not join the horde of those workers injured in industry.

To-day employees should know the art of working and have skill and technique at that particular trade, work, or machine on which they are employed, regardless of how menial the task, before they can in any safe degree keep pace with industry as at present conducted. At the present time there is not as much laborious manual labor as formerly. The use of machinery has supplanted much of the toilsome work previously done by manual labor. The higher wage rate has been responsible for the introduction of much machinery to supplant what was formerly called "semiskilled" or "unskilled" labor. With this introduction of machinery there has come speed in the operation which necessarily calls for more alertness and knowledge of the proper methods of working and the carrying on of safe practices.

When we study and analyze working operations we will realize that there is no such thing as unskilled labor in the sense that it does not require skill to perform the work. At least there should be no unskilled labor. Each employee should be taught by the industry the safe and skillful manner of performing his work. Even if the operation does not require much knowledge it may necessitate strength, skill, and mental alertness to properly perform the work, although it may be designated by some people as menial work; still there is a technique in the proper method of performing it.

The need for skill is very apparent at this time, for industry is working at a higher speed than ever before in the history of this or any other country, and industry has a greater task to perform than ever before to teach the safe practices in industry, in order to properly protect those engaged therein.

This work will have to be done by the industry to a large degree, for most of the skill and technique can not be taught in the school, but must be taught in the industry itself.

Studies of Injury in Industry

To teach the safe practices in industry it is necessary to know what is happening in the industry. To obtain this information it is most important to keep a proper record of industrial injuries. If this information were at hand in each establishment, in sufficient detail to indicate the real cause of the injury, it would prove a valuable aid in studying the hazards of the industries. It would enable the management to know what was happening and the frequency with which major and minor injuries were occurring.

The relative importance between a fatal or minor injury is something that should be studied very carefully. The difference between a fatal and serious injury and a minor injury, which might occur in connection with machinery, apparatus, or moving vehicles or equipment, on many occasions when measured in time is but a fraction of a second, during which time the employee has moved his body or a part of it but a short distance either to or from the point of danger.

If we gave attention to this phase of safety work and studied the occurrence of minor injuries we would advance a long step forward in preventing serious or major injuries.

Industry Speeded

We may obtain some vague idea as to the speed of industry when we know the amount of mechanical power used in connection with our industries in this country. It is reliably stated that the industries in the United States are using electrical energy to the extent of 12-horsepower for each man, woman, and child in the country. It is claimed because we use more mechanical and electrical power in our industries than any other country that this is the basis for the prosperity of this country as compared with others.

However, it is an indication that mechanical power is a great aid to the present-day industry and it clearly indicates that the person engaged in modern industry in many instances is required to keep pace as a human operator with a semiautomatic machine or with mechanical or electrical energy which has speeded industry and in which the worker has need of greater skill for self-preservation.

The inspection bureau of the department of labor has many duties, chiefly that of applying the requirements of the labor law and the code rules which have been adopted to protect the employees. The proper enforcement of these rules has a most beneficent effect in reducing to a minimum industrial injury. The bureau alone can not do all there is to be done. Industry must do its share. It is evident that we can succeed in reducing the frightful losses and human suffering which occur in industry as a whole. There will be need for more educational work by industry to instruct employees in the safe and efficient manner of carrying on their work than there is at present. While numerous agencies may assist in this work much effective work can and should be done by the industries themselves.

WORKMEN'S COMPENSATION

By William C. Archer, Industrial Referee

Development of the Movement

AT THE beginning of the fourth century, the Emperor Diocletian issued an edict which fixed the maximum prices for the sale of goods, and appointed a legal schedule of wages for 19 different classes of workingmen. In the preamble of the edict the Emperor declares that his motive is to establish justice among his people. Throughout the Middle Ages and down almost to the middle of the nineteenth century there was considerable legal regulation of wages in most of the countries of Europe. This practice indicated a belief that the compensation of labor ought to be brought under the rule of law and fairness, as these legislators conceived fair dealing.

The fathers of the church implicitly asserted the right of the laborer to sufficient compensation for the maintenance of his life when they declared that God wished the earth to be the common heritage of all men and when they denounced as robbers the rich who refused to share their surplus goods with the needy. The moral principle that guided the teachers of the Middle Ages held that all commodities should be sold at that price which the social estimate regarded as just; but they insisted that in arriving at this estimate the community ought to take into account the utility, the scarcity, and the cost of production of the commodity. Inasmuch as the cost of production at that time was chiefly labor cost, or wages, a just price for goods would necessarily include a just price for the labor that produced the goods. St. Thomas reflects the common view when he says that labor as well as goods should bring a just price. This rule was equivalent to the doctrine that the compensation of the workman should be sufficient to furnish him a decent livelihood.

Reference is thus made to these ancient practices and principles because from them sprang the present system of workmen's compensation, comparable fundamentally to the system which prevailed throughout the civilized part of Europe, in Italy, England, Ireland, Germany, and France. Spain saw its beginning there, but in the eighth century that country began to withstand the Moorish invasion and for 700 years thereafter her sole occupation was war, so that the peaceful pursuits of commerce and industry were impossible and in turn rendered impossible the development of such refinements of justice as the workmen's compensation system rests upon.

The earliest compensation system grew out of the ancient guilds, the merchants' guilds, and the workmen's guilds of the Middle Ages.

The oldest extant charter of a guild in England dates from the reign of Canute in which the members were associated in alms-giving, care of the sick, etc. In the Dooms of London we find the same religious and social progress described with the addition of certain advantageous commercial arrangements such as the establishment of a kind of insurance fund against losses, etc. The merchant guilds differed from their earlier predecessors in that they were commercial only, but that they were widespread is evidenced by four documents yet extant which fortunately refer to towns in four different parts of England—Berwick, Southampton, Leicester, and Totnes. These associations grew so powerful that they presently became identical with the municipality. Thereafter there arose the craft guilds which looked to the protection principally of workmen. They provided for the interests both spiritual and temporal of their members, provided old age and sick pensions, pensions for widows, and burial funds.

In France as early as the year 779 there remains this law: "Let no one dare to take the oath by which people are wont to form guilds, whatever may be the conditions which have been agreed upon; let no one bind himself by oaths concerning the payment of contributions in case of fire or shipwreck." This prohibition appears several times in the laws enacted by the Carlovingian emperors. These guilds were originally a sort of fraternity for common support, protection, and amusement. Later on, as in England, other guilds emphasized the economic aspects, such as are apparent in the merchant and craft guilds. In passing it is interesting to note that even at this early day there appeared three classes of persons in the craft guilds: The apprentices, or learners (apprendre, "to learn"), the journeymen (journée, "day"), or men hired to work by the day, and the masters or employers. From this it appears that a person rising through the first two classes to become a master really passed over into the class of employers, from which it is to be inferred that such workman thereby gained the right to become an independent contractor and in turn to employ his own day men and learners.

In Germany the first well-known guild is that of the Workmen of Worms, its charter dating from 1106. In Germany there was a high development of the entire system. There were merchants' guilds, artisans' guilds, and guilds for personal improvement, community improvement, etc. In this country the word "hansa" had the same signification as guild; thus we find the origin of the Hanseatic League, which grew to the exercise of great power.

In Italy, to quote Plutarch, of all the establishments of Numa no one is more highly prized than his distribution of the people into colleges according to trade and craft. In Rome alone there were in the third century more than 30 colleges, private and public, including bankers, wine merchants, physicians, teachers, bakers, pork butchers, and another which supplied Rome with lime.

We thus see the very early development of the entire system with abundant evidences of developments and ramifications to an amazing degree. There were, of course, innumerable variations due to the wide distribution of various communities, with their characteristic needs and states of development. These associations permeated every walk of life, as is indicated by the fact that artists as well as

artisans, religious as well as lay, merchants as well as craftsmen, all had their separate and distinct organizations for their common good. And through them all were the same motivating principles, charity and justice.

It will be noticed in passing that what is commonly looked upon as a new and modern development is neither new nor modern. Rather are we again merely beginning the development of associations which more than a thousand years ago ramified greater and were more highly developed in detail than we now even dream of. The development of to-day does not stress charity as the motivating principle so much as it stresses economic and utilitarian necessity, but justice pervades this later development, and of course justice and charity are akin. Whatever proportions this later development may reach, there will always be a vastness and solidarity in the new that did not characterize the old, for we must now deal with the tendency to organization which is becoming universal. No longer have we the master craftsman the number of whose employees were limited by law or custom nor whose instruments were hand tools only. Instead we have the tremendous modern plant, applied modern science with its mechanics and electricity and chemistry, which make necessary the employment of great numbers and the division of work into highly specialized functions. Then, too, this modern age is perfecting the various means of communication to such an extent as to crumple up time and space. Philosophers assign to the soul the quality of levitation, and physical man is pursuing it also as a dream.

Before we quit the historical allusion let us call attention to the fact that the merchants' guilds gave rise to associations of employers and manufacturers out of which grew certain privileges akin to monopolies and that out of these grew what is known as prescriptive rights, good will, etc. For under the rules then obtaining a merchant, as, for instance, a haberdasher, was secured in his right to serve a certain population not too great for his personal service. Another might not invade his field. This gave rise to the so-called prescriptive right to conduct his business within certain limits. Good will had a very definite meaning and a very definite value recognized in inheritance, contracts of sale, etc. On the other hand, a master workman might serve his public so long as he might do so within the prescribed limits of a certain number of employees. When the demand for his services was such that he could not meet it with six or eight journeymen in his pay, there and then arose the right of another master workman in the same field to engage others and to begin business. Thus out of the craft guilds grew the associations of labor with their defined rights.

The fifteenth century brought to a swift close the greater number of associations which had thus developed. Foundations, associations, organizations were shaken into rapid dissolution. The new principle of utter selfishness destroyed them. The ground lay fallow for hundreds of years. Then they began again, and, inasmuch as we are dealing chiefly with workmen's compensation, let us say that Germany at the middle of the last century created anew a system of workmen's compensation. It has spread rapidly and now obtains in every civilized country. Strange to say, it appeared late in the United States and 15 years compasses the entire development here;

but, as is characteristic of this country, it has developed quickly into a vast system involving an annual setting aside of hundreds of millions of dollars to provide the benefits required by law. Aside from the volume and immensity of the thing in the United States, it is simple in principle and easy to understand. It recognizes that losses from accidents are to be regarded in the calculation of overhead expense and as an element of cost of production. As such it enters into the cost of manufacture or production, is properly reflected in the selling price, and is thus thrown upon the consumers who constitute the entire population. Before this principle was recognized and compensation systems adopted the workman, whatever his hire, was compelled each to bear alone the losses occasioned through the misfortune of accident. The carpenter who died from an infection resulting from a splinter in his finger was utterly without recourse, and whereas his family but yesterday living happily upon his wage, to-morrow was thrown into poverty through the death of the wage earner, the loss being completely uncompensated. Or the miner who lost a leg through the fall of coal was thereafter incapacitated for a continuation of his employment and was thrown into distress, attendant also upon his family since as wage earner thereafter he was greatly handicapped as a breadwinner. It is quite remarkable that this injustice should so long obtain and equally remarkable how viciously fought was the inauguration of the new plan which now has universal approval.

It is true there was some relief in the courts through actions for damages, but it is nauseous to contemplate the inadequacy of this system of relief, for in most cases a cause of action could not be maintained under the law; and even where there was a rightful cause of action under the law the contest in the courts was so unequal and the remedies so unscientific and uncertain of application and the general average in recoveries so pitifully small that the whole thing will forever remain a blot upon our civilization and an unhappy memory.

It will be valuable to consider for the sake of comparison the system which was replaced by the compensation laws. Hitherto the injured workman was supposed to bear alone the losses occasioned by his accidental injury unless he could charge it to the negligent act of another, and in doing so, he must prove himself free from contributory negligence. Jurisprudence in the United States has grown out of English jurisprudence, that is, it has grown out of the English common law and the common law knew only personal rights and remedies so far as personal injuries are concerned. This is more easily understood in the light of the fact that until recent times workmen in any given employment were few in number, known to each other by name and association and working with simple instruments or tools. The relationship as among the workmen and the relationship as between a given workman and his employer was rather simple. The employer was held to provide a reasonably safe place of employment, to provide fellow workmen of reasonable skill and diligence, and to be reasonably diligent in his attitude toward his men. On the other hand, a workman had corresponding obligations to his employer and to his own fellow workmen. An employer was held not to be liable if the workman's injury was occasioned by his own negligence or by the negligence of a fellow workman or by the inherent hazard of employment.

Thus are defined what are known as the three common-law defenses of an employer brought into court in an action for damages, namely, assumption of risk, the fellow-servant rule, and contributory negligence. These are all grounded in fault and gave rise to the well-known definition of tort as a wrongful act, neglect or default through which another is injured in his person or property. Fault and wrong are emphasized throughout. As industry grew more complex the fellow-servant rule was ameliorated by making certain bosses or foremen stand in the shoes of the employer rather than alone as fellow workmen, so that the act of these bosses or foremen were in some degree the act of the employer. The assumption-of-risk rule was likewise modified through municipal regulations for greater safety, the absence of compliance with such regulations creating a presumption of fact in favor of the injured workman and tending to throw the burden of proof on the other side. But the contributory-negligence rule held steadily.

Under the workmen's compensation plan the whole matter of wrong and fault is thrown to the winds, and there is substituted a new principle. The old question was, Whose fault was it? The new question is, Whose misfortune is it? This certainly introduced a new day.

How efficacious was the right to recover damages in the court? The answer may be given that it was thoroughly inefficacious, first because a right of action could not be maintained in the greater number of cases, and second, the recovery even in rightful cases was so tortuous, long drawn out, and heartbreaking in the end that it was scarcely worth while. For instance, one of the most eminent present-day jurists in the United States is quoted as characterizing the system by saying that the plaintiff did not live long enough to enjoy his verdict. A count of cases in one of the large cities of the United States showed that the right to maintain an action was present in fewer than ten cases out of a hundred. This means that in more than ninety cases the plaintiff did not have a good case at law. He could not overcome the three defenses above referred to. And in the cases where recovery was actually had the final amount received was less than $50 on an average. In the event of injury the employer and employee, who supposedly should be at least friendly, inasmuch as their efforts in producing salable goods or creating substantial improvements were more or less mutual and interdependent, were immediately made enemies. The injured man advanced his claim, the employer rejected it. The workman being a poor man was compelled to resort to a lawsuit. To do this he could offer his lawyer no cash retainer and therefore was compelled to sign a contract on a contingent basis. The lawyer, assured of a fee only in the event of a recovery, was compelled to make an outlay of money in the preparation of his case, the securing of competent witnesses and expert witnesses, etc.—therefore engaged to try the case for one-third to one-half of the amount recovered. There was the usual delay of a year or two before the case reached the calendar, within which time the injured man nursed his injury and borrowed money from his friends to live on. The case came on for trial; the jury rendered its verdict. There was a prompt appeal, the employer usually being large enough to maintain a legal staff, so that his end

of the litigation was carried on at minimum cost. There was the long delay before the appellate court handed down its decision, often a reversal. In the event of an affirmance, the money was paid; the lawyer took his share; borrowed money was repaid, the butcher, the baker, the candlestick maker was settled with—and there you are. And this, mind you, in fewer than ten cases out of a hundred. In the other ninety there was no hope of compensation.

The New System in Operation

When we turn to an examination of the new system, we find benefits provided for loss of wages due to accidental injury. We find also incidental medical benefits which include nursing, medicines, professional service, hospitalization, and the so-called aftertreatment tending to restoration of function after the wounds are healed. The question of fault does not enter into it at all. Regardless of fault the recovery is obtainable. Some States make an exception where the cause of the accident is intoxication or willful and flagrant misconduct, but, even so, only a negligible number are thus excluded. An elaborate system of benefits is made necessary because of the various kinds and degrees of injuries, but all awards are predicated on the basis of the loss of wage-earning capacity. It is not necessary here to recite the table of benefits, for these are accessible to everybody. Nearly every State provides a waiting period of one week during which no compensation is paid. The purpose of this is to eliminate the trivial cases which are so numerous. Another purpose is to prevent a simulation of disablement. Were this not done, the temptation to take a few days off or to be paid for the necessity of being absent now and then would be too great, for one might allege a strain of the back, for instance, in which the complaints would be purely subjective and defy all the clinical observers, whereas, on the other hand, voluntarily incurring a disability which would likely last longer than one week would require a considerable courage or foolhardiness.

Another feature which characterizes these laws is the placing of a maximum limitation on the weekly award. In fact, the limitation is usually twofold. It can not be more than two-thirds of the wages nor more than a certain number of dollars per week, say, $20 to $25. There is no justifiable reason for this limitation. There is a sufficient reason for providing no compensation for the first week or two of disablement, but to limit the recovery to part of the wages is not justifiable. The workmen is entitled in justice to the one-third of his wages which he does not recover by every reason that entitles him to the two-thirds that he does recover. To state it conversely, there is no more reason why the one-third he does not recover should remain uncompensated and borne alone by himself than there is reason to justify the old system by which he recovered nothing. There is even less excuse for further limiting the two-thirds by a maximum number of dollars within that two-thirds. Take a workman who is earning $60 a week. He can recover under the most advanced law in the country only $25 a week of his wages. He and his family have a $60 standard of living. The violence to this standard of living is incommensurate with justice. If he has savings, he must take down his savings to the extent of $35 a week. Meantime the insurance company collects its premium against his full wages. In other words,

it collects twice as much premium on account of his wages as it would collect from a $30 man, and yet the compensation to the two men is practically the same. We then get into the body of the benefits which are somewhat the same in every jurisdiction.

For a permanent total disability the compensation continues throughout life. For a permanent partial disability the compensation is usually defined by maximum limits. Within this classification occur the vast number of injuries to members of the body such as hands, arms, feet, legs, eyes, fingers, and toes, whether the loss be total or proportionately so. For this class of injuries nearly every statute fixes a definite schedule of awards—so many weeks for an arm, with a proportionate number of weeks for a proportionate loss of use of that member, etc. This was made necessary to provide compensation in a vast number of cases in which compensation would not be immediately paid, for many a workman who sustained a stiff elbow, for instance, was able to retain his job, and were he paid for wages lost, he would be inadequately paid; in fact, he would be paid no more than he would have received for the acute period of disability, after which he would have returned to the same job without the stiff elbow. But with a stiff elbow there is always a potential disability, and to prevent the hypothetical consideration of such cases or the endless reappearance of such cases on the calendars, which might be occasioned with each change of employment or each idle period for whatever cause, the law steps in and provides the so-called schedule benefit which is no more nor less than a commutation in time of the potential disability resulting from accident. Here it may be remarked that it is peculiar that no difference in compensation is provided for workmen of different ages. The man of 21 who has his stiff elbow to carry throughout a long life receives no more for it than does the man of 70 whose working days are about over.

Under the classification of permanent partial disability also fall those indefinite injuries which impair wage-earning capacity measured in a lowered wage, in which cases two-thirds of the difference between the old wages and the new wages is received as compensation, with a maximum limit varying in different jurisdictions, but which seems to be settling around $5,000. The foregoing classes embrace the permanent injuries. There are also the two broad classifications of temporary injuries, those which are total and those which are partial. The last named is a negligible number, for every compensated case involves some complete cessation from work. The temporary total disabilities constitute the greater number of cases, although the amount of money paid out is by no means proportionate to the mere number of such cases. It is perhaps not necessary to go further into a general discussion of the measure of benefits. There are, of course, to those engaged in the administration of the laws very interesting matters relating to the internal structure of the compensation laws with respect to benefits. For instance, the discussion is never ended as to the proper method to measure loss of vision. The ordinary test for reading glasses is a test which discovers, for instance, that a man only sees at 20 feet what he should see at 30 feet. This is expressed by the phrase 20/30. In the administration of the compensation laws this 20/30 has become the fraction twenty-thirtieths, but there is always the added question of what one may discern by direct vision as compared with indirect vision or peripheral vision by which

one sees not only the object looked at directly but rather less distinctly all other objects within the field of vision. This is only given to illustrate that books might be written if one were adequately to discuss the technical difficulties with regard to various injuries. But there are matters which are worth more than passing comment.

How shall pain as a disabling factor be determined? This is a baffling question. Pain is generally supposed to be a purely subjective symptom; that is, one has only the word of the sufferer, unless the pain be sufficient or so located as to give objective evidences of it. Then, also, as persons differ in nervous organization and sensibilities, pain is a varying factor. Undoubtedly a given injury will cause more pain in one person than in another. Wise and experienced clinical observers feel that beyond a given time and beyond certain motions they are able to discount complaints of pain. Here the human element in individuals plays a great part. Take an old man with a so-called lame back who upon arising in the morning takes some time to straighten up for the day's work and to limber up his back. This subject may receive a twist or blow to his back which will disable him for the rest of his life as against a supple youngster to whom the injury would afford but an hour's inconvenience. This injury to the back of the old man who already works under difficulty is apt to cause him a permanent total disability. Take, again, the man well advanced in years who has had for a long time a hernia or who has had a hernia which has been once or twice repaired by operative procedure. He sustains another hernia or a recurrence. Because of the condition of his heart or arteries or general condition he can not go again on the operating table. Here we have another more or less trivial injury causing a permanent total disability. If it should be complained that the employer or insurance company is called upon to respond in awards seemingly unfair in these extreme cases, it should be borne in mind that such cases are offset by the vigorous and robust workmen who sustain such injuries without much disability. In other words, one offsets the other. This is the great rule of insurance. One man's house burns to the ground. His neighbor pays insurance for a lifetime without any fire whatever.

Perhaps the most interesting and remarkable features of all cases are the neuroses. They are very numerous. The neurotic element is undoubtedly present in more than half of all compensation cases. In the handling of this matter, administration if properly done can work a great good and avoid a great evil. The neurosis which is here spoken of is the emotional reaction due to injury. One man cuts his finger and it heals by first intention. Another man cuts his finger and has a local infection. Another man cuts his finger and develops a general septicemia from which he may die. Another man presents an emotional reaction without much somatic disturbance. To the uninitiated and to the unsympathetic, this was long regarded as malingering and little worthy of consideration. But to those who know, these are the pitiful cases which require knowledge, sympathy, and courage in their handling. In fact, to be handled well they should be handled little and that little with a great deal of wisdom. Too many hearings, too many examinations by physicians, too much hospitalization, too much sympathy are contraindicated as distinctly harmful. Many a compensation case is tutored into a neurosis. Here we are not at all speaking of dishonest cases but of

real entities. Let us draw a picture of a typical neurotic compensation case, a picture not at all exaggerated but repeated often in every jurisdiction.

Let us take a workman who is living a routine life on a balanced household budget, in other words, a workman who is merely making a living, but making a decent living, in which he and his family are accommodating themselves to their mode of living. Week in and week out they have practically the same diet, properly balanced, of course. They go to church, they go to the movies, the workman and his son see a baseball game now and then, the wife and daughter attend a party now and then. They are able to pay the ordinarily expected medical bills or repairs to their automobile. The son and daughter are at school. This workman sustains an injury. For the first few weeks the misfortune is borne without fear. He does not recover properly. He develops a complication. His small savings, because of his inadequate compensation, are drawn upon heavily. They disappear. The rent for the first time is hard to pay. The life-insurance premium can not be met. He is compelled to borrow from his neighbor. It may be that about this time the insurance carrier foolishly compels the production of witnesses to prove continuation of disability, and there enters into his mind the fear that he will be unable to secure his compensation during his disability. The grocery bill becomes overdue. He is not a thinker. He has heretofore read the newspaper with the slight demands upon cogitation. He has discussed local politics, listened to his radio, read the baseball score, listened without much wear and tear to the Sunday sermon. Now he has new problems. He can not adjust himself to the new situation. He reasons in a circle. Like a caged animal he has at first gone prying around the confining barriers of his close hoping for a way out. Repeated circuits demonstrate the futility of this effort. Alarm seizes him which goes on to terror. In short, he is unable to create his environment but becomes entirely subject to it. Pondering over and over the situation his mind becomes tired.

The blacksmith can swing a sledge all day. The school boy can swing it a few times and then ceases from sheer exhaustion. This workman experiences exhaustion of mental effort to work a way out. Hope fails. The son is taken from high school and put to work. His earnings augment the compensation so that the family income may be brought back to normal, but the savings are gone. Within this time in actual fact the physical man is almost restored to the normal function. He essays work again, but because his mind has dwelt so long upon his disability he is unable to convince himself that the disability is not there yet. There is a distinct personality change. Thus develops a neurosis. Examples may be multiplied. Another man who leads a vegetative existence finds himself after injury the object of a love and sympathy at home which he had ceased to know was there. Without rationalizing his new experience, he finds himself in an environment more delightful than he experienced before. He unconsciously wishes for its continuance. Adapting himself finally to the new situation, he is loath to return to the other, which was one of unmitigating hard labor. Here we are apt to see the development of a neurosis in which the workman is in no wise dishonest or consciously malingering.

Take still another case: A man standing on a high place is rendered unconscious by a falling object. He develops a true fear of going again to high work, and he is so obsessed by the idea that he narrowly escaped death that he develops what he believes to be a real disability. But dwelling upon his pains he magnifies them until they become more or less real. He is influenced by his autosuggestion. He becomes neurotic. And who has not seen the genuine hysterias—the fingers pressed into the palms or the arm held close to the side with such resistance that the fingers can not be pulled open or the arm unbent? Under a slight whiff of ether the physician demonstrates that there is no loss of mobility whatever. The muscles respond to the stimulus of the galvanic current, but the emotional reaction has rendered the arm useless. The foregoing cases are genuine compensation cases. If small men oppose their claims without ability to meet the situation, they increase and continue the disability and do not cure it. In the end they will double and treble compensation finally paid out, whereas a proper understanding of such cases and the meeting of them with sympathy and seeming generosity at the right time would greatly foreshorten the disability period. Nothing is more desirable in the handling of compensation cases than that compensation should be promptly paid where it is due. Employers and insurance carriers all suffer much monetary loss because they intrust the handling of human beings to third-rate people who fail to recognize that there is more in man than merely bone and muscle. It should be observed here that these observations have no reference whatever to the fraudulent or dishonest cases. These latter should, of course, be summarily dealt with and thrown out. Happily, malingering does not characterize the compensation system. It is a small element, and in itself when compared with the vast figures in the ledger of workmen's compensation is more or less negligible.

No discussion of workmen's compensation is complete which does not take cognizance of the medical question. At first compensation laws provided partial medical services. All such laws have been amended time and again until now the better statutes provide unlimited medical services. It may be truly said that adequate medical service promptly and generously applied will more than pay for itself in diminished weekly benefits. No physician is too learned or skillful to treat injuries. In fact, the compensation system has created a new surgery in which it is not enough to save the life or the limb, but function also must be maintained or restored. It was not at all unusual a few years back to find palm injuries resulting in claw hands. The fascia of the palm, so delicate and so interdependent, with inflammation or infection there may easily result in the involvement of surrounding tissues and loss of function. Well, a hand in the New York jurisdiction, for instance, is worth $4,880 as a compensation case, and loss of use of the hand is equivalent to loss of the hand. Many a bungling surgical job has lost the workman the use of his hand and lost industry $5,000 as compensation. In ninety-nine out of a hundred such cases there should be no such loss of function, and the modern A–1 industrial surgeon sees to it that there is no such loss.

The effects of injury are more far reaching than were dreamed of before the matter was put upon an economic basis and losses paid for with good dollars. There are many workmen who are in apparent

health but in reality are slowly yielding to disease. A man, for instance, has a bad heart but it is a heart which compensates. The impulse that sends the blood to the extremities is balanced by the impulse that sends the blood through the lungs to be aerated and returned to the stronger side of the heart again to be sent to the extremities. This workman strains himself in lifting or otherwise sustains a shock. His heart then decompensates and death may result. It may recompensate for short periods but thereafter he is short of breath and his feet and ankles are swollen. Another man has varicose veins and may be somewhat diabetic but he is a working agent. He hurts his shin and the wound does not heal and remains open and ulcerating. The unwise third-rate employee of an insurance company may harass and fight such cases and these workmen may be denied adequate medical services, whereas it would be a saving all around of life and limb to the workman and of much money to industry were these men promptly hospitalized under the care of first-rate experienced high-class physicians, of whom there are many. Under such care they would soon be restored to health. At least they would be in as good shape as they were before the accident. The process of decay, if it were to advance further, would be a natural process and such as they would have experienced without accident. Without proper care these men never recover from the effects of accident and under the law of every jurisdiction are legally entitled to the compensation which they are apt to claim and receive. First aid should be swift and sure and should not be left to the poor attempts of tyros, for trivial injuries which are allowed to develop infections are costing industry literally millions of dollars annually in the United States.

Let the reader imagine a line of funeral processions spanning his own State if he wants to have a mental picture of what trivial injuries and resultant infections have already cost that State. It may be truly said that thousands of high-grade physicians have actually washed their hands of compensation cases because they are not properly treated with respect to the matter of fees. They either do not receive their fees or are subjected to so many indignities while trying to collect that they simply retreat from compensation cases. This is a very great mistake on the part of somebody.

It is true that here and there industrial clinics have arisen, and indeed much can be said in their favor. They accomplish much good and develop technical experts who really know how to treat injury cases. If this article were to voice a criticism it would be this: It is perhaps true that industrial clinics as a rule fail to segregate some of the more important cases for hospitalization and the care of the best available medical talent obtainable at any price. In other words, in their vast number of cases they may be too much inclined to put them all through the same mill.

We come now to safety. Safety first is the shibboleth of modern industry. This is so oft repeated in various expressions that it has grown to be a litany. Of course, it is better to prevent an accident than to compensate it. We need not dwell on this nor shall we hesitate to commend employers generally for their very great efforts to meet the situation. The plants are legion which have local hospitals, safety campaigns, prizes, and bonuses for good accident records, etc. All employers of any considerable size have not only the proper dis-

position but the good sense to try to prevent accidents. They deserve nothing but commendation. Many small isolated employers give the matter no attention whatever, and in this respect are none the wiser for the last thousand years. They pay their small premium and wash their hands of the whole matter. But with all our safety, accidents come on and on like the tides. Nobody can quite explain it. It may be that better and better reporting accounts for an increased number of reported accidents, whereas there may be a diminishment of actual accidents, but certain it is that the attempt to prevent accidents results happily in the first instance in preventing the more serious accidents, so that it is safe to say that the accident prevention work has paid and paid well. It may be also that the increase in number of claims for compensation may result from the fact that the law has become more generally known and claims are more numerous for small injuries so that there is a more widespread effort to receive compensation for all injuries. The higher-paid workmen are less inclined to bother with the matter of trivial injuries. It has been the common experience of every jurisdiction that in times of great industrial energy when everybody is employed at good wages there is less general inclination to lay off for small injuries and receive compensation therefor than in times when there is general unemployment, when even a small compensation award is actually needed. But campaigns for safety, the teaching of the matter to school children and the unceasing effort toward safety, have had, are having, and will have tremendously beneficial effects.

The administration of workmen's compensation affords a real problem. The very magnitude of it makes it a big problem. Developing knowledge is bringing it to a real art. The average learned judge would find his difficulties in many a compensation case in which the question was largely medical. The average lawyer knows little or nothing about this new branch of the law. A general recognition of these truths has caused the administration of compensation laws to be thrown into special courts or tribunals. Some States designate particular courts as the only available appellate tribunals; this for the sake of speed and for the sake also of developing specialists in the new laws. In the trial of compensation cases, although involving questions of fact as well as questions of law and medicine, the jury system happily is done away with entirely. Introduction of the jury system in compensation cases would render efforts at administration utterly impotent. The presence of lawyers is discouraged because fees are universally fixed and fixed at low figures. Perhaps the discouragement has gone too far, for undoubtedly lawyers are needed in many cases in which they are not to be found. Naturally the lawyer knows best how to marshal facts and present evidence. The mere absence of lawyers has brought about a situation in which the judge or referee of the compensation tribunal is both judge and advocate, for these referees participate freely in the examination of witnesses and the development of facts. In doing so they have kept themselves pretty well above criticism. It is because justice when contemplated grows upon the person who contemplates it and is more and more loved by him so that he may be zealous in the development of facts, and yet quite judicial in the weighing of evidence and the final judgment of a case.

In almost every jurisidiction there are no technical rules of procedure, although, of course, the logical rule of proof must be followed. There is no jury and hearsay evidence is admissible. It will be seen therefore that the jurisprudence pertains more to equity and resembles more the procedure under the civil law of southern Europe than the common law of England. It is confidently predicted that the way is being paved for a reform in legal procedure everywhere. There is universal criticism of present-day procedure in the courts. The whole jury system is under indictment as unscientific, largely inefficacious, and certainly cumbersome and dilatory. The establishment of the jury system was at the time a great step forward in securing human rights. It is of course quite a foil to an arbitrary judge, but the most trained observer can not foretell what a jury can do because it is apt to do anything. It no longer serves the purpose for which it was created. At the present time it is a worn-out system. It may be needed again, but with the white light of publicity playing upon every act of a judge, and with the short terms of incumbencies of judges, and with the newspapers at every turn of the road with their capacity pitilessly to expose skullduggery, the jury system is no longer needed. Likewise, technical rules of procedure are more often a nuisance than an aid to justice. Who has not seen an attorney struggling more or less in vain to get a question answered? He is entitled to an answer if he can only get the question in the proper form. Instead of going at the matter in a common-sense way as men attack the questions of everyday life, we have more or less artificial rules by which it takes half an hour to find out the color of the cow.

Who can honestly say that the system of jurisprudence does not hamper rather than promote the ways of justice? Endless appeals are to be deprecated. Half the cases in the courts at the very least could be arbitrated or disposed of by the methods now obtaining in the compensation tribunals with little or no cost in a fraction of the time it now requires and with a much closer approximation to justice. Every great city has its courts clogged with cases, nine-tenths of which might be assigned to reputable lawyers as referees and adjudicated quickly and the calendars cleared. Skillful lawyers now under the present rules can get any case into such a mess as is hard to straighten out and certainly can not be untangled in any brief time. This incidental benefit of the compensation tribunal is bound to be far-reaching. It is confidently predicted that within a generation the vast majority of lawsuits will be handled by judges or lawyers without the aid of a jury and with a large disposition to do justice in the particular case. As it is now, the chief occupation of lawyers is to hunt cases in point rather than with the weapons of justice and equity at hand to bring about justice in the particular case and in a forthright manner. This is written by one who believes that the courts are utterly and absolutely essential and that they are the most indispensable bulwarks of liberty and justice and solidarity and the perpetuation of free institutions that exist in the world to-day outside of religion, but in securing these great benefits they do so in the handling of important matters in the exercise of which function they should remain forever undisturbed, a learned, fearless, independent judiciary—forever to be maintained and preserved.

THE RELATION OF WOMEN IN INDUSTRY TO THE ACCIDENT RATIO

By Nelle Swartz, A. B., Director, Bureau of Women in Industry

Number of Accidents

ONE WOMAN out of every four in New York State works for wages; that is, 1,250,000 women over 10 years of age are contributing to the economic life of the State.

What are they doing? The largest number, 350,000, are in the manufacturing industry; domestic service and clerical occupations claim the next largest group, professional service ranks fourth, trade fifth, and the remainder are scattered among transportation, agriculture, and public service.

One would have thought by reading the newspapers during the period of the war that women were new in industry—as a matter of fact they have always worked and from the very beginning of our factory system have done a considerable share of the producing of the world. But new vistas are opening up for women. They are to be found doing practically every kind of work and entering all the professions.

In following the trend of women's employment, it is noticeable that over the 10-year period from 1910 to 1920 the number of women clerical workers more than trebled. This marked increase reflects modern tendencies in the business and industrial world; that is, the increased use of office machinery, improved methods of filing, accounting, and cost keeping. All these will doubtless continue to open up this field of occupational opportunity for women workers in the future.

The number of women in professional service increased considerably in that decade; the number of women lawyers doubled, as did the number of nurses. There were twice as many women in transportation pursuits at the end of the decade, and women could be found as undertakers, stevedores, and teamsters.

Not only has the field of work for women been broadened but also the length of her service in industry or in the professions has been greatly increased. While formerly the working woman was to be found among the younger group who worked only to bridge over the gap between school and matrimony, now in increasingly large numbers married women are continuing to work after marriage or are returning to work after the first few years of marriage. Whereas going to work after marriage was considered a social stigma a few years ago, now in terms of the feminist the married woman who works is the "emancipated" and "free" woman.

The girl fresh from college is not returning to a life of leisure with her parents but is going on to graduate school to study for a profession or entering some field of social or allied work. Whether we like this trend or not, whether we believe that it is best for society as a whole, women are entering the industrial and professional groups in larger and larger numbers and must be recognized as an integral part of our economic life.

Thousands and thousands of women are driven to work because of economic necessity; some work to raise the standard of living of their families, and still another group work for their own personal satisfaction and release.

My discussion with you to-day is limited to one group of women, the industrial group, and to one of their problems—that is, accidents. Of the total number of accidents in this State, 93 per cent occur to males and 7 per cent to females. The reasons for the relatively small number of accidents to women are obvious. They are not in any number employed in the most hazardous trades. The building trade, for example, which furnishes the largest number of accidents among men, does not employ women.

Figures showing the percentage of accidents to females over a nine-year period, would seem to indicate that except for a slight rise after 1918 there has been little change in the proportion of accidents to females. Undetermined factors such as changes in the groups covered by the compensation law and changes in the occupational composition of the industrial population so qualify these figures, however, that they can be used only to suggest trends rather than prove facts. The most that can be said, then, with respect to accidents to females is that the proportion is neither increasing at an alarming rate nor decreasing in marked fashion. With present figures it is almost impossible to tell whether the slight movement is upward or downward.

Year ending June 30—	Total compensated accidents	Compensated accidents to females [1]		Year ending June 30—	Total compensated accidents	Compensated accidents to females [1]	
		Number	Per cent			Number	Per cent
1917	55,441	2,173	3.9	1922	47,878	3,346	7.0
1918	47,151	2,635	5.6	1923	58,078	3,730	6.4
1919	45,495	3,237	7.1	1924	72,983	4,851	6.7
1920	51,213	3,457	6.8	1925	76,216	5,464	7.2
1921	44,982	3,116	6.9				

[1] Cases tabulated by year of occurrence from 1915 to 1922, by year of final award for 1923 and later years.

Now, while accidents to females are much rarer than to males, the proportion of accidents to young girls is greater than to young boys. In the year ending June 30, 1925, 9 per cent of all accidents to males, 23 per cent of those to females, were suffered by minors. This indicates that in so far as females suffer from industrial accidents they are likely to have them early in their industrial career, whereas the industrial accidents suffered by males are much more highly concentrated among adults.

Compensated accidents, by age and sex, for the year ending June 30, 1925, are as follows:

TABLE I.—*Compensated accidents by age and sex*

[New York State, July 1, 1924, to June 30, 1925]

Years of age	Males		Females		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
Under 14	10	(1)	2	(1)	12	(1)
14–15	144	0.2	29	0.6	173	0.2
16–17	1,174	1.7	389	7.1	1,563	2.1
18–20	4,647	6.6	810	14.8	5,457	7.2
21 and over	64,777	91.5	4,234	77.5	69,011	90.5
Total	70,752	100.0	5,464	100.0	76,216	100.0

[1] Less than one-tenth of 1 per cent.

The industries in which accidents to females occurred are as follows:

TABLE II.—*Compensated accidents to females by age and industry*

[New York State, July 1, 1924, to June 30, 1925]

Industry	Years of age										Total	
	Under 14		14–15		16–17		18–20		21 and over			
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Manufacturing	1	(1)	23	79.3	319	82.0	621	76.7	2,101	49.6	3,065	56.1
Construction							1	.1	7	.2	8	.1
Transportation and public utilities					3	.8	6	.7	61	1.5	70	1.3
Trade			2	6.9	34	8.7	53	6.6	382	9.0	471	8.6
Clerical and personal service			4	13.8	33	8.5	127	15.7	1,623	38.3	1,787	32.7
Agriculture	1	(1)					1	.1	14	.3	16	.3
Not otherwise classified							1	.1	46	1.1	47	.9
Total	2	100.0	29	100.0	389	100.0	810	100.0	4,234	100.0	5,464	100.0

[1] Not shown where base is less than 20.

Accidents to women occurred chiefly in manufacturing and in clerical and personal service, with 56 and 33 per cent of all accidents, respectively. Manufacturing was a more important source of accidents to minors than adults; 78 per cent of accidents to minors as opposed to 50 per cent of those to adults occurred in manufacturing. The reverse was true of clerical and personal service; 13 per cent of accidents to minors and 38 per cent of those to adults occurred in clerical and personal service. Nine per cent of accidents to women occurred in trade.

The largest number of accidents to women in manufacturing industries occurred in the clothing industry—30 per cent. This may seem a nonhazardous trade, and most of the accidents were minor, such as punctures from a needle, but they were uncared for at the beginning and infection developed, which too often meant the loss of a finger. The textile industry was next with 13 per cent of the total number. Many of these accidents occurred on looms. Food products had 12 per cent of all accidents. Some of these were burns, others from cutting machines. Metal goods was next with 8 per cent. The majority of these occurred on punching and stamping presses, which are very difficult to guard. Laundries were next with 7 per cent of all accidents, many of these, occurring on the ironer, were mashed fingers or burns.

The accidents which occur to those engaged in personal service are generally to janitors and day workers. While many of these injuries are not of a serious nature in the beginning, an uncared-for finger with a splinter often develops into a serious infection, or a bad rupture may be caused by lifting heavy objects.

Causes

As causes of accidents to women, falls rank first, with 30 per cent and machinery second, with 24 per cent. Handling of objects and hand tools cause 14 and 8 per cent of accidents, respectively.

Almost a third of all accidents to women are due to falls—falls on the level, slipping on wet floors, stumbling over objects, falling downstairs, etc. What part high-heeled shoes or misfitting shoes play in the large proportion of women's accidents due to falls can only be a guess. However, it is a matter of interest that manufacturers are becoming increasingly interested in the kind of shoes which their employees wear. Shoes run down at the heel, shoes too loose, can not fail but cause a lack of balance which may result in an accident.

Accidents to women, occurring on machinery, decrease as the worker grows older which indicates, generally speaking, that carelessness and the spirit of adventure in the young play some part in the cause of machine accidents. The girl wants to know what would happen if she operated without a guard—what would happen if she stuck her finger in, how near she can get her material to the danger point in the machine—and so curious is she that she often tries with fatal results. For this reason there is written into the New York State labor law some restrictions as to the employment of the young worker on machines. The question arises here, of course, whether it is better and safer to forbid children to use dangerous machines, or whether it is detrimental to the training of children to forbid them using these machines when they are young and adaptable to training. The State, through its labor law, has taken the position that children under 16 should be forbidden from operating certain machines. The law states that "no child under 16 years of age shall be employed in operating or assisting in operating any of the following:

(*a*) Circular or band saws.
(*b*) Calendar rolls.
(*c*) Corrugating roll-making machines.
(*d*) Cracker machinery.

(*e*) Dough brakes.
(*f*) Drill presses.
(*g*) Laundering machinery.
(*h*) Leather-burnishing machinery.
(*i*) Metal cutting or stamping machines.
(*j*) Paper box corner staying machines.
(*k*) Paper-cutting machines.
(*l*) Paper lace-making machines.
(*m*) Picker machines or machines used in picking wool, cotton, hair, or upholstery material.
(*n*) Planers.
(*o*) Power punches or shears.
(*p*) Printing presses, job or cylinder, with power other than foot.
(*q*) Rolling-mill machinery.
(*r*) Sand-paper machinery.
(*s*) Steam boilers.
(*t*) Washing, grinding, or mixing machinery.
(*u*) Wire or iron straightening machinery.
(*v*) Wood jointers, wood polishers, wood shapers, wood turning, or boring machinery."

The State has even said that children under 18 may not be employed at certain machines or trades: Cleaning machinery while it is in motion (applies to males under 18, females under 21); operating or using any emery, polishing, or buffing wheel (applies to males under 18; all females, with certain exceptions for those over 21).

In this connection, it may be well to divert a little from the subject to tell you that in 1923 a law was passed which was to the effect that any minor under 18 who is employed in violation of the labor law and is injured during the course of such employment shall receive an amount double that which he would receive if legally employed. The employer himself must pay the additional penalty and can not insure against such liability.

In enacting the double compensation law the Legislature of the State of New York was of the opinion that one of the most effective ways of preventing illegal employment of children was by requiring the payment of double compensation for accidents to children employed in violation of the law. This opinion has been justified in that immediately upon the enactment of this legislation employers, through trade journals and other channels, were urged to clean house and see to it that no child was employed without a working certificate, nor allowed to work during prohibited hours or on prohibited machines. The effect of this educational work among employers is, of course, immeasurable.

The double compensation law became effective on July 1, 1923. During the first year the law was in effect, of the 674 minors under 18 who received compensation for industrial accidents, 29, or 4.3 per cent, were awarded double compensation because their employment violated one or more provisions of the law governing the employment of minors.

All but one of these 29 minors illegally employed were under 16. In the entire group there were 75 children under 16 years of age, so that the number receiving double compensation represents more than one-third of the entire number in that age group.

All but two of the accidents doubly compensated were caused by machinery. Eleven machines were punch or stamping presses, 4 were rolling or shaping machines, 3 were button-making machines, 3 were printing presses, 2 were elevators, 2 mangles, 1 a quilling

machine, and 1 a cutting machine. Children under 16 are specifically prohibited by the labor law from operating these machines.

What was found true of the whole group of accidents is largely true of this group—that they occurred in most instances while the machines were in operation; that they resulted largely in injuries to upper extremities; that cuts and bruises were the most frequent sorts of injuries.

The three most serious permanent disabilities in this double compensation group were a 98, a 95, and a 55 per cent loss of use of the hand; in two cases a finger was totally disabled, in two cases there were 50 per cent, in one case 33⅓ per cent loss of use.

On the whole, the temporary disabilities in this group were of short duration ranging from 2⅖ to 8 weeks [1] and averaging 4.3 weeks for the 19 with a determinable period of disability.

Although the temporary disabilities were of short duration and consequently the compensation awards were small, nevertheless the total penalties suffered by employers for violation of the child labor law in these 29 cases are an impressive sum. In addition to the regular awards borne by the insurance companies the 29 cases of double compensation cost employers a total penalty of $13,119.48 or an average of more than $450 per case. To be sure, the average was brought up by three or four very heavy penalties for serious injuries. The largest penalty was one of about $5,000 for the almost complete loss of use of a hand. One $2,600 penalty was uncollectible by the claimant because the employer went into bankruptcy.

Location of Injury

It is the hands of the worker that are most frequently exposed to accident hazards. It is the hands that put the work into the machine and the hands that hold the tools. As they are most subject to exposure, so are they most valuable to the worker in the successful pursuit of his employment. They are his stock in trade, and an injury to them may change the whole course of his industrial career.

In a study of 500 injured women suffering from permanent partial injuries, made by the bureau of women in industry, it was found that one-fifth of the accidents resulted in impairment to the hands proper and almost two-thirds to the fingers of the workers. More than half of the hand injuries and approximately three-fourths of the finger injuries occurred on power working machines.

An analysis of the nature of injuries showed amputations to be the cause of about one-third of all injuries to these women. Cuts and lacerations were the nature of nearly one-quarter of the injuries, and these again occurred largely to the fingers and hands.

As far as women are concerned, the loss of a finger or hand is serious from an economic point of view. From this same study of 500 women suffering from permanent partial injuries, we found that at the end of an average period of four years, over one-fifth (21.2 per cent), of the women were still out of industry as a result of their accidents; over a quarter (26.4 per cent), though they had returned to work, had not

[1] No compensation allowed for first two weeks unless total disability exceeded seven weeks. Duration of disability was, therefore, two weeks! onger than number of weeks for which compensation was awarded, in the case of accidents causing disability lasting seven weeks or less. [The waiting time was reduced to seven days, by amendments, ch. 318, Acts of 1924.]

been able to regain their earning capacity; over half (52.4 per cent) had succeeded in maintaining their earning capacity. From an economic point of view, then, only about half of these women were able to regain their former earning capacity. From a social point of view a woman is apt to suffer because of her injuries more than a man.

The loss of self-assurance which so often comes to a woman with the realization that she is maimed or disfigured presents a serious social handicap. There were women whose self-consciousness was almost equivalent to physical suffering. As might be expected, these women were young. They felt the disfigurement of their injuries keenly, and it made them shy and backward about meeting people. A number of these girls said they always tried to hide their hands "in company." One girl felt everyone was looking at her hand. Another was ashamed to apply for a better position on account of her finger. Facial disfigurement, even though very slight, always caused embarrassment.

There were some women who felt their personal disfigurement had caused strained relations with their husbands. Some of these women had separated from their husbands since their accidents. Some girls traced broken engagements to their disfigurements. One of these reported that the man she was to marry couldn't bear the thought of eating food that she had prepared with her maimed hand.

The accident had a contrasting effect upon the lives of other girls, hastening them into matrimony. They reported they felt too discouraged to try to readjust to an industrial job and so hurried their marriages.

Even for the woman who rehabilitates satisfactorily in industry, an injury which impairs her efficiency as a housekeeper is a serious handicap. With such a high proportion of finger injuries, housework became difficult for a great many women. There were 104 women who reported the injury had impaired their general usefulness. Their handicap was so serious as to make it necessary for the women to have constant assistance. Of these, some were unable to care for their children, one woman being unable to lift her baby because of a stiff arm and two being unable to bathe or clothe their children. There were five women who reported they were unable to do any of their housework. Sweeping, dusting, or cooking had become impossible. Either some member of the family was helping out or some one had been hired to do the work.

Some women who reported impairment of general usefulness were able to do their own work, but said they were clumsy in sweeping and dusting, broke many dishes, or had difficulty in preparing their vegetables and in cooking. One old woman who kept house for her sons said that they were very impatient with her because she did not keep the house neat and because she broke so many dishes. She did her best, but since her accident "everything she touched seemed to go wrong."

Laundry work was difficult or impossible for 128 women. Many complained of extreme pain when they put their hands in water, others of inability to wring out the clothes. In 31 cases the women were compelled to send their laundry out, thus incurring an added weekly expense.

Some women complained of difficulty in doing their sewing and mending. Finger injuries made the handling of the needle awkward, and eye injuries made sewing impossible. One girl who had been accustomed to make all her own dresses and hats was now completely incapacitated for sewing. Another woman had earned about $200 a year doing embroidery work in her leisure time. Through her accident she not only lost the additional earnings but was robbed of the satisfaction and pleasure which this work brought her.

Recreational activities were curtailed as a result of finger injuries. A few women were compelled to give up piano or violin playing. Only three of these were professional players but all sacrificed a social talent which had brought them considerable pleasure. One of the professionals had gone into a factory temporarily to tide over a dull season and to earn a little additional money to continue her study—the third day she lost two fingers of her right hand.

Eye injuries also cut off social activities. Some women whose eyes were affected found difficulty in reading and writing. Some found their impaired eyesight a hindrance in reading music, and another's special grievance was that she could not go to the movies.

Difficulty in walking was mentioned by some women who had leg injuries. They suffered even in doing their own housework and, as one woman expressed it, she was "too tired to have any social life." Two of the younger girls felt unhappy because they could no longer dance.

Probably no scheme can be devised which will compensate workers for the serious social handicap which follows a permanent injury. But at least a continued emphasis can be made upon the heavy social and economic cost of such injuries as a further incentive toward accident prevention.

The development of industry to-day is such that too much emphasis can not be put on accident prevention. Machine power is replacing man power. Statistics show us that fewer men are each year producing more goods. For example, a 16-year-old girl can by means of a machine do the work formerly done by a number of adult men. These machines, manned by young people and women, introduce the problem of speed, of monotony, of noise, all contributors to fatigue, which in turn plays its part in causing accident. One way of eliminating fatigue is by adoption of shorter work days, rest periods, vacations, and a wage sufficient to enable the worker to provide for himself recreation and diversion. Modern industry, highly technical and specialized as it has become, introduces new elements which must be dealt with from the point of view of accident prevention.

Machines can be 100 per cent guarded, industry can be 100 per cent equipped against the possibilities of accidents, and yet accidents will occur, unless we keep constantly in mind the human factors which cause accidents. Safety education—as important a part as it plays—can accomplish only so much unless going hand in hand with it there is greater and greater effort toward the elimination of unnecessary fatigue.

FITTING THE YOUNG WORKER TO THE JOB

By Richard A. Flinn, A. M., Chief, Division of Employment

The Public Employment Office, the Employer, and the Worker

THE employment division of the New York State Department of Labor aims to help the employer by finding for him the right worker for his job and to help the work seeker by finding suitable work for him. In the year ended December 31, 1927, the division of employment obtained jobs for 58,457 men, 51,324 women, 14,694 boys, and 10,097 girls, making a grand total of 134,572 placements during the past year. In the year 1914 legislation was enacted providing for the establishment of public employment offices, and the offices were opened in January, 1915. Hundreds of thousands of persons were unemployed at that time, and relatively more unskilled workers were idle as compared with skilled mechanics. When employment conditions improved, the skilled workers were the first to go back to their former jobs, and it was sometime later when the untrained worker was able to find a job.

Fitting the Young Worker to the Job Will Help to Keep Him Employed

Even at times when there were a great many persons out of work, employers called for some skilled men, and it was often necessary to send letters to applicants notifying them that special types of jobs were available. On the other hand, when a call was received for a laboring job, or one which required no training or experience, there were always plenty of men waiting hopefully at the unskilled desk. It was evident, then, that the big job of the public employment office was to fit the young worker to the job and help him to become a trained worker. In later years when he had mastered a trade and grown to manhood, he would be less likely, in times of business depression, to lose his job or, if the worst came, to be idle as long as his unskilled neighbor. It is the aim, then, of the public employment office to fit the young worker to the job and to help him obtain work which is reasonably permanent. We know that persons are away from their work for other reasons. Ill health and accidents are two important causes of enforced idleness. As we shall see later, the public employment office strives to select jobs which will not be apt to cause ill health or accidents to the particular individuals chosen for these jobs.

Cooperation Between the School and the Employment Office

In fitting the young worker to the job, it is necessary for the placement worker to learn as much as she can about the mental and the physical ability of the individual child. In the early days of juvenile-placement work by the State department of labor in many cases it was difficult to obtain the school record of the child. Some teachers who were very busy with the many duties of a graduating-class teacher did not find time to furnish the information desired by the placement worker. The record of a troublesome boy who did well in manual training, because he liked the work, and who had failed in academic subjects because his interest had not been aroused, was obtained with great difficulty. His teacher was no longer interested in him or in his employment problems.

The establishment of the part-time or continuation school brought the labor department into closer contact with the board of education, in many cities. Branch offices of the public employment bureau were opened in several continuation schools. At the present time, in Albany, Syracuse, Rochester, Buffalo, and in New York City, placement workers of the State department of labor cope with the employment problems of boys and girls attending the continuation school. Even after these children have reached the age of 17, they are permitted to apply for work and after they become 18 years of age they are urged to use the services of the adult department.

The School Gives a Record of the Mental Ability of the Child

The grammar school or the high school last attended by the child forwards his school record to the continuation school, and it is available for inspection by the placement worker. Frequently boys and girls ask for jobs which require skill in arithmetic, spelling, composition, or penmanship, and the placement worker finds it advisable to consult a child's marks in these subjects. It is almost obvious that some of these children will be rejected after an interview by the employer, and yet they insist upon being sent to the job. One of the most convincing arguments—to persuade an employer to hire his help through the school employment office—is that the placement worker will save him the trouble of weeding out the unsatisfactory applicants and will send him only suitable workers. Some boys and girls in their anxiety to obtain work are inclined to exaggerate or to estimate too highly their school ratings or their training and experience. In addition to the records above mentioned, the placement worker has available a most valuable and trustworthy source of information—namely, the present class teacher of the child in the continuation school. The employment registration card kept by the placement worker contains a summary of the child's school record and frequently an opinion by the continuation school teacher of the type of work suited for the child.

Record of the Physical Examination of the Child

A medical officer makes a physical examination of the child prior to enrollment in the continuation school and sends a record of it to the employment certificating office. This record is usually read by

the placement worker, and a notation is made on the child's employment registration card of his age, height, weight, physical defects, and other facts to be considered when selecting a job for this particular child. One should not assume that a certain child is physically able to perform any and every kind of work merely because he has received written permission from a medical officer to go to work. Sometimes the boy or the girl may barely pass the minimum requirements, but the certificate is issued because that first job may be light, pleasant work and, in fact, may tend to help the physical condition of the child. However, the child may hold that job only a short time and may then obtain, through its own efforts, a position where the work is heavy or a strain upon the child's body. The placement worker consults the employment registration card before selecting the child for the position and considers carefully his physical fitness for the work. Further mention will be made of this certificate of physical fitness.

Duties of the Placement Worker

In general, the placement worker of this department finds suitable employment for children who are out of work and assists employers in obtaining competent workers. During certain months of the year, particularly in September and in October, some employers find it difficult to fill their vacant positions because the boys and the girls desired work only during the summer vacation and return to high school. The placement worker, like the ambitious teacher, is constantly studying and observing in order that she may acquire further knowledge, training, and experience in her work. Working conditions in industry are changing each day. The placement worker, as we shall see later, visits as many factories and other places of employment as possible in order to discuss with the employer the opportunities in his plant for young workers.

The Child's Employment Registration Card

The placement worker usually calls the child's application for work merely the "registration" card. To-day, however, we shall refer to it as the "employment" registration card in order that teachers may not confuse it with the enrollment or registration card which is kept by the class teacher or the school clerk. The employment registration card should contain all of the information which can be secured about the child's mental and physical qualifications for employment. The card contains space for the child's school record, his likes and his dislikes, his favorite school subjects, and for mention of any physical or mental handicaps or advantages to be considered when selecting a job for him. Space is provided for a record of all his jobs, whether obtained by the school placement worker or through his own efforts, from his first job up to the latest one. This record is of value not only to the individual child during the years when he is in contact with the placement office, but also as a case history containing a record of experiments, failures, and successes of importance to the placement worker.

Employer's Occupation Card

An employer when calling for workers may ask for various kinds of employees, who will be engaged at jobs where the nature of the work is different or where varying degrees of training or experience are required. For example, an employer may ask for an errand boy, for a stock clerk, and for a typist. A separate form is used for each type of work, and that is why it is called the employer's occupation card. One card, therefore, will contain on its face a description of the work to be performed by the errand boy or by the stock clerk, as the case may be. The reverse side will contain the names of the boys who have been sent to the employer as applicants for that particular position and the results of their interview. The occupation card for an errand boy to work for one employer may describe an entirely different job from that of an errand boy wanted by another employer. An errand boy for a printer may be a tall, strong, 16-year-old boy able to carry bundles weighing 30 or 40 pounds, while the errand boy for an insurance broker might be a small, neat, careful, and trustworthy boy whose duty it would be to deliver promptly to firms in the business district important papers, such as insurance policies and other papers, weighing only a few ounces. Obviously the small chap could not fill the big fellow's job, and the latter would lack the personality for the other position. The occupation card, therefore, should contain a job specification and a job analysis.

Selecting the Worker for the Job

In selecting the type of work for an individual boy or girl, the placement worker has many things to consider. First, she learns from the child his likes and dislikes in relation to work; secondly, the various kinds of work which he is mentally and physically able to perform; thirdly, the types of jobs available in the district and the employers who will hire boys of his type. Employers, too, have their likes and dislikes. One successful and good-natured business man can always be persuaded to find a job in his office for a boy with red hair, because it has been his experience on those particular jobs that red-headed boys are hustlers and satisfy his needs. Many boys and girls ask for office work. After a test shows that they are poor in penmanship, spelling, and arithmetic, and it seems unlikely that they will succeed in office work, the placement worker may suggest that they learn a trade or accept suitable factory work. They may be urged to give more attention to these academic subjects in their continuation-school work. These boys and girls are not told that they can not succeed in office work, but that it will be necessary for them to become more proficient in order to pass the tests given by many employers. Some boys and girls who enjoyed their shop work in the upper grades or in the vocational school know what they want to do, and the right opportunity is usually found for them. Many children say that they can "do anything." They are the real problems. Their school record in academic and in shop work is given careful consideration. The continuation-school teacher is consulted. The placement worker recalls to her mind many kinds of jobs in factories which she has visited and talks

to the child about these jobs. In some cases the child has listened attentively to the teacher's discussions of various occupations and is interested and would like to try one of them. Always it is the purpose of the placement worker to select a job which will lead that individual child to the attainment eventually of a suitable occupation in which he will be a useful citizen and of service to the community.

Few Children Think About Their Life Work

Many boys and girls, however, give little thought to the choice of an occupation. They do not give any attention or reflection to the work which they see being performed by men and women. They do not realize that in a few years they, too, will be men and women and at occupations which probably will be their life work. To many girls work is a task for an indefinite time until they marry. They say that office work affords better opportunities to meet eligible men. Girls who might earn excellent wages at light, clean work in garment factories frequently prefer routine clerical work in offices. Many widows, some with children to support, formerly were unskilled office workers and now find it very difficult to obtain employment. On the other hand a woman who has a trade usually finds that her skill and not her age is the important factor in fixing her wages. Many boys do not think about their life work, and the size of the pay envelope or the easy job is the thought occupying their minds. Other boys, who are interested in an occupation, do not realize that the trade they wish to learn has work hazards which will be present every day during all the years they follow it. A careful, skilled carpenter in good physical condition is not apt to be injured. However, he may be the victim of an accident caused by a fellow workman. Children should be taught by teachers and by placement workers that some occupations have greater risks of accidents than others.

Mental and Physical Misfits

Boys and girls often find their first job for themselves, and frequently it is not suitable. They take it because it is the only work they can find, or because they are tired of school and wish to have money to spend. Many girls when selecting a job do not give that matter as much attention as they do to the choice of a new hat. A girl does not accept the first hat offered to her. Even though it may at first sight appear becoming or fit, nevertheless she will examine several others before making a definite choice, and she will consider several points before she makes her decision. Isn't it unfortunate that the slow-witted girl of 16, who never seems to grasp things, took a job at a stamping press. Her story, after a serious accident, was pitiful. A girl friend told her about the job and the pay, but nothing about its dangers. She would not have taken the job if she had taken the time to discuss the job with her teacher or with the placement worker. Boys sometimes find jobs which will lead to good positions, but they lack the education necessary for advancement to the better jobs. These boys may work for one or two years and find that boys with a better education are being promoted while they remain in a

rut. These poorly trained boys drift from job to job and often are stranded in early manhood, when they should have reached the goal attained by their former companions.

Doing the Dangerous Work

Many of the boys, in school to-day, will be doing the dangerous work of to-morrow. There are those who must serve the general public. They must provide light, heat, power, and railroad service. Some of the occupations in this industry are dangerous, and yet somebody must do the work. Houses must be built. Skyscrapers must be erected; machinery must be constructed; chemicals must be made. The placement worker in the public employment office must be familiar with the hazards in industry. After she has learned what work the child likes, she must judge if he is fit for it. If a boy selects a job which has hazards, they are pointed out to him and he is cautioned how to avoid them. Boys and girls who are mentally or physically unfit for certain work are not sent by the placement worker to those jobs. If they, of their own initiative, find such jobs and are injured, it is not the fault of the placement worker. Occasionally a continuation-school child has been injured at work, but it is generally found that the child himself obtained the job without consulting the placement worker.

What is Known About Jobs

As a general rule a child should not be sent to a job until a visit has been made to the place of employment to learn the nature and the conditions of work. Sometimes teachers hear about a job, and without knowing anything more about it than the brief description given by the employer, they send a boy or a girl to the job. It is the practice of the employment division of the State department of labor not only to visit every place of employment in which a job has been obtained for a boy or a girl, but to make a complete report of the visit. The employer's record card, as it is called, contains all of the information necessary about working conditions for boys and girls to enable the placement worker to fit the right child to the job. Each juvenile occupation in that particular place of employment is described and analyzed. What is the nature of the work? Is it heavy or light, or must it be performed with speed? Does the child sit at a bench doing hand work or on a machine? Or does he stand at a floor machine? Is the work monotonous, dirty, or wet? Does it involve a nervous strain or a physical strain? What are the conditions of work? Does the child stand or sit? Are there operations of stooping, moving, reaching, or lifting, and to what extent? What are some of the qualifications for work? What degree of hearing or sight is necessary? Of accuracy, neatness, or cleanliness? Should the worker be short, medium, or tall? Does the work require a person of average mental ability, above the average, or can it be performed by a person below average? The card contains a brief description of the manufacturing processes or duties of the position, and these are explained by the placement worker to the child seeking work. There are many other items on this card which help the placement worker

sometimes to find an exceptional opportunity for a pupil who has special talent or, on the other hand, for the handicapped child who is limited to certain kinds of work.

Follow-up Work

After a job has been found for the child he is encouraged to return from time to time to the placement worker for further advice and information. The continuation-school boy and girl can be interviewed conveniently on the day designated for their school attendance. Sometimes the placement worker notifies the teacher to send the child to the placement office on that day. The child may have been placed temporarily in a certain position, and the placement worker may have a more desirable job to offer him. At regular intervals of one month, three months, etc., follow-up letters are sent both to the employer and to the employed child asking whether everything is satisfactory. If the child complains about work conditions, the employer is visited. The work may be heavy, dusty, or dangerous. Accident hazards are removed if possible. This follow-up letter reminds the child that the placement worker is interested in his progress, and it often causes the employer to pay closer attention to that individual child. He knows that someone is looking after the industrial welfare of that child, and frequently he takes a kindly interest, too. Complaints which, if not adjusted promptly, might lead to a change in jobs are received from the child or from the employer. The employer may report that the child is tardy, or lazy, or careless. The placement worker talks it over with the boy. It has been found in some cases that a scolding by an employer leads to the sudden quitting of the job, whereas a warning by the placement worker frequently results in an improvement in the boy's work and encourages good habits. One of the most serious faults of working children is that of quitting a job without a definite promise of another position. Much unemployment results. Follow-up work encourages boys and girls to tell their troubles to the placement worker, and many grievances are removed or explained away by the placement worker. At those seasons of the year when jobs are hard to find children who are not entirely satisfied with their jobs are urged to keep them until new work can be found.

Paying Attention and Following Instructions

The teacher knows which boys and girls are habitually inattentive. Some children do not hear the instructions, or do not thoroughly understand them; others forget, or are dreamers. Their minds are not on their work. The placement worker appreciates information from the teacher concerning this lack of attention. Not only does the placement worker refuse to place the child at machine work, if she knows that he is inattentive, or will not follow instructions, but she warns the careful, attentive boy and girl to insist on getting sufficient instructions from the foreman before operating the machine.

Prohibited Occupations and Hours of Employment

The placement worker insists on the legal proof of age from the child. The provisions of law relating to the hours of work permitted to children, prohibited occupations on dangerous machines, and of certain jobs which may injure the health or morals of girls are observed to the letter. The child's date of birth, as certified by the board of health, is recorded on the employment registration card and consulted whenever the child applies for work. No child under age is knowingly sent to a prohibited occupation. However, for example, a boy may be hired as an errand boy or a girl as a packer and within a few days be transferred by a foreman to a prohibited occupation. Some small employers may allege that our placement worker sent the child to a prohibited job, but our records prove otherwise. More than 25,000 positions are obtained annually for boys and girls, and there are few, if any, cases in which these children have been injured on the job which our placement workers have selected for them. Moreover, some boys and girls themselves found jobs in which accidents were possible, and later applied to the placement worker for work with less risk of accident. In many cases more desirable work was found. The first factory job may not be dangerous, but it may lead in later years when the boy is 18 years of age, to hazardous work. The placement worker is familiar with hazardous work for men and women because the State department of labor finds jobs annually for more than 100,000 men and women in almost every type of work. The placement worker has available the records of the adult departments, and informal conferences of the entire employment staff keep her posted on working conditions of men and women. She has a fairly accurate picture of the work the children of to-day will be doing in a few years if they continue in these lines of work.

Contented Trained Workers

In fitting the young worker to the job it is often a problem to find a place in a particular occupation desired by the boy or girl. The child seeking his own job rarely knows where to find many of the opportunities. He is like a stranger without map or guide seeking his way in a large city. He may waste much time in looking for a certain job and, not finding it, accept work with which he is not satisfied. Again, the boy who wants to be an electrician's helper may visit many shops and be turned away. If he applies to the placement worker and is fit for the job, she usually can get him a position if no such job is available in her files. She telephones to many employers who have called upon the office for this type of help and persuades one to give him a chance. The boy who is fitted for his job is interested in his work and in the machines which he will learn to operate. He will stay on the job and in time become a good mechanic and a contributor to the prosperity of his community. The young worker who is a misfit becomes dissatisfied and frequently changes his job; he is careless; he stumbles and falls in his unfamiliar new place of employment; he is inattentive; he plays tricks and is not interested in his work. Some girls have similar faults and, if they are not fitted for their work, they dislike work,

grow lazy, and remain idle when work is plentiful. Those who are happy at their work make a valuable contribution to the welfare of the community.

Employment Problems of Employers

Contented workers and happy employers are generally found under the same roof. There are, however, some employers who complain that they can not find boys and girls or that the boys and girls of to-day do not stay long on the job. Employers with attractive working conditions, adequate light, heat, and ventilation, as well as reasonable wages, find no difficulty in obtaining sufficient help. It is true, however, that many boys and girls quit good jobs for trivial reasons. Some expect promotion, in pay as well as in type of work, every few months. Others expect to learn a trade in a year and will not spend the three or four years necessary to become a skilled worker. The placement worker finds it necessary every few weeks to counsel, to persuade, to coax, and perhaps to beg certain boys and girls to stay in their present positions and to wait patiently for advancement. She tells them from actual cases the stories of other boys and girls in these same places of employment who persevered and ultimately were happy in the possession of a useful trade and excellent earning capacity. Employers, then, who provide suitable working conditions and opportunities for advancement find little difficulty in obtaining and keeping young workers. Moreover, whenever the placement worker has no immediate job for a deserving boy or girl, her first act is to telephone to these employers and offer them the first opportunity to interview these children. One employer complained that continuation-school boys never worked long for him. The matter was investigated and it was learned that the boys whom he had hired had themselves sought the jobs and had not been selected by the placement worker. They were searching merely for a job and after the novelty of the new work had worn off they were no longer interested and decided to try something else. The complaint of that employer may be said to be general, because you often hear it said that our present educational system does not adequately train children for business or for industry. It is not my intention to discuss at this time arguments to support or disprove that complaint. I am sure, however, that we will all concede that not only continuation-school pupils, but even high-school graduates and some college graduates, take positions in industry or in business principally because they need a job, and largely because they have made no analysis of the requirements and opportunities in that particular line of work or their fitness for it. Teachers can be proud of their work when their pupils, entering into industry, meditate on the various types of work and their individual fitness for special jobs.

Accident Prevention for the Older Youth

The best time to educate working boys and girls in accident prevention is before they lose all contact with the school. Education in accident prevention may be said to be a continuous process as

related to employment work in the schools. The placement worker touches upon it in her daily work with each individual child, not only when the boy or girl is being sent to a job, but also when interviewing employed children as a part of the follow-up work previously mentioned. When applicants reach the age of 18, the employment records containing their work history for several years are transferred to the adult department. The young men and women are selected, thereafter for jobs based upon their mental and physical equipment as well as their previous employment record. Care is taken not to send men and women to jobs which seem likely to prove injurious to them.

Special Activities of the Public Employment Offices

The men's division and the women's division have several departments each handling a special type of clerical, skilled, or unskilled workers. Applicants who are farm hands, mechanics, laborers, clerical workers, or professional men and women are interviewed by specially trained placement workers, and suitable positions are obtained for them without charge. These public employment offices are maintained by the State department of labor in Albany, Syracuse, Rochester, Buffalo, Dunkirk, Elmira, Binghamton, and Oneonta. There are also four offices in New York City, in the Bronx, in Brooklyn, and in Manhattan, and also a negro office in Harlem. The work of each office embraces a district of several counties. Whenever there is a demand for workers which can not be supplied by that district office, surplus applicants are referred by the other district offices to fill the job.

Teachers' Employment Bureau

Two years ago, at the suggestion of Industrial Commissioner Hamilton, a teachers' employment bureau was established with a central office in New York City. Branches are located in each of the cities mentioned above. Teachers seeking positions file a special application form, at the nearest district office, together with a duplicate copy which is forwarded to the central office. Information concerning vacancies is obtained from school superintendents and principals throughout the State, and applicants are notified of the vacancies for which they are qualified. A special leaflet, giving a brief description of the work of this teachers' bureau, will be distributed to those attending this course of lectures.

LEGAL ASPECTS OF LABOR PROBLEMS

By Alexander A. Tausky, Assistant Attorney General in Charge of the Labor Bureau of the Department of Law

Functions of the Attorney General

UNDER the State departments law there is provided a civil department in the State government under article 5 of the constitution (ch. 78 of the consolidated laws). Under section 180 of the law, there shall be in the State government a department of law. The head of that department shall be the attorney general.

The organization of the attorney general's office was continued as the organization of the department of law. Attorney General Albert Ottinger is the counsel and legal adviser of the industrial commissioner (who is the administrative head of the department of labor) and also the counsel and legal adviser to all of the department's offices and bureaus throughout the State of New York. The attorney general maintains an office located in the building of the department of labor in New York City, with a staff of assistants, deputies, and attorneys, and represents the department in all actions and proceedings brought by or against the department.

The attorney general is also the attorney of record in the prosecutions of all appeals taken from awards and decisions by employers and insurance carriers in compensation cases. The costs of the proceedings and the services rendered to the claimants in connection therewith are free of any charge whatsoever.

The attorney general also is the attorney of record in the prosecution of all violations of the labor laws, which are referred to the attorney general's office by the Department of Labor of the State of New York.

The labor laws are administered by the industrial commissioner and under section 21 of the labor law, the commissioner is the administrative head of the department, and shall enforce all of the provisions of the labor law and of the industrial code; and shall cause proper inspections to be made of all factories and mercantile establishments and to enforce the laws prescribed and make investigations of the conditions of women in industry and inquire into the cause of strikes and industrial controversies.

The State industrial board, consisting of five members, one of whom is the chairman, is empowered to make, amend, and repeal rules for carrying into effect the provisions of the labor law and to prescribe means and methods to effectuate such provisions. It has power to hear and determine all claims for compensation under the workmen's compensation law and to require medical services for injured employees. In this connection the board is assisted by referees

appointed by the industrial commissioner, who exercise all other powers and duties exclusive of purely administrative functions.

The rules of the industrial board are made for the proper sanitation and for guarding against and minimizing fire hazards, personal injuries, and diseases; the construction, alteration, and maintenance of structures relating to factories, factory buildings, and mercantile establishments, it being the intent of the legislature in empowering the board to make rules so that all places to which the laws apply shall be so constructed, equipped, and conducted as to provide reasonable and adequate protection to the lives, health, and safety of all persons employed therein.

In the event that there are any practical difficulties in carrying out any of the provisions of the labor laws or rules of the board affecting the construction or alteration of buildings, etc., any person who may be affected by such provision or rule may petition the board for a variation, by notifying the board or by making application for a hearing on such petition, and after the board has heard the persons so affected by any provision or rule a resolution is adopted describing conditions under which the variation shall be permitted. If the decision is unfavorable to the person so affected thereby, he may bring an action in the supreme court of the State for the determination of the validity or reasonableness of such rule or provision of the labor law, which action is really in the nature of an appeal from the determination of the board, and then, if the person affected thereby is dissatisfied with the judgment or order of the supreme court, he may go to the appellate courts to have the matter finally adjudicated.

The labor laws relate to sanitation in factories and mercantile establishments; to proper ventilation and sanitary workrooms; to prevention of accidents on elevators, or machinery; to fire protection, requiring a requisite number of exits; to working hours for women and minors; to occupation of children; and to numerous other conditions. Failure, on the part of those who are responsible, to obey and comply with the orders of the department gives rise to prosecutions.

Before, however, any of these prosecutions are instituted, the parties are given ample notice of the noncompliance of an order or violation of the law, and after having received notice of the noncompliance of an order or violation of the law, there is, in addition thereto, a departmental calendar which contains the names of such persons or firms who fail to comply with the law, and the person or firm is summoned to appear before the director of factory inspection, or other person who may be designated to preside at such hearings, and to state any reason for the noncompliance of any violation, and if he can not give any good or sufficient reason for noncompliance, he is warned by the person presiding at the hearing that in the event he refuses or neglects to carry out the order within a reasonable time that prosecution will be instituted against such person or persons.

Now, I have attempted to show the procedure preliminary to instituting actions against persons or firms who violate the labor laws.

The early factory laws provided no special offices for their enforcement. It was assumed that complaints would be made by employees who happened to be injured, and it was merely provided that the

ordinary officers attached to the court, such as sheriffs, policemen, prosecuting attorneys, should attend to the prosecutions on complaint of such employees, but as the years went by it was found that the laws could not be enforced in that manner. Employees would not make complaints against their employers for fear of being discharged. Officials would be lax in enforcing the laws. Then, beginning in the decade of the sixties, there was created a special State police, known as factory inspectors, whose duty it was to investigate the conditions in the factories, to get their own evidence of violations, and then to conduct the prosecutions themselves. The first State to appoint these special police was Massachusetts. The system of factory inspection in the State of New York was adopted in 1886 by the passage of an act to regulate the employment of women and children in manufacturing establishments, and to provide for the appointment of inspectors to enforce the same.

The chief object of the inspector is to secure evidence for prosecution against violators of the law. After the inspector has discovered any violations, the matter is presented by the inspector to one of the counsel of the department of law, who is assigned to receive the evidence, and determines if there is a case made out that will probably result in a conviction when tried in the court. If counsel is satisfied with the evidence presented by the inspector, the department of law prepares an information or complaint based upon the evidence presented. The inspector then appears before a magistrate and swears to the complaint, upon which the magistrate issues a summons, and the same is then served by the inspector on the defendant.

The trial of labor cases in New York, Kings, and Bronx Counties, is held in the Municipal Term Courts. In Queens and Richmond Counties they are tried before a magistrate in the district court. In other counties in outlying districts the cases are tried before a justice of the peace.

If the defendant waives his right to be tried in the Court of Special Sessions, his case may be tried in the municipal term of the counties of New York, Kings, and Bronx. In Queens and Richmond Counties, likewise, if the defendant waives his right to be tried in a court of special sessions, the case is tried before a magistrate. In up-State cases, some of them come up before a justice of the peace for hearing; he has jurisdiction to hear and determine, sitting as a special sessions court under section 56 of the criminal code.

Under section 1275 of the penal law:

> Any person who violates or does not comply with any provision of the labor law or any provision of the industrial code, or any rule, regulation, or lawful order of the State industrial commissioner or industrial board, is guilty of a misdemeanor, or upon conviction shall be punished for a first offense by a fine of not less than $20 and not more than $50; for a second offense by a fine of not less than $50 and not more than $250, or by imprisonment for not more than 30 days, or by both such fine and imprisonment; and for a third offense by a fine of not less than $250 or by imprisonment for not more than 60 days, or by both such fine and imprisonment.

The defendant is called upon to plead. If he pleads guilty, and if the case is one for noncompliance with an order, the case is often immediately disposed of.

Now, we come to the problems that confront counsel in the trial of a case for the violation of the law, and the question to be decided very often is one of—

Constitutionality of Laws Enacted by the Legislature

In questions of constitutionality, the question really to be decided is the conformity of the law with the constitution.

It is then the duty of the court to investigate the question as to whether there is really an evil condition that needs to be remedied; whether this condition is a menace to the public or whether the statute is merely a benefit to private individuals without public benefit; whether under the actual conditions the legislature confiscates property; or whether there was discrimination and denial of equal protection under the enacted law.

In the case of Lochner *v.* New York (198 U. S. 45) where a 10-hour law for bakers was tested, the court had before it only a limited amount of general information on the subject without any special investigation, the majority ruled that the facts were not conclusive to warrant such legislation for the following reasons:

> We think the limit of the police power has been reached and passed in this case. There is in our judgment no reasonable foundation for holding this to be necessary or appropriate as a health law to safeguard the public health or the health of the individuals, who are following the trade of a baker. We think that there can be fair doubt that the trade of a baker in and of itself is not an unhealthy one to that degree which would authorize the legislature to interfere with the right of labor, and with the right of free contract on the part of the individual either as employer or employee.

The court further states in their opinion:

> That there must be more than a mere fact of the possible existence of some small amount of unhealthiness to warrant legislative interference with liberty.

But it must be borne in mind that this is the usual attitude of the courts where investigation of the facts have not been brought to their attention, and where the court relied on such knowledge acquired by themselves. In such a case, in which there has been no investigation by the courts, the court might take what is called "judicial notice" of facts even though they are not presented in evidence and might rely upon what it considers "common knowledge."

But there are other questions which arise in the trial of a case; whether it can be proven that the defendant was guilty of a violation of the labor law. Take the section of the law prohibiting the employment of children and females. It is provided in section 130 of the labor law that:

> No child under 14 years of age shall be employed in or in connection with or for any factory, mercantile establishment, business office, telegraph office, restaurant, hotel or apartment house, theater or other place of amusement, bowling alley, barber shop, shoe-polishing establishment, or in the distribution or transmission of merchandise, articles, or messages, or in the sale of articles.

"The prohibition is absolute, making the violation of a prohibition a misdemeanor. Criminal knowledge or intent forms no element of the offense." (People *v.* Kibler, 106 N. Y. 321.)

Take for example the case of a violation by a certain large distributor of milk. The company was charged with permitting employment of boys under 14 years of age. The defendant set up as a defense that they did not employ the boy nor permit him to work in connection with its establishment, and furthermore that while a corporation is liable for the acts of its officers, it is not liable criminally for the acts of mere employees, which acts are forbidden by the company itself, and done without its knowledge or consent.

In this case it was shown on the trial that frequently milk was lost or stolen from the wagons; that the company had a rule which was posted in its place of business, and which provided that drivers must not under any circumstances allow any person not in the employ of the company to assist them in any way, or to ride on their wagons, and that any violation of this rule would be sufficient cause for dismissal. The company, however, knew quite well that its drivers violated this rule, and claimed that in order to prevent violations thereof it employed inspectors to go out on the routes of various drivers and see whether they were obeying the rule; the inspectors found the rule violated, but in no case did the company discharge a driver for the violation of the rule. The court in that case found the defendant guilty, and from that judgment the company appealed to the appellate division, first department, and that court held that the first and underlying question is whether the offense charged is malum in se or malum prohibitum. In the prevailing opinion, the court held that in the case of an act malum prohibitum *intent forms no part of the offense.* That it is sufficient if it is shown in a statute such as this, that the owner or proprietor of a business, violates the condition prohibited by the statute, and therefore it makes no difference whether the owner or proprietor carries on the business himself or entrusts the conduct of it to others. (People *v.* Sheffield Farms, S. D. Co. 180 App. Div. 615.)

The appellants were not satisfied with the affirmance of the judgment of conviction, and then appealed to the court of appeals, who affirmed the judgment of the trial court, and also affirmed the order of the appellate division; and Judge Cardoza, writing in a lengthy and instructive opinion in which he very lucidly explains the law relative to the prohibition and violation of the law under a statute of this kind, said in part:

> That the defendant's duty did not end with the mere promulgation of a rule, but there was duty of enforcement. * * * That the section of that law is directed primarily against the employer and also secondarily against others as they may aid and abet him. That the employer must neither create nor suffer in his business the prohibited conditions. The command is addressed to him. Since the duty is his he may not escape it by delegating it to others. (People *v.* Taylor, 192 N. Y. 398–400) * * *. He breaks the command of the statute if he employs the child himself and he breaks it equally if the child is employed by agents to whom he has delegated his own power to prevent.

It is further provided regarding the employment of children under section 131 of the labor law that—

> No child between 14 and 16 years of age shall be employed in or in connection with or for any factory, establishment, or business specified in subdivision 1 of section 130 unless an employment certificate as provided by section 631 of the education law is kept on file in the office of the employer at the child's place of employment.

In this case the defendant was convicted of a violation under this section of the labor law. Upon the trial it appeared that the inspector called at the factory of the company, who saw the defendant, who was the treasurer and superintendent of the factory and in charge thereof, and found a girl under the age of 16 years, but there was no certificate filed as required by the labor law. The girl testified that at the time she was working for the company she was 15 years of age, and that she had no certificate and none had been filed with her employer. The defendant testified that he had been with the

company for nine years, but that he had nothing to do with the employment of the girl; that as soon as he had ascertained the age of the girl he discharged her; and that she was not employed there with his consent or knowledge without a certificate. But another witness was called and testified that she was also employed by the company for over 15 years; that the girl in question told her that she was 16 years of age, and that she employed her, therefore, without a certificate; but, nevertheless, the court found the defendant guilty. Upon appeal the court, in its opinion, stated:

> That the statute provided that no child shall be employed, permitted, or suffered to work in or in connection with any factory, thus imposing upon those responsible for the management or control of factories a special duty to see that no child under 16 years of age, without a certificate required by the statute, shall be permitted or suffered to work in or about the factory. If the statute had been simply against the employing of an infant, a different question would be presented. But where an employer of labor is prohibited from suffering or permitting "a person to work in a factory, he can not escape responsibility by proving that he directed his employees not to employ a person to labor in violation of the statute." (People *v.* Taylor, 124 App. Div. 434.)

Judgment, therefore, which was appealed from was affirmed, and therefore the defendant was guilty of a misdemeanor for violation of the statute.

There are other questions which are presented at a trial under this section of the law, and that is the question of the birth of the child. It must be proven that the child was under the age provided under this section of the law, and that is incumbent upon the people. It occurs at times that there is a dispute as to the age of the child employed. The child may have represented herself to be of proper age, and they may set up the defense that the child was of proper age, and in order to prove the birth of the child, it is necessary that the mother testify as to its birth; but it is difficult very often to prove that fact when the child is motherless, and then other evidence must be produced to prove that fact, either by the child itself or by other witnesses, and if such witnesses are not available, then it may become necessary to introduce a birth certificate, but that must be also proven by the person who can properly testify as to the accuracy of the certificate, and the authenticity of the same. Sometimes it occurs that even the mother is loath to testify as to the correct age of the child, because of her willingness that the child should be employed, in order to assist in the maintenance of the home; but, as a general rule, it can be said that the convictions for violations of this section of the law are frequent.

In the second annual report of the factory inspectors there can be found a statement to the effect, "it is extremely difficult to obtain any facts regarding the date of the birth of children born in this State. That it has been the experience of many, if not all, of the extensive manufacturers that not a few parents are perfectly willing to say that their children are over the age required by law, but when the statements are written and read, and they are called upon to swear to them, they will not do it. Still there are some parents that will commit deliberate perjury in order to get work for their offspring." But that condition has greatly improved and such is not the case now. With the cooperation of the courts and the employers, we are able to enforce this law quite satisfactorily.

Under sections 160–161 of the labor law, employees are permitted to work only a certain number of hours, which constitute a legal day's work, and there must be one day of rest in seven. Every employer operating a factory or mercantile establishment or freight or passenger elevator in any building, is not permitted to have his employees work on Sunday, unless he shall conspicuously post on the premises a schedule of the employees permitted to work on Sunday, and designating the day of rest for each, and furthermore, such a schedule must be filed with the commissioner.

The constitutionality of the provision that every employer shall allow every employee at least twenty-four consecutive hours of rest in any calendar week, has been considerably litigated. The leading case in which the contention was that the "law was unconstitutional and violated any attempt to limit the right of a male adult to contract for his labor in the same pursuits, and that the legislature violated the provisions of the Constitution, both of the State and the United States, and that no person shall be deprived of life, liberty or property, without due process of law." In that case the court held:

> That the provisions of the statute on its face are reasonable, fair, and appropriate; and it can fairly be believed that its natural consequences would be in the betterment of public health and welfare, and therefore, it is one which the State for its protection and advantage may enact and enforce. (People *v.* Klinck Packing Co. 214 N. Y. 122.)

In such a case the question arises whether the employer has made arrangements for giving the employee one day of rest during the week days. Likewise every employee must be allowed 60 minutes for meals during the day. Of course, exception is made in certain cases, where an employee works for a street surface or elevated railway. In such a case they may work 10 consecutive hours and be given one-half hour for meals. There are other exceptions to which this section does not apply; that is, to janitors, employees in dairies and creameries, etc. Also, in cases of mercantile and other establishments, no child under 16 years of age shall be employed in or in connection with any mercantile establishment, business office, or telegraph office, restaurant, or hotel, for more than 6 days or 44 hours in any week; and no more than 8 hours in any day between the hours of 6 in the evening and 8 in the morning. No female over 16 years of age shall be employed in a mercantile establishment more than 6 days or 48 hours in any week, excepting that she may be employed 9 hours on one day of each week, in which case she may be employed 5 days of the week, at not to exceed 9 hours on each day, and not more than 4½ hours in any shorter day, and the total number of hours during any week can not exceed 49½ hours. Now, in addition to this, she may be employed 78 hours during any calendar year provided that the female be not permitted or suffered to work more than 10 hours any day nor more than 6 days, and no more than 54 hours in any week.

The problem that arises in some cases, is that the employer fails to make up and file a schedule of the number of hours which the female is required to work,; the law provides that in the event that the employer desires to employ a female more than 48 hours in any week, he must post a notice of such overtime and file a copy with the commissioner.

There are cases of violations under section 181 of the law, in which the defendant contended, in a case where the law prohibited the employment of a woman over 16 years of age after 10 o'clock in the evening in a mercantile establishment, that the place of business being an amusement company where there was a booth wherein the girl was selling chewing gum in the defendant's amusement park, the main question to litigate was whether the person was working in a mercantile establishment; and also in a case where the law was violated in a drug store in which there was a sale of goods outside of drugs, medicines, and chemicals, the courts held in both cases that these establishments were mercantile establishments; that the dimensions of the shops or portion of the particular establishment that is used for the sale of such merchandise does not determine whether they come within or without the statute, or as to the quantity of sales of the particular article does not come into the question. The fact that the woman was permitted to work at night beyond the prescribed hour stated in the statute is a violation of the law, and judgment of conviction was affirmed both in the appellate division and in the court of appeals.

There are other important laws which relate to factories—the laws enacted for the prevention of accidents, requirements for elevators and hoistways, and the guarding of machinery.

The burden of proof as to the assumption of risk in the case of failure to comply with the statute as a general rule is upon the employer, and the question arises sometimes whether the employer or the owner or lessee of the premises is to be charged with the violation of the law.

Then we have the fire hazards, the most important being exit doors leading to the street and whether doorways are easily accessible, so that in the case of fire there may not occur a catastrophe. There are a number of other sections of the law for the protection and safety of employees, and sections of the law relating to sanitation.

Under the general business law (ch. 20 of the consolidated laws), no person is permitted in the making, remaking or renovating of any mattress, upholstered spring bed, or metal bed spring for sale, to use any secondhand material, which has not been thoroughly sterilized by an effective process prescribed under the law, and no person shall sell or offer for sale, deliver or consign for sale, or have in his possession any upholstered spring bed or metal bed spring in the making, remaking, or renovating of which there has been used any secondhand material, which has not been thoroughly sterilized by an effective process. Before the inspector finds a violation of this section of the law, he must open the mattress and look at the contents, and if he finds that the material is not what it is represented to be, he extracts a sample of same as evidence of the contents of the mattress, and if it is not properly tagged then it is a violation of the law. If the material used in the mattress is not new, it must under the law be properly sterilized, and if it does not contain a yellow tag, it is a violation of the law; but the problem is for the people to prove, first, that the mattress was in the possession of the person offering it for sale, and then it is necessary to ascertain the name of the manufacturer, and he also can be held responsible for the violation. The people must prove by competent expert testimony the condition of the contents of the mattress; that upon examination of the sample it was found to be different than

represented by the tag, which if new material should be white, and if secondhand material should be yellow, and if it is found that it was secondhand material and unsterilized, and that the mattress did not contain a yellow tag with the date of sterilization and the name and address of the person or firm who sterilized the same, then that is also a violation under the section of the law; but in all cases in which there is a violation of the law relating to a mattress or a spring the people must show, in addition to what the inspector found, the real condition of the material by expert testimony.

This law has been enacted because of the numerous complaints that have been made by purchasers on account of the material found in the mattress. It would be represented, for instance, that the material in the mattress was all new material, cotton and jute, whereas, the inspector would find on investigation, that the contents of said mattress consisted of cotton, jute, and shoddy, the manufacturer delivering and consigning the said mattress to the dealer who offered it for sale and who had it in his possession; or it may be a case in which the box springs are manufactured and that the manufacturer neglected to provide tags to the box springs and failed to describe the material in said box springs as provided by law; but in all cases it must be shown that the mattress or box springs were in the possession of the defendant offered for sale, and in order to frustrate any attempt on the part of an unscrupulous vendor in manufacturing mattresses or bedding of any kind and from misrepresenting to the public the contents these laws were enacted and have been vigorously prosecuted and as a general rule conviction has been secured.

Before concluding I wish to make reference to a beneficial law, which has been enacted by the legislature and is known as the workmen's compensation law, and before explaining the various problems that present themselves in the enforcement of said law I wish to briefly review the historical development of the workmen's compensation law.

As I have stated above, the attorney general prosecutes all appeals from awards and decisions taken by employers and insurance carriers in compensation cases. He represents the State industrial board on all appeals. He prosecutes cases in which the employers have failed to comply with section 50 of the workmen's compensation law, which provides, that every employer shall secure compensation to his employees in the following ways: Either by insuring and keeping insured the payment of compensation with any stock corporation or mutual association authorized to transact the business of workmen's compensation insurance in this State; by furnishing satisfactory proof to the commissioner of his financial ability to pay such compensation for himself, in which case the commissioner may require the deposit of securities of the kind prescribed under the law; or the employer may secure the payment of such compensation in the State fund; and section 52 of the workmen's compensation law provides the penalties for failure to secure the payment of compensation, under which section such failure constitutes a misdemeanor punishable by fine or imprisonment.

With an unsatisfactory experience under the employers' liability law the United States followed with considerable interest the introduction of workmen's compensation in foreign countries. In 1891

the United States appointed certain commissioners to study the German system and the reports of the Commissioner of Labor containing the results of the investigations by the commissioner and published a few years thereafter. Another investigation of European systems was made in 1898 by Massachusetts at the request of the legislature of that State.

The period from 1890 to 1911 was devoted to investigation and experimenting, and public opinion was inclined to favor the principle of the workmen's compensation law. During this period certain individual States attempted to enact laws on the principle of workmen's compensation, but no permanent legislation was really enacted by any State, and the problems that confronted the legislature was first, that of making workmen's compensation compulsory on the part of both the employer and employee; and secondly, that of overcoming constitutional questions and objections. The second period began in 1911, and first there was an amendment to the State constitution making the compensation law compulsory, but the principle of workmen's compensation was finally accepted in some of the States.

The first workmen's compensation measure in New York State was in 1898, modeled after the British act, and was introduced in the New York State Legislature in that year, and this bill was referred to the judiciary committee but not reported. A few years after some of the other States of the Union succeeded in enacting a workmen's compensation law, but it was confined only to a selected few employments.

In 1910 the first workmen's compensation law (Laws of 1910, ch. 674) was held unconstitutional by the highest court of the land because it was held that it imposed liability without fault and took property without due process of law. Thereafter, in 1913, the amendment to the constitution was made (art. 1, sec. 19) which gave the legislature plenary power to enact workmen's compensation law. It read in part as follows:

> Nothing contained in this constitution shall be construed to limit the power of the legislature to enact laws for the protection of the lives, health, and safety of employees, or for the payment either by employers or by employers and employees, or otherwise.

In other words, in the case of Ives *v.* South Buffalo Railroad Co. the workmen's compensation law, as enacted in 1910, was held unconstitutional on the ground that it subjected the individual employer to a suit for damages without fault, whereas the 1914 statute provided a method through the State insurance fund or alternative plans of distributing the burden of compensation equitably over the industries affected thereby. In view of both of these differences, and also in view of the decision of the United States Supreme Court in the case of Noble State Bank *v.* Haskell, the court held that the conflict with the Federal Constitution no longer existed. Therefore the New York workmen's compensation law, as enacted in 1914, was declared constitutional by the Supreme Court of the United States in the case of New York Central R. R. *v.* White, its constitutionality having been previously held by the Court of Appeals of New York in the case of Jenssen *v.* Southern Pacific R. R.

Generally speaking, it has been held by the courts that the workmen's compensation law shall be construed liberally and broadly.

The underlying thought in enacting this law was that such a system of compensation would be in the interest of the general welfare by preventing workmen from being deprived of means of support as a result of an injury received in the course of his or her employment.

The statute was the expression of what was regarded by the legislature as a wise public policy concerning injured employees, and under the circumstances, the law should be interpreted with liberality. This was pointed out in a number of cases, particularly in the matter of Petrie, decided in the court of appeals.

Now as to the application of the workmen's compensation law and the requisites for a valid claim in compensation by an injured employee:

1. There must be a relation existing between employer and employee.

2. There must be an industrial accident within the meaning of the workmen's compensation law.

3. The accident must arise out of and in the course of the employment.

4. There must be notice to the employer and the industrial commissioner in the manner required under section 18 of the act.

5. There must be a claim filed for compensation with the industrial commissioner or the department of labor, and the employer, within the time prescribed by law.

6. There must be a hazardous employment within the meaning of the workmen's compensation law, with certain exceptions.

An *employer* as defined in the law, except when otherwise expressly stated in the law, means a person, partnership, association corporation, and the legal representatives of a deceased employer, or the receiver or trustee of a person, partnership, association, or corporation, employing workmen in hazardous employments, including the State and a municipal corporation, or other political subdivision thereof.

An *employee*, as defined under the law, means a person engaged in one of the occupations enumerated in section 3, or who is in the service of an employer, whose principal business is carrying on or conducting a hazardous employment upon the premises or at the plant, or in the course of his employment away from the plant of his employer, and shall not include farm laborers or domestic servants.

Employment under the workmen's compensation law includes only employment in a trade, business, or occupation carried on by the employer for pecuniary gain or in connection therewith, excepting where the employer and his employees have by their joint election elected to become subjected to the provisions as provided under the law.

Employers may be divided into two classes, general or special employer.

An employee may be held to be an independent contractor, like in a case decided in the court of appeals, where the employee agreed to do a specific piece of work for his employer and in so doing he had absolute control of himself and helper and was not under the supervision and control of his employer. He was free to proceed with the execution of the work, in accordance with his own ideas and in his own time, and was not subject to discharge as an employee.

There are a number of cases on this point which I will attempt to explain.

An accident is defined by the courts as an untoward event, "an unlooked-for mishap which is not expected or designed;" it may not be willful or intentional and not due solely to intoxication.

It is an easy matter sometimes to prove an accident. For example, when an employee's fingers are caught in a machine or are mangled, there is no question that an accident has occurred, but when it is a case of an occupational disease, it is not so easy to show that the disease was due to the occupation, and that must be shown principally by competent medical testimony. That can also be explained by a number of cases which were decided by the appellate division and the court of appeals.

The workmen's compensation law does not apply to employees continuously. It ceases to protect workmen during periods when they are not at work or when the accident does not arise out of and in the course of employment. Questions arising frequently, just where and when a man quits work at night and comes to work in the morning, when does his work begin? And at lunch intervals—do they come under the law?

There are very frequently questions arising as to jurisdiction, such as admiralty and maritime. It has been held by the Supreme Court that the State laws that attempt to provide compensation for industrial accidents occurring in admiralty are not valid, even though the Congress of the United States enacts a law to give them effect, because Congress can not delegate such legislative power, but must exercise it directly.

There are other questions which appear intricate, and that is the question of interstate commerce. If an employee at the time of the injury was engaged in interstate commerce, or in work so related to it as to be practically a part of it, his redress must be under the Federal act.

The time allotted to me for this lecture does not permit my going into this subject as thoroughly as I should like to; therefore, I have given merely an outline of the problems that present themselves in the prosecution and enforcement of the labor laws and the workmen's compensation laws. I have tried to explain the laws by pointing out the different sections of them; by applying certain cases which have been adjudicated by the higher courts.

PREVENTION OR SETTLEMENT OF INDUSTRIAL DISPUTES

By A. J. Portenar, Chief Mediator

Introductory Remarks

IT IS generally acknowledged that some agency should exist for the prevention of strikes and lockouts, or for their speedy adjustment when unfortunately they cannot be averted. With rare exceptions, no private agency or individual can successfully perform this function, because in a majority of instances one or both of the parties will regard such intervention as an unwarranted intrusion and will resent it accordingly. Illustrating this point, I will relate a comparatively recent incident. A strike involving recognition of the union was in progress in a mill in one of the larger cities of the State. After the strike started a committee composed of prominent residents of the city, including clergymen of several denominations, attempted to intervene. The door of the president of the company was metaphorically slammed in their faces, and when they wrote him a letter they received a reply requesting them to mind their own business, in those very words. State mediators also visited him on two occasions. He received them courteously because, as he explained, the law made it our duty to come and his to receive us.

But governments, acting in behalf of all the people under their jurisdiction, have both in law and morals the right to ask the contestants to explain the causes of their quarrel and then to endeavor to bring about an amicable adjustment of the controversy.

That this is a general conception of the duty of governments is proven by the fact that every government in Europe, Australasia, and the Americas has enacted laws intended to regulate industrial relations, in the effort to avert or minimize industrial strife. These laws vary all the way from absolute prohibition of strikes or lockouts, accompanied by compulsory arbitration, to the mere offer of official mediation, without compulsory features of any character. And even the latter mild form of intervention sometimes meets with resentment by one or other of the parties.

It would require a series of lectures to discuss exhaustively the character of these various forms of official intervention in labor disputes, the results obtained through each, and the arguments pro and con as to their respective merits. Therefore I will confine myself to the statement that the State of New York has elected to perform this civic function by processes of conciliation rather than by any form of compulsion, although efforts have been made from time to time to induce the legislature of this State to enact compulsory arbitration laws. The latest attempt to do this occurred some five or six years ago, when a bill was introduced modeled upon the Kansas Industrial Court act. The bill failed of passage.

My personal opinion, based on experience and observation, is that the conciliatory method produces better results in more instances than can be secured by the application of punitive laws.

This opinion is strongly confirmed by the experience of the Dominion of Canada in the administration of its industrial disputes investigation act during the past 18 years. This act prohibits strikes and lockouts in public utilities, railways, and mines until an investigation has been made and a report rendered by a board of conciliation and investigation. Penalties of fine or imprisonment are provided for disobedience. The authorities enforced the prison penalty only once, and have frankly stated that they will never do so again. An excellent record of strikes averted or ended has been made, but the Government admits that this success has been the fruit of conciliatory methods. There has been plenty of opportunity to apply the punitive provisions of the act, for it was disobeyed before the ink was dry on it, and has been ignored in more than 400 instances, but the Canadian Government is steadfast in its reliance upon conciliatory methods alone.

The New York Law

The State labor law authorizes the maintenance of the department of labor, the head of which is the industrial commissioner. Under the heading of "General powers and duties of commissioner," section 21, subdivision 5, of that law provides that the commissioner "shall inquire into the cause of all strikes, lockouts and other industrial controversies, and endeavor to effect an amicable settlement thereof, and may create within the department a board to which a controversy between an employer and his employees may be submitted for mediation and arbitration."

Section 21, subdivision 8, provides that the commissioner "may make investigations, collect and compile statistical information and report upon the conditions of labor generally and upon all matters relating to the enforcement and effect of the provisions of this chapter and of the rules thereunder."

Division of Mediation and Arbitration

For the performance of the duties laid upon the industrial commissioner by the above provisions of law, there has been created in the department of labor the division of mediation and arbitration. This division is headed by a chief mediator, who is assisted by four mediators. The wording of the law as quoted above and the title of the division sufficiently indicate the functions assigned to it.

We find much confusion in the public mind as to the nature of mediation and arbitration. These terms are not synonymous, but denote two procedures that differ greatly, although either or both may be resorted to in the settlement of a labor dispute. To mediate is to endeavor to bring the parties into accord by inducing them to meet and discuss their differences, and by advice or suggestion to aid in bringing about an amicable adjustment of the dispute. To arbitrate is to hear evidence and argument relative to the dispute and to render a decision which shall be final and binding upon the parties. The division of mediation and arbitration in the labor department is

primarily and chiefly a mediating body, but it will consent to act as arbitrator when the parties join in requesting it to act in that capacity.

In this way we are sometimes called upon to decide a single issue, while at other times one of us may be asked to assume the position of impartial chairman of a permanent arbitrating tribunal, to decide all disputes which may arise during the life of a contract. There occurs to me one instance in which an agreement provided that if the representatives of the parties could not agree on an arbitrator the selection was to be made by the State labor department and the American Arbitration Society, acting jointly. Another agreement provided, in the same event, that the selection was to be made by the chief mediator of the State labor department.

From this it may be seen that the scope of the work of the division of mediation and arbitration is practically to do anything of a voluntary character that may be useful in averting or ending an industrial dispute. The border line of our activities is reached when any act of ours trenches upon compulsion.

The law is mandatory in directing us to inquire into the causes of industrial controversies and to endeavor to effect amicable adjustments thereof, and it is permissive in giving us legal warrant for making investigations, compiling information, and making reports. By virtue of this authority, when our inquiries have developed the fact that the settlement of a dispute is obstructed by what we deem to be an unreasonable attitude on the part of either or both of the parties, we may call a public hearing, compel attendance of witnesses and the production of books and papers by the issuance of subpœnas, and make a public report of our findings. When the report is published, the parties are at liberty to continue in their unreasonable attitude if they so elect, but naturally the offending party or parties will be subjected to the intangible but very effective pressure of public condemnation.

We have upon occasion used this authority with salutary results, and we have sometimes found that the mere statement of our intention to resort to public investigation if an obstructive or unreasonable attitude is not abandoned has modified such an attitude to the extent of making agreement possible. But it should also be recorded that on other occasions we have come into contact with people who have shown themselves utterly impervious to this consideration. Perhaps the most contemptuous defiance of public opinion which I have experienced in my official capacity occurred during a strike in one of the worst sweated industries in the city of New York. Failing to secure an interview with the spokesman for the employers' association, I wrote a letter asking for an appointment. A reply came over the phone, in this wise: "Neither with you nor with anyone else, at this time or any other time, will we discuss this matter." Another instance of similar nature occurred during a strike on an important public utility. I visited the office of the company without obtaining anything more than a curt "Nothing to say." The next day a high officer of the company issued a public statement in which was embodied this passage: "The intervention of mediators, either official or private, is not desired." When we run into a stone wall of this kind, we are at the end of our resources.

Importance of Obtaining Early Information

You have all heard the old recipe for cooking a hare, which begins by saying, "First catch your hare." So with us. We cannot do anything concerning an industrial dispute unless we have knowledge of it. To procure the settlement of a strike is good. To avert a threatened strike is better. And the chances of successfully doing either are greatest while the dispute is in its earlier stages, before passions have risen to the point where they becloud judgment. It is therefore obvious that early information of strikes, impending or actual, is of transcendent importance.

We cannot depend on newspaper clippings. Only very serious strikes are given prominence, while smaller disturbances are either relegated to obscure positions or not mentioned at all. We can not depend on the contestants to inform us, for long experience has demonstrated that in most instances they will not do so.

This matter has been the subject of serious consideration by successive commissioners. About 8 or 10 years ago a bill was introduced into the legislature to amend the labor law by requiring the filing with the labor department of agreements between organizations of employers and employees. The theory actuating this proposal was that if this were done, records could be kept of the expiration dates of such agreements, and areas of possible industrial disturbance could be charted far in advance of the actuality. But the proposal met with such hostility from both employer and employee organizations that it was abandoned. If it had been enacted in the face of this hostility without a specified penalty for nonobservance, it would have been disregarded; while the imposition of a penalty would have increased the hostility. It might be impractical, and it certainly would be undesirable, for the labor department to prosecute every secretary of an organization who failed to comply with such a provision. We would incur the enmity of persons whose good will is essential to the performance of our function of mediation. For these reasons it was decided not to renew this recommendation.

A suggestion that both employers and employees be compelled by law to report strikes was negatived upon the same reasoning.

As a means of partially overcoming this difficulty the expedient of detailing mediators to definite key industries was adopted. For instance, one mediator was assigned to the building and construction industry; another took care of men's clothing and leather goods; a third was assigned to the ladies' garment industry. Being in constant touch with responsible officials on both sides of a given industry, the mediator not only would naturally be aware of expiration dates of formal agreements but also would be in position to catch the earliest storm warnings during the life of—or approaching the end of—such agreements. In consequence we have been able to anticipate the course of events in the important industries to which mediators have been assigned.

The State labor department has an employment division, with branch offices in 14 important industrial centers. The superintendents of these employment offices have been instructed to report immediately any industrial disturbances which break out in their respective communities.

A further means of maintaining a close watch upon the industrial barometer is the intensive study of trade papers and labor union journals.

In spite of all this, candor makes me confess that strikes are sometimes weeks old before we hear of them. Of course, no big strike can evade our notice for long, but strikes involving anything from a handful to a couple of hundred persons may be in progress for some time without coming to our attention.

I do not want to create the impression that impending or actual strikes are never reported to us by the interested parties. On the contrary, when either one is what might be colloquially described as "up against it," we receive very prompt notification, together with a request to "do our stuff."

One of the reasons which actuate both employers and unions in their hesitation to ask for our intervention is the fear that the opposing party will jump to the conclusion that our intervention is by request and that this will be interpreted as a sign of weakness. That fear is not without foundation, as the first questions we hear are "Who sent you?" "How do you know about this?" So we are careful to point out that we are sent by the legislature of the State of New York; that we represent the people of the State; and then we tell them how we became aware of the dispute. It may be from a clipping in a daily or a trade paper; it may be that we happened to see the pickets parading in front of the plant; it may be from any one of a number of possible sources. But we find ourselves frequently compelled to assure the party first interviewed that we will not permit the other party to get the idea that we are sent by him.

Technique of Mediation

A dispute having come to our attention, we seek interviews as soon as possible with the person who is in the most responsible position on each side of the controversy. On the part of the employers, it may be the representative of a group formed into an association, the president of a company, or the head of a firm. On the part of the strikers it is of course the chief officer of the union. Sometimes a strike is a sporadic occurrence, the impulsive outbreak of a group of unorganized workers, but even in that case there is always some individual who assumes control and direction, whether by actual selection or with the tacit assent of his fellows.

Our right to information is usually acknowledged, and the mediator gets at first hand the statement of each party as to the subject of the dispute, and the attendant circumstances that may or already have caused a stoppage of work. The mediator should be a good listener, and will permit the person interviewed to tell his story in his own way and at whatever length he chooses. This is important for two reasons: The narrator gets a weight off his mind by the mere narration of his grievances, and is thereafter in a more receptive mood when the mediator makes whatever suggestions seem appropriate; and in the second place, the mediator gets an insight into the background of the dispute when he has heard the stories of both parties. The importance of this knowledge can hardly be overestimated, for sometimes the immediate cause of a strike or lockout is really no more than

the proverbial feather which will break a camel's back; while the actual cause is some deep-seated grievance which comes to the surface *only* when the aggrieved person is encouraged to tell everything that relates to the dispute, no matter how far back it is in point of time. Only a short time ago an employer interviewed in regard to a strike in April, 1928, adverted to an action taken in 1925 which had a material influence on his present attitude; yet he did not mention it until nearly the close of our conversation. Therefore even seemingly irrelevant statements should be patiently listened to for the light they throw on more or less obscure but highly important facts and also on the motives of the disputants.

Sometimes the stories will practically coincide as to the facts, the difference being in the interpretation placed on the facts. At other times the mediator will hear stories that are absolutely contradictory. He must use his judgment as whether it is wiser to point out contradictions or to permit them to go unchallenged.

When the story has been told and such questions as may be needful have been answered, the mediator will revert to the immediate situation. His first suggestion will almost invariably be that the parties should meet and discuss their differences in his presence. If he succeeds in obtaining the consent of both parties to enter a conference, he has surmounted the first big obstacle to eventual agreement. No industrial dispute is hopelessly fated to become a test of endurance so long as the disputants can be brought together. But if either of the parties expresses positive determination not to discuss the issues with his opponent or to submit them to the arbitrament of a third party, hope of amicable adjustment fades. It has been my experience that this uncompromising attitude is nearly always taken by the employing party to the controversy, and that the more frequent issue in such instances is recognition of the workmen's organization. For example, in 1926 there were 105 strikes reported in New York State. Conference was declined in 32 disputes, of which 28 declinations were by employers and 4 by employees. Of the 28 declinations, 13 involved recognition of the union. In 1927, 99 strikes were reported. Conference was declined in 32 disputes, it being the employer in each instance who declined. Of the 32 declinations, 15 involved recognition of the union.

Willingness to confer, however, does not of itself assure amicable adjustment. A dispute may prove to be insoluble by conciliatory methods when an issue is involved upon which neither party will compromise. Nor are wage and hour schedules the only issues about which such uncompromising attitudes are developed. I recall an instance in which the date of expiration of agreement was the stumbling block which made two conferences futile, and the matter then had to be settled by a struggle which ended in the defeat of the strikers. Formal recognition of the union will frequently wreck a conference in which wages and hours presented no obstacle.

Mediation an Adjunct to Direct Negotiation

The experience of all mediators, official and private, confirms the principle that direct negotiation between the disputants, without the intervention of any third party, is the most satisfactory method of settling a dispute. In support of this statement I will quote Dr. Jacob

Billikopf, impartial chairman of the men's clothing industry in New York City. At a recent hearing on cognate subjects before a subcommittee of the Bar Association of the United States, Doctor Billikopf stated that efforts to adjust disputes by direct negotiation are always made before they are referred to him for decision, and that of those disputes which do come to him, 80 per cent are adjusted without a decision because he invariably urges the parties to make further efforts to reach agreement. Therefore, whenever we find the disputants are voluntarily holding conferences in an effort to adjust their differences, either before or after a strike, we carefully refrain from intruding ourselves to any greater extent than to drop around casually and occasionally to inquire how things are going. Only if and when we learn that conferences have been definitely broken off does our intervention become active.

How useful it can then be may be illustrated by a comparatively recent instance which is typical. The Theater Owners' Chamber of Commerce and the Motion Picture Operators' Union had broken off negotiations for an agreement to take the place of one about to expire. There was less than two weeks in which to work. It took us one week to get them together again. In that last week two fruitless conferences were held, but on the last night of the month, with the men under orders to strike at 10 a. m. next day, we organized a third conference which lasted from 5 p. m. until 8 a. m., but we had an agreement to show for our sleepless night. A strike would have affected 800 men.

That same year we averted two other strikes under identical circumstances. Bonnaz operators to the number of 2,000 were kept at work without interruption through our intervention, after direct negotiations for a new agreement had failed, and 750 cloth spongers were likewise kept off the street.

These are examples of the very best work we can do. Far more numerous, of course, are the instances in which intervention, successful or otherwise, is made after a strike has actually begun.

The Mediator in the Conference

How shall the mediator conduct himself in the conference?

He cannot have a prepared program or a set of rules for his guidance. In a broad sense, previous experiences are extremely useful, but they should not be considered as furnishing a charted course to be applied to particular cases. The nature of the issues involved, the characters and capacities of the people attending the conference, the degree of animosity or friendliness presented in the attitude of the disputants to each other, even such a detail as the number of persons in attendance—these and other circumstances have an influence on the atmosphere of the conference and will affect the manner in which the mediator will perform his duties.

The smaller the number of people in the conference, the better. If only three or five persons are present, including the mediator, there is apt to be an informal and intimate atmosphere which greatly facilitates the interchange of opinions and increases in inverse proportion the probability of satisfactory settlement. In a large gathering speeches "for the record," sometimes more or less unimportant or irrelevant, will provoke replies in kind, and not only arouse dor-

mant hostilities, but prolong the conference so greatly that an adjournment may be necessary. This is an undesirable outcome, because the will to meet is weakened when a long discussion proves fruitless. "What's the use?" is too likely to become the attitude of one or both of the disputants, and the difficulties in the way of a resumption of negotiations are increased in inverse proportion. In addition some unpleasant incident may operate to bar another meeting. For example, one Friday a conference was adjourned to the following Monday. On Saturday morning a group of union workmen working in the same building for another firm got into an altercation with some men working in the struck shop. One of the nonunion men was stabbed in the arm with a shears, and it took me months to get his employer back into a frame of mind in which he would consider meeting the business agent of the union.

If there is one general principle which is always applicable to the conduct of the mediator, it is that he must secure and deserve the confidence of both parties, and for that reason he must scrupulously avoid even the appearance of partisanship. If it once gets into the mind of either party that the mediator leans to the other side, his usefulness is greatly lessened if not actually destroyed.

The mediator has a status of dignity conferred on him by the State, and he brings to the conference the sincere purpose of benefiting both parties. Therefore he should be neither apologetic nor pompous. He should not hesitate to speak plainly in characterizing a proposal, whether favorably or otherwise, yet his words must be free from offensive implications. It is difficult to express what he should be and do with any greater particularity than to say he must have both judgment and tact. Given these qualities he will secure the respect of the persons he meets officially, even when he fails to accomplish the primary purpose of amicable adjustment.

By tacit consent the mediator will usually act as chairman if the conference is a large one. If only a few are gathered together that sort of formality is dispensed with. But the chairman should be tactful enough to understand that he must not assume all the prerogatives which usually attach to that office. Of course, he will not let a half dozen people talk at once, and he will endeavor to keep the discussion focused upon essential issues, but he must do these things in a manner that will not ruffle tempers or offend susceptibilities, which are likely to be sufficiently irritated without any assistance from him.

The mediator will make some introductory statement to get things started. After that, his judgment is his sole guide as to the suggestions he will make and the manner in which he will make them. He may find it expedient to be a silent listener while the discussion is going on, and, if the parties appear to be approaching common ground, he can do no better than to continue in that rôle. But if he observes that the discussion has demonstrated that the proposals offered by either party will not be acceptable to the other, then it is advisable for him to intervene with a suggestion. This may be an entirely new approach to the subject or a compromise proposal. The nature of his suggestion will be determined in the light of the information he possesses and the arguments advanced by the disputants.

The mediator may sometimes privately urge upon one of the parties a course of action which it might not be wise to advance publicly. On one occasion 800 drivers and helpers had been out on strike for six or seven weeks. Neither the organization nor the individuals composing it had any large reserve of money when the strike began; at the time a conference was arranged (not without difficulty) they were on the rocks financially. The officials of the two companies involved knew this as well as the men did, and their obvious policy was to let time fight for them—that was why they were reluctant to agree to a conference.

When we met, the president of one of the companies laid down his terms, and they were hard terms—in effect, nothing short of abject surrender. Two hours were consumed in debate, the union committee trying vainly to get some modification of the conditions. At last some one in the room said that we might as well break off, as we evidently could not get anywhere, and the union men actually arose to go out. The man who made that remark was another mediator, and I gave him a kick in the shin that he probably feels yet when the weather is bad. I knew that if the men left that room then we could never get another conference. I jumped up and said to the union committee: "Don't go away; go out to the corridor and discuss Mr. ——'s terms among yourselves, but don't leave the building." They filed out and as they did I was wondering what I was going to do next. But an inspiration came. When the door closed I turned to the company officials and made a little speech. "Most of those men have been with you for years. Your business is a peculiar one, and it will take time and money to fill their places satisfactorily. You have them licked and you both know it. But you have not yet licked them enough to make them swallow the dose you have handed them. They will leave here and the strike will drag along for another month or so. Then they will take anything you offer. You will have a complete victory, but you will also have something else not so desirable. You will have a sullen, resentful body of employees, always seeking furtive opportunities to do something to your disadvantage. Can you not see what is needed? Can you not sugar-coat that pill so that it will not be so hard to swallow? Let them have something in their hands when they return to their constituents which will save them from absolute humiliation and make it possible for them to urge ratification of the terms they bring."

Mr. —— turned to his vice president and said: "Can we give them a dollar a week advance if they make Sunday work time and a half, as it used to be, instead of double time, as now?" A rapid calculation was made and the reply was, "Yes."

I added, "And take them all back without discrimination?"

Again the reply was "Yes."

I went to the door and called the union committee back. When they were seated President —— said: "We have decided to offer you a dollar a week advance and take everybody back. In other respects the terms offered you remain unchanged. What do you say to that?"

I watched the union leader's face and saw the sun rising in the east. With thanks he accepted the offer on the spot and began talking about the hour the men were to report next day. The ratification by

the body next morning was a matter of five minutes, although he had asked me to be there to help him overcome possible opposition. There has been no trouble since.

After the Conference

Agreement at a conference is not absolute assurance of adjustment. There remains the ratification of the terms by an association of employers, if a strike is general, and by the union membership. Sometimes the work of a conference is wholly undone by the refusal of ratification, more often by the union than by employers. Reasons for this are that the employers' association is much the smaller and more easily handled body, or it may be that only a single employer is involved. The union is a many-headed body, and almost always embraces ambitious men who seek to discredit the leader for personal considerations, or ultra-radicals who will do the same thing out of conviction. The employer is not afraid some one will edge him out of his job, but the union leader is frequently more or less influenced by that consideration. He will privately admit his willingness to accept a given proposal, but he will weigh the possible consequences to himself of open advocacy before he takes a public stand. When he does finally take a stand it is sometimes the opposite of that privately expressed. He has had his ear to the ground.

Related Things

We meet people under the stress of the emotions produced by conflict. We hear ex parte statements which indicate 100 per cent of rightfulness on the side being listened to at the moment, and then, when we hear the other side, they endow the party first seen with horns and a long, forked tail. We are daily witnesses of strife and turmoil, but ourselves not of it. We "pour oil on troubled waters," and we hope that of us it may be said, "Blessed are the peacemakers."

I will not tell you what kind of a man a mediator should be. His portrait is drawn when his work is described. But of his job it may be said that while there are many other jobs which loom bigger and pay much more, there is none more interesting.

Every point I have made, every angle of controversy or method of handling it to which I have alluded, can be exemplified out of my own experience. If some of the allusions seem to require amplification, direct attention to them.

In the table following is given a partial summary of results:

Number of disputes and method of settlement, 1915 to 1927

Item	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Number of disputes	104	[1]328	234	265	168	240	194	100	129	101	79	105	99
Disputes in which intervention occurred	49	96	69	80	74	106	90	47	56	62	46	79	64
Request received for intervention	12	27	25	24	31	47	30	18	5	11	8	16	15
Disputes in which intervention was the direct agency for settlement	27	52	39	56	43	65	36	17	27	32	23	31	25
Strikes averted by intervention	3	0	2	12	3	3	7	3	2	5	4	1	3

[1] For 9 months.

PREVENTION OF ACCIDENTS IN INDUSTRY

M. H. Christopherson, Director of Service New York State Insurance Fund

IT MAY be well for the purpose of this discourse to treat the term "accidents in industry" in a broad sense so it will cover accidental injuries or hurts to all employees included under the coverage of the workmen's compensation law of New York State, which includes practically every person who works for wages, as listed in the 19 groups of employments in section 3 of the compensation law. The law also recognizes occupational diseases of which 18 are listed in the same section, and requires the payment of compensation for disabilities sustained or death incurred by an employee, resulting therefrom.

As the legal liability of the employer is an important factor in the reduction of accidents in industry, the following quotation from section 10 of the workmen's compensation law should be considered:

Every employer subject to this chapter shall in accordance with this chapter secure compensation to his employees and pay or provide compensation for their disability or death from injury arising out of and in the course of the employment, without regard to fault as a cause of the injury except that there shall be no liability for compensation under this chapter when the injury has been solely occasioned by intoxication of the injured employee while on duty or by willful intention of the injured employee to bring about the injury or death of himself or another.

The following is a quotation from section 50 on the security for payment of compensation:

An employer shall secure compensation to his employees in one of the following ways:

1. By insuring and keeping insured the payment of such compensation in the State fund, or

2. By insuring and keeping insured the payment of such compensation with any stock corporation or mutual association authorized to transact the business of workmen's compensation insurance in this State.

3. By furnishing satisfactory proof to the commissioner of his financial ability to pay such compensation for himself, in which case the commisisoner may, in his discretion, require the deposit with the commission of securities of the kind prescribed in subdivisions 1, 2, 3, 4, and 5 and paragraph (a) of subdivision 7 of section 239 of the banking law, in an amount to be determined by the commissioner, to secure his liability to pay compensation provided in this chapter.

* * * The employer so electing shall be known as a self-insurer.

Following is another quotation from the compensation law of considerable importance to employers:

14a. Double compensation and death benefits for minors illegally employed.

1. Compensation and death benefits as provided in this article shall be double the amount otherwise payable if the injured employee at the time of the accident is a minor under 18 years of age employed, permitted, or suffered to work in violation of any provision of the labor law.

Although not of frequent occurrence, it is noteworthy in an analysis of industrial accident causes that in instances where an accident is not witnessed by another, the claimant, in an effort to collect compensation and have his medical expenses paid, may have the possibility of malingering, which must also be considered.

According to definition approved by the appellate division of the court of appeals, an accident is "an unlooked for mishap or an untoward event which is not expected or designed," being limited so that "an act done deliberately and willfully by a third party may be an accident from the viewpoint of employer and employee."

Accident statistics giving the causes of injuries based on past experience must be thoroughly studied to form an opinion on how to prevent other injuries. Therefore, as a basis before planning on how accidents can be prevented, let us consider the following summary of compensated accidents by cause classes in the fiscal year ending June 30, 1926. Compensation in these cases has been approved by the New York State Industrial Board; misrepresented cases and malingering periods have, therefore, been eliminated.

SUMMARY OF COMPENSATED ACCIDENTS IN NEW YORK STATE, 12 MONTHS ENDING JUNE 30, 1926, BY CAUSE

Cause of injury	Number of accidents				Total weeks of disability [2]	Average weeks of disability
	Total	Kind of disability				
		Death or permanent total [1]	Permanent partial	Temporary		
Machinery, point of operation	13,555	(4) 58	4,539	8,958	306,958	22.6
Hoisting and conveying apparatus	2,771	(2) 123	805	1,843	180,897	65.2
Vehicles	8,932	(8) 262	1,648	7,022	393,946	44.1
Explosions, fire, electricity, etc	4,019	(4) 130	359	3,530	166,336	41.4
Harmful substances	1,437	31	99	1,307	45,592	31.7
Falls of persons	18,278	(11) 250	2,657	15,371	540,828	29.5
Falling objects	6,447	(3) 94	963	5,390	165,678	25.7
Stepping on or striking against	4,273	12	302	3,959	38,607	9.0
Handling objects	27,575	(4) 94	3,708	23,773	332,434	12.0
Hand tools	7,570	(1) 15	1,467	6,088	102,949	13.6
Animals	824	(1) 15	112	697	26,398	32.0
Miscellaneous and indefinite information	3,992	(3) 67	668	3,257	112,137	28.1
Grand total	99,673	(41) 1,151	17,327	81,195	2,412,760	24.2

[1] The figures in parentheses indicate the number of total disabilities.
[2] The weeks of disability include 1,000 weeks for each case of death or permanent total disability.

The cost for insurance including self insurers in New York State during this same period was approximately $60,000,000, of which $29,000,000 was for compensation incurred in these 99,673 physical injury cases. The balance was for medical and expense charges. These figures include only the amounts paid by industry for compensation coverage. They do not include the waste and expense caused through the loss of services of the experienced employees who were injured or the cost of teaching others who had to substitute for them, nor does it include the financial loss of the injured employee or his physical suffering or the anguish of his family and other dependents.

Although a great deal has been accomplished in preventing avoidable accidents in the past, much remains to be done before we can

claim to have reached the goal that experience in many places of employment has shown that the frequency and severity of accidents can be reduced to a level well below the average of to-day. Our efforts must be centered on improving the places of employment where physical conditions are not what they should be and in training employees to realize that their feet and their hands, their eyes and other parts of their bodies belong to them and should not be damaged.

By going into details of the summary figures, we find under the machinery heading that metal-working machines in factories are responsible for 4,354 of the total number of accidents and that in this group power-stamping presses are most wasteful of life and limb in the metal trades, 1,275 injuries being chargeable to that class of machines alone; 2,185 accidents are charged to woodworking machines, of which 1,264 injuries were caused by the various types of saws, 464 on planing and molding machines, and the balance, 457 injuries, being distributed among the other woodworking machines.

Other compensated machine accidents in the following industries are listed in the order of their relative importance:

Textile	1,889	Laundries	394
Food products	923	Rubber, celluloid and composition goods	285
Printing and bookbinding	616	Paper making	245
Leather products	403		
Paper products	402		

The remaining industries, each of which had less than 200 accidents are: Leather (tanneries), 123; chemical products, 59; paints, varnishes and colors, 12; then a miscellaneous list totaling about 400 follows.

As more than 12,000 or 90 per cent of the total number of machinery accidents in factories, with 347,000 weeks, or 89 per cent of total disability, are caused by the above machines, it is of prime importance that accidents occurring to the operators of such machines should be given consideration. The State department of labor with its police power has for a number of years endeavored to secure compliance with the orders they issue to guard such machinery and the insurance carriers through their rating board merit system have tried to bring about a safer working condition for the operators. Such machine accidents are usually at the point of operation, where the operator must feed the stock that is being machined, presenting the most difficult problems in machinery guarding. Much has been accomplished by proper guarding although in many instances the employer and the employees insist that the point-of-operation guards prevent certain operations being done and production is interfered with, so it frequently happens that guards which would probably have prevented an accident have been removed and are not on the machine when an accident occurs. This condition prevails most frequently in the smaller shops where each machine must be used for several operations; in larger plants where a machine is set up to perform a single operation or several of similar character, the point-of-operation guards are quite generally used. Designers and toolmakers in the various manufacturing plants are constantly at work on the design and preparation of such guards although little has been done by the machine manufacturers themselves to supply universal guards for the machines which they sell.

Machine accidents listed under prime movers and power-transmission apparatus, including 13 deaths, are 545 with 28,548 weeks lost time, indicating that considerable effective guarding has been done on such equipment.

To accomplish the best results, it would seem that the present practice where the State department of labor endeavors to secure ocmpliance with its dangerous machinery guarding code and the compensation insurance rating board through the various insurance carriers recommend guarding according to their standards for which credit is allowed in the schedule rates, must soon give way to one common standard: The department of labor code, that the industrial commissioner be responsible, as at present, for securing compliance with that code; that the insurance carriers through their inspection service should assist the commissioner to secure compliance with the State codes and through their rating board merit system, apply schedule charges against the assured where such guarding has not been accomplished.

Elevators

Elevators in factory and mercantile buildings in the same year, ending June 30, 1926, caused 1,023 accidents resulting in 77 deaths, 98,703 weeks of disability, and $760,000 in compensation. The most serious of these causes, fall of person into shaft from floor, caused 161 accidents, of which 33 resulted in death. The next in importance is caught between the floor and car, 109 accidents, resulting in 6 deaths. The balance are from 20 other causes.

Although there has been a more favorable trend in elevator accidents in recent years, the result of better hoistway construction and inclosures, nevertheless, it is necessary to require more general compliance in the installation of interlocking devices on hoistway gates and doors that will prevent the car leaving the landing before the hoistway doors are closed and in providing all hoistways with doors or gates extending the full height of the door opening and to have such inclosures set flush with the hoistway line to eliminate the serious shear hazards. Cooperative action on the part of building owners, their agents, architects, and contractors, supplemented by the State and city authorities, is necessary.

Cranes

One thousand five hundred and eighty-two accidents on cranes, derricks, blocks and tackles, conveying apparatus, and similar equipment for moving material by mechanical means, in industrial plants and contracting operations, resulted in 66,340 weeks of disability and 35 deaths. In addition there were 101 serious accidents on temporary construction hoists used in contracting operations where 8 met death and 10,562 weeks of disability resulted.

In the demolition and construction of buildings and other contracting work, the workmen suffer many serious accidents, other than machinery accidents, and many fatalities occur from falls and falling material, in transportation of men and material by trucks or hoists and other conveying machinery.

Accident prevention activities have not reached the same degree of perfection in contracting work as in many factories except in rare instances by large contracting concerns. The industrial commissioner through his inspection bureau has established a system of frequent visits to places under construction, and orders requiring a higher degree of safety by guarding and improving unsafe conditions are being enforced by him. The insurance carriers are also requiring that hazardous conditions be corrected. The active work of the department of labor and insurance carriers is making for greater safety in construction work and the new compensation insurance experience rating plan that became effective May 1 this year will doubtless result in serious consideration being given to create safety in industry by the manufacturers and contractors who consider the cost of accidents to their workmen principally as a necessary expense item.

The following quotation from the daily papers of an article by Charles G. Smith, manager of the State insurance fund, indicates the financial advantage that will accrue to manufacturing and contracting risks whose annual premium at manual rates is in excess of $400:

> Employers in New York State will be able to make material financial savings under a modification of compensation insurance practice that will go into effect throughout the State on May1, in the opinion of Charles Gordon Smith, manager of the State insurance fund. Thereafter an employer whose safety work shows improving results in cutting down accidents will be rewarded by getting his insurance at lower rates much more promptly than formerly.
>
> "Hitherto employers have had to wait a number of years to get lower rates as a result of their improving accident records," said Mr. Smith yesterday, "because the years of their record were considered of equal weight, irrespective of results shown, in making up their experience rating. Under the new method an employer who is showing an improvement now gets prompt reward for it, for under the revised plan his recent experience receives much more weight than it did formerly."

This revised experience rating plan has approximately the same effect on compensation insurance premiums as an employer's financial credit in the purchase of materials. If his credit is good, he benefits through trade discounts and greater reduction from list prices. While, on the other hand, if his credit is bad, just the same as his accident experience may be bad, the cost to him promptly increases.

Correcting unsafe physical conditions within a manufacturing plant or on a construction job is but a small portion of the safety activities that exacting conditions, based on considerable experience in a number of large plants and on contracting work, require to create the condition which enables plants to run month by month adding up millions of hours of employment without a lost-time accident. Such results are not a matter of chance but are the result of a better understanding of the safety problem and are conditions that American industry should strive for.

Despite the fact that many workers are injured on dangerous machines that may be improperly guarded, or have no guards at all, the total weeks of disability from such accident causes is small in comparison with the number of injuries and deaths that occurred in

the same year over which the guarding of machinery could have no control. The following will serve to illustrate the comparison:

Item	Deaths	Other injuries	Weeks of disability	Incurred compensation
Power working machinery including prime movers, power transmission equipment, hoisting apparatus including permanent elevators, cranes, derricks, and all other conveying apparatus	181	18,326	487,855	$6,303,516
Nonmachinery injury causes, such as vehicles, explosions, fire, electricity, harmful substances, falls of persons, falling objects, stepping on or striking against objects, handling objects, hand tools	858	58,529	1,786,370	21,208,839

We can not get away from the human equation if any favorable impression is to be made on the reduction of the large number of severe injuries that are shown in the nonmachine injury causes, and it is quite certain that many of the injuries that were caused by machinery would not have occurred if the employee who received the injury had been on the alert, if he had stopped to think before doing. The need for training every employee to work skillfully and safely is the greatest problem in accident prevention.

Paying compensation to his employees while they are incapacitated as the result of accident, industrial injuries, or hurts, or paying death benefits to their widows and other dependents, is a moral and legal obligation which the employer must assume. The amount he pays for satisfying such obligations depends on the cost of the accidents in relation to his annual pay roll. The method of computing premiums in workmen's compensation insurance is unlike that of any other insurance coverage, such as fire and public liability where insurance premiums are on a fixed annual basis.

Under the compensation insurance rating plan an average or basic rate for each classification is established. This rate is modified up or down based on the accident trend or loss cost experience of the risk over a period, the four last policy years, to determine the proper rate for the following year.

The value of the total accident experience modification is apportioned 40 per cent to the latest policy year; 30 per cent to the next preceding year; then 20 per cent and 10 per cent, respectively, on the two last years. Under this revised experience plan, effective May 1, 1928, risks that exceeded the average loss cost in the last policy year are heavily penalized by the application of an increased premium rate in the second year following.

The resultant high insurance rate coupled with other expenses, such as the loss of service of experienced employees during the time while incapacitated, the need for training substitutes who are liable to spoil material and damage tools and who are otherwise inefficient, not forgetting the time that was wasted by foremen and supervisors while training such substitute employees, would seem to inspire those who are responsible for efficiency in production to warrant a study of the accident problems in the same thorough manner that the financing, selling policy, the purchase of material, and each manufacturing detail is planned and executed.

Every employer who has taken sufficient interest in his employees and the dangers they are subjected to, whether such dangers be real or

mental fears, can readily change the accident frequency and severity in his place of business, no matter what the processes may be.

When an employer determines to stop such needless accident waste and he has a real desire to do the best he can to protect his employees from injury during the hours when he is more or less responsible for their safety, the effect will be quick and sure.

No business problem that an employer has to solve responds more readily to good management than that of accident prevention, nor is there any single branch of his business that gives greater returns for the time and money spent on it. In addition to the savings in time and money, the gratifying results it assures to the employer and to the responsible heads of his business is far greater than can be realized if the same effort to improve is applied to any other branch of his business.

Organized safety in industry has become quite the fashion in recent years, in manufacturing plants the shop safety committee activities working under direct supervision of the employer or his manager. Wherever such officials cherish safety to the extent of making the Golden Rule the boss of the company, the safety problem is solved. Organized safety is essential in every manufacturing plant or on construction work, and the selection of an individual, a "safety man," who fits into his job is of prime importance. The balance of this safety program is principally in quotations from the Manual of Industrial Safety, by Sidney J. Williams. It is the plan of organized safety that every safety engineer believes in and subscribes to. Results worth while are bound to accrue under this plan provided the employer "stands by."

"The basis of the safety man's job is this fact, which is perhaps the greatest discovery of modern industry: That the men and women who work for a manufacturing company, a mine, a railroad, or other employer are the most valuable assets the company has and that their safety, comfort, welfare, and good will are essential to the company's success. If the employer does not really believe this, the safety man has no job worthy of the name. If he does believe it, as most modern employers do, the safety man is his agent in clothing the idea with flesh and blood and developing a safety atmosphere which surrounds and permeates every employee.

"This job requires a combination of enthusiasm and common sense. Enthusiastic belief in the value of human life, in the responsiveness that lies somewhere beneath the skin of everyone, in the ultimate success of his efforts. Common sense to recognize the difficulties of his task, the persistence of habit, the differences between individuals, the thousand other demands upon the time and energy of those he must deal with. The safety engineer must also have imagination to discover hazards and invent remedies. He must take nothing for granted—neither the foreman's assurance that 'nothing can happen here,' nor his own belief in the efficacy of some new guard.

"Industrial safety is a combination of engineering, organization, and education. Technical training and past experience in all or any of these lines are not essential for the safety man (though they are helpful), but he must be able to appreciate all of them, balance their relative importance, and make use of the assistance of specialists in these fields.

"The first thing that the safety man must realize is that he can not possibly do his job alone, but only with the warm cooperation of his associates secured by hard, persistent effort."

"In arousing this interest and securing this cooperation, some must be reached by appealing to the reason with facts and figures; some by appealing to the emotions with the story of what accidents mean to the workman and his family; a few may be affected by nothing save the fear of discharge or of the horrible personal consequences of a serious accident. The safety man must understand human nature well enough to employ all these methods as the case requires."

"What place should the safety man occupy in the general organization of the company or plant? What should be his relation to other departments and executives? The safety man should not be given, in fact he should not desire, any operating authority. One reason for this has already been suggested. Another reason is that, according to all experience, effective accident prevention requires that the general management shall place responsibility for safety in each operating unit, squarely upon the executive of that unit. The manager of the plant or other operation—no one else—must be held responsible for safety; he in turn looks to the superintendent or foreman of each department for safety in that department, and so on down the line. To these operating executives the safety man should be an advisor, a consultant, a friend.

"The relation of the safety department to other 'staff' or non-operating departments varies in different organizations. If there is a general industrial relations department or personnel department, the safety man is usually a part thereof, along with the employment manager, the physician, and the educational director. Often the safety man, upon displaying the necessary ability, becomes head of this entire department; or similar ability on the part of the employment man or the physician may bring a like result. In a smaller organization or where these other activities are lacking, the safety man usually finds himself called upon, sooner or later, to take charge of sanitation, health service, general welfare work, employees' activities, perhaps fire protection, and even the employment of new men. If the safety man reports directly to the operating manager of the company or plant, he should cultivate the closest possible relations with all other welfare and employee activities, for these are all closely tied up with accident prevention.

"The introduction of a safety program should follow substantially the order indicated below. It is especially important to complete the most necessary safeguarding and to have the program well understood by the principal executives before starting the educational work and before organizing committees of foremen or workmen. The essential steps are:

"1. Appointment of safety engineer or director.
"2. Analysis of accident record, to determine weak spots and furnish basis for campaign.
"3. Meeting of operating executives; appointment of plant or general safety committee.
"4. Inspection by safety engineer, with foreman in each department; report to general committee.
"5. Mechanical safeguarding as determined by general committee; important and obvious hazards to be guarded first.
"6. Bulletin boards and other educational activities.
"7. Departmental or workmen's committees.

"The machinery for securing this general interest and cooperation is commonly called the safety organization. This does not mean something separate and apart from the regular operating organization of the factory or other industry; it means the adaptation of the regular operating organization to the purpose of accident prevention, because accident prevention is regarded as a proper and necessary part of efficient production.

"The general function of the safety organization is to supervise and direct all safety activity; to determine standard methods of safe operation and standards for mechanical safeguarding; to investigate accidents, fix responsibility, and impose discipline where necessary; to plan and direct all parts of the educational campaign. It is evident that the safety organization must be an integral part of the general plant organization in order to be intrusted with these important functions. An important feature of the safety organization is that the men serving on the various committees will be themselves educated through their service to an understanding of safety which they could obtain in no other way.

"In a plant having more than 500 employees on one shift, the safety organization should generally consist of the following:

"Plant safety committees.
"Department committees (especially in very large plants).
"Workmen's committees.
"Full-time safety engineer or safety supervisor.

"In a company operating several plants there should be a general interplant safety committee as well as the proper organization within each plant.

"In a plant of 150 to 500 employees, the organization may be simplified by combining the functions of the department committees with those of the plant committee, making the organization as follows:

"Plant or general safety committee.
"Workmen's committee.
"Full-time or part-time safety engineer or inspector.

"In a plant of less than 150 employees, the organization should be extremely simple, consisting of—

"General safety committee (including workmen).
"Safety engineer or inspector (this responsibility may be given to the master mechanic, employment manager, or other employee).

"In construction work—whether by a contracting company or the construction gangs of an industry or public utility—organized handling of the safety campaign is no less necessary, but the organization must be simplified and adapted to the conditions of changing personnel and location. On large construction jobs, a safety committee consisting of the superintendent and at least two other men has been found practicable and effective. On a small job the superintendent or foreman should be considered a safety committee of one, completely responsible for the elimination of hazards and the prevention of accidents. In a construction organization of any considerable size, a full-time or part-time safety man in the headquarters office should keep in constant touch with the various jobs and perform all the usual duties of the position.

"In other outdoor or special industries the same general principles should be applied, remembering that in all industries human nature is essentially the same; that safety can be brought about only by enlisting the active interest of the entire organization, both executives and workmen; and that it is easier and more effective to let the organization educate itself by running its own safety campaign than to expect it to digest too frequent or too large doses of advice from headquarters."

Every employer in order to give safety the place in industrial operations which it deserves must make certain that unsafe places and machines are properly safeguarded for the workers' protection from injury, and to see that all employees are trained in safe practices and to think safety. On the employees' side the workers should respond to the effort of the employer in preventing injuries to them in cooperating by using the safeguards that are provided, by taking necessary precautions and to think for the safety of themselves and any others who may be exposed to possible injury.

Any one who makes a study of economics in industry, its keen competition, and the apparent need for building business on a foundation that is substantial, yet sufficiently flexible in design or in principle to permit of variables to keep abreast of this progressive age, naturally assumes that it requires a man in business to keep sufficiently well informed on every detail in his particular line. In general, the business man does keep informed on price fluctuations and style and specifications of the material for the goods which he sells, yet a good proportion of the executives in large establishments and owners of smaller enterprises depend largely on representatives of wholesale and other supply houses and middlemen in general to select various essentials which they need for the manufacture or installation of their product.

Insurance is one of the items that an employer generally gives consideration to but once in the course of a year. Then after arranging for the payment of the premium he dismisses the subject from his mind, leaving it to the insurance carrier to call attention to details that he should be informed on; therefore, in the protection of his workmen it becomes largely the carrier's function to initiate the things that will be mutually beneficial and constantly to follow up important details.

More than 50 different insurance carriers write workmen's compensation insurance in this State, so to some extent the carriers' service resolves itself into a matter of competition, supplementing the need for keeping the aggregate accident loss ratio within reasonable limits.

The business world is constituted so that one person must, to some extent, live at the expense of others. His profit is dependent on his ability to compete. Naturally, the function of government is to supervise and not to compete. Saving the lives and the limbs of the workers, however, is a humanitarian project with which the Government is deeply concerned. Except in the protection by compensation to injured workmen and their dependents and the manner of such coverage, the law does not make it mandatory for an employer to insure the payment of his losses.

It would be difficult for the legislature to require competitive insurance companies to write insurance for every employer who might apply for coverage, so the need for a State fund, from which the legislature can require coverage for any who may apply by mandatory requirement, is apparent.

Competitive business naturally is in search of profitable business, leaving the less desirable field for the other fellow. In workmen's compensation it happens to be the State fund that must write anybody who applies for coverage.

The State fund does not depend on taxation for its maintenance, but lives on its premium income in the same manner as other carriers. Therefore, for self-preservation if for no other reason, the State fund must keep its accident costs within competitive limits.

The fact that the State insurance fund writes compensation insurance at 15 per cent below the rates approved by the State superintendent of insurance for all insurance companies and has returned annually for a number of years a 15 per cent dividend to its assured proves the efficiency of its management and safety service, efficient not only from the economic viewpoint but from being an important branch of a State department, without any enforcement power, under the supervision of Dr. James A. Hamilton, the industrial commissioner. The State fund accident-prevention service does effectively keep the accident frequency and severity of injuries to the employees of its 22,000 policyholders well within the average.

The State fund specializes on workmen's compensation insurance exclusively, and through its safety service it keeps its assured informed on progressive accident prevention not only from the monetary side alone, but also from the humane viewpoint by training employees how to think before doing and by inducing the employer to apply the principles of the Golden Rule during the hours while he is more or less responsible for his employees' safety.

As safety in industry is a matter of self-preservation, so far as each individual is concerned, it requires the same training or education that a person should practice at all times whether at work or at play. To become proficient in any vocation, it is beneficial to live in the atmosphere of such activities.

The Department of Labor of New York State, which began to function about 1880, by advising employers on sanitation and safeguarding dangerous places in factories, has extended its work so that at present it is an important factor in protecting industrial workers against accidental injury by the removal of physical hazards and in the necessity of protecting themselves against injuries through their own negligence.

The department of labor holds an annual industrial safety congress in the State in the last week of November where employers, employees, and others who have a keen humanitarian interest in the welfare of workers meet to discuss and devise means for the improvement of industrial relations, particularly from the angle of "Safety while at work." Attendance at these congresses is beneficial to all who can attend. The proceedings of the congresses are published by the State and should be carefully read.

The National Safety Council is an organization comprising in its membership a large number of employers, insurance carriers, and others

who contribute to its continual safety service in all phases of accident prevention. Annual congresses are held and proceedings of transactions are published. It is fortunate that their congress this year will be held in New York City during the week of October 6. All who can do so should register and attend the various sessions, listen to the various speakers and rub elbows with those who give much time and study to safety problems.

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DIET AND CLOTHING AS FACTORS IN PRODUCTION

By MAY R. MAYERS, M. A., M. D., BUREAU OF INDUSTRIAL HYGIENE

Diet as a Factor

THE question of diet as a factor in production is quite as applicable to this audience and to myself as to any of the workers in industry. We can not any of us do our work efficiently unless we are physically fit, and we can not feel physically fit unless we know not merely how to eat properly in the general sense of the term, but how to adapt our diets to the requirements of our several occupations.

The fact that sedentary workers require less food and a different kind of food than do day laborers is a matter of common knowledge. Not so well known, however, are some of the other environmental conditions which require special dietary adaptation, such as, for example, abnormal atmospheric conditions; that is to say, exposure to excessive heat or cold or to an unusual degree of humidity.

The question of the adaptation of diet to environmental and working conditions involves not merely a consideration of these conditions, but also some knowledge of the differences in the reaction of individuals to these varying conditions. Diet is essentially an individual problem, and its solution is dependent in the last analysis upon the reactions within the body of the particular individual, with reference both to the intake of food and to environmental conditions. In order that each person may be sufficiently intelligent in the adaptation of his diet to his own needs in this direction, he should understand something of the fundamental principles underlying the whole subject.

Although most of you, I presume, are more or less familiar with these general principles, I shall review them very briefly in order to refresh your memories. I shall then discuss some of the special problems requiring special variations from these general principles.

As you all know, the body has come to be regarded as a working machine whose intake and output can be readily measured. It has frequently been compared with a steam engine requiring a definite quantity of fuel—the amount depending upon the output of work. It might better, however, be compared with a clock which never stops running. For even when we are sound asleep in bed our hearts continue to pump; our lungs continue to contract and expand as we breathe; the process of digestion continues without stopping; and our bodies regarded as so many chemical laboratories are never at rest. It has been calculated that the average person at complete rest uses up from 1,500 to 1,800 calories of energy per day in the performance of these physiological functions. This is known as the basal metabolism. It might be well to keep these figures in mind

so that you may fully appreciate as we go along what a very large percentage of the total expenditure of energy is consumed in this way. The practical aspects of our basal metabolism will be discussed in greater detail subsequently.

It might be well before going into a more detailed discussion of the practical aspects of the basal metabolism to review very briefly the definition of a calorie and its significance in all dietary calculations. The calorie, as you all know, has come to be the standard unit of measurement both for heat and for energy. By definition it is the amount of heat necessary to raise 1 gram of water 1° C. This applies not merely to the human body but to the steam engine as well. Indeed, as you probably know, coal is frequently bought and paid for on the basis of the number of calories which it contains rather than on the basis of its tonnage. Incidentally, it is interesting to know that to purchase coal in this way is far more efficient because different types of coal yield different amounts of energy per ton. The amount of coal required is, of course, directly proportional to the output of the engine. Both these factors can be fairly accurately estimated. In the case of the human machine, it is likewise necessary to determine the output in energy in order to estimate the caloric intake in food which would be required to supply this energy. Both of these factors can be readily measured by means of the so-called calorimeter. Various food substances have been burned in this calorimeter and the number of calories of heat produced as a result of this oxidation determined. The number of calories of energy which an individual expends when he is doing different types of work have also been carefully worked out by means of another type of calorimeter. It is entirely possible, therefore, to ascertain the number of calories which an individual requires in order to supply him with the necessary energy for a specific performance and to determine the particular quantities of particular foods which will produce that energy. To be specific it has been estimated, for example, that a person engaged in sedentary work, such as office work, uses up approximately 2,400 to 2,500 calories of energy. A person doing moderately heavy work, such as is done by a traffic policeman, uses up approximately 3,000 calories. A man digging ditches may use up as many as 3,500 to 4,000 calories.

Thus far the situation in the case of the human machine is analogous to that of the steam engine. There are other factors, however, which are quite as important to the human body as is a proper balance between the caloric intake in food and output in energy. These relate to questions of proper growth, proper repair of tissues, and the ability to withstand certain diseases. In order to understand these additional factors, it will be necessary to briefly review the basic food substances and their fate in the body. As you all know, they are the carbohydrates, the proteins, the fats, the various inorganic salts, and the vitamines. It must be borne in mind, of course, that most foods contain more than one of these elements, but it is the tendency for one or another to predominate, and foods are usually classified by the dominant food element which they contain. With this in mind, let us briefly examine what happens to the various types of foods that we eat after they enter the body.

The Carbohydrates

The carbohydrates include the starches and sugars, and when burned in the body constitute the primary sources of energy and heat. In other words, they are our chief sources of calories. The common carbohydrate foods are: Bread, crackers, flour, or anything made of flour, such as macaroni or spaghetti; cereals such as rice, farina, etc.; tapioca, cake, pie, candy, jelly, and honey or other sirups. The digestion of these foods is begun during the process of chewing, at which time the starches are acted upon by the salivary enzyme known as ptyalin. They are then acted upon by the various enzymes of the liver, the pancreas, and the small intestine. As a result of this process the starches are converted into sugar and absorbed as such. During this process of digestion a certain amount of energy is liberated and supplied to the body for purposes of heat and bodily activity. As has been stated, all of this can be accurately calculated in terms of calories by the use of the calorimeter.

If the daily caloric intake of food into the body is greater than the number of calories of energy which the body expends in the course of its daily activities, the excess food is converted into fat and stored in the body as such. In other words, such a person will gain in weight. If this process should continue for a sufficiently long period of time, he would find that he has acquired considerable deposits of fat in different parts of his body. A favorite site for such fat storage is in the abdominal wall. If the caloric intake of food into the body is less, however, than the energy output, it becomes necessary for the body to burn some of its own tissues in order to make up the deficit. The fat which has been stored in the body at some previous time is the first to be burned. Then, if this is inadequate, the proteins or muscle tissues of the body are burned. Various other chemical changes occur which I can not go into here. A person of this type will lose weight and grow thin. If the process is continued long enough, he will gradually lose in strength as well. He will tire easily and his resistance to disease will be reduced. If the caloric intake of the body exactly equals the output, there will be no storing of fat and no burning up of the body tissues. Under these conditions, a person will neither gain nor lose in weight, but his weight will remain stationary as long as this balance between intake and output continues.

I might digress for a moment to say, in this connection, that while it is highly important that people should not be overweight, it is quite as important that they should not be underweight. The present tendency for everyone to reduce without regard to individual requirements is a menace to health. It is of supreme importance that persons who desire to reduce should first determine what their normal weight should be for their age and height and then see to it that they do not fall below it. Many girls, particularly at the present time, are seriously endangering their health in following the universal fad of reducing, regardless of whether it is necessary or not in their particular cases. They are developing anemias, lowering their general resistance to disease—increasing particularly their susceptibility to tuberculosis. They are lacking in energy, their working efficiency is greatly impaired, and they tend to become mentally depressed. Reducing, as long as it remains a fad, is a real menace to health. Reducing under proper medical supervision, or with careful regard to what the normal weight should be, may be of inestimable value.

The Lipins

The lipins constitute a group of foods which include both the fats and the lipoids. There is a distinction between the fats and the lipoids, which is not commonly understood but which is important. The term "fats," in contradistinction to the term "lipoids," applies primarily to such fats as are stored in the body as such. This would therefore include the fat which is present around the meat which we eat; suet, meat gravies, lard, etc. The lipoids, on the other hand, are fats which appear in combination with other cell constituents. These are both of vegetable and animal origin, and include such substances as cream, butter, egg yolk, Crisco, oleomargarine, any of the other butters, olive oil, or any of the vegetable oils. While the metabolism of the lipoids is not clearly understood, it is believed that these substances tend to play a part in producing changes in the walls of the blood vessels, especially of the arteries. These changes are believed to be of a character associated with the production of arteriosclerosis, or what is commonly known as "hardening of the arteries." This does not, however, appear to be true in the case of the fats. While arteriosclerosis is one of the normal accompaniments of advancing years, there is a tendency toward premature arteriosclerosis among workers who are engaged in heavy manual labor. The metabolism of lipoid substances is of a special interest, therefore, in connection with these workers.

The lipins, as a whole, are quite as important a source of energy and heat as are the carbohydrates. Indeed, being more concentrated, 1 gram of fat yields a somewhat greater number of calories when burned in the body than does 1 gram of carbohydrates. The same principles which have just been discussed with reference to the carbohydrates apply to even a greater extent to the lipin foods—that is to say, the fats and the lipoids. After digestion they are acted upon by the enzymes of the pancreatic secretions. Any quantity which is not used by the body as a source of heat or energy is stored in the form of fat just as in the case of the carbohydrates.

The Proteins

The proteins supply the body with heat and energy just as do the carbohydrates and the fats, but this is not their primary purpose or function. The proteins are eaten chiefly for the purpose of supplying the body with the necessary building stones for growth and repair of tissues. The common protein foods are milk, meat, chicken, or other poultry, fish or other sea food, liver, kidneys, sweetbread, cheese, eggs, nuts, peas, beans, lentils, gelatins, etc.

These foods when they enter the body are acted upon by the enzymes of the gastric juices, the pancreatic juices, and the juices of the small intestine. They are broken down into their elements—the amino acids. These amino acids, though very complex in chemical structure, are the building stones from which every type of protein can be built up. We can eat meat, for example, in the form of beef or pork, and though these substances are very different when we eat them, after they are broken down in our bodies into their basic amino acids, the body can then recombine these amino acids in a way to produce the kind of protein from which our muscles are

made—a type chemically quite different from either the beef or pork protein with which we started. Very few persons appreciate what wonderful chemical laboratories their bodies are.

Infants, children, and growing adults require more of these substances than those who have reached maturity, because they require material for growth as well as for repair. The grown adult requires relatively less of these substances since in his case they are used almost solely for the purpose of repair. Old people require still less. Persons who eat an excess of protein foods can not use them to advantage. Part of the excess is converted by the body into carbohydrates and subsequently stored in the body as fat just as when an excess of carbohydrate food is eaten. The chemical changes required to transform the excessive proteins into carbohydrates, however, is a distinct waste of energy. The proteins can not, in any sense, be regarded as a proper substitute for carbohydrates or fats as a source of heat and energy. A person, therefore, eating an excess of the protein foods gives the body a considerable amount of unnecessary work since much of this excess must be eliminated by the kidneys in the form of waste products, such as urea, uric acid, creatinin, etc. An excessive intake of these foods is not merely a waste of the foods themselves, but puts an unnecessary strain upon the general metabolism of the body and particularly upon the kidneys.

A person who eats an insufficient quantity of the protein foods will continue to lose in strength because of inadequate tissue repair. There has been a reaction in recent years against excessive meat. This on the whole has been very wholesome, but like most reactions, it has gone to extremes in the opposite direction. There are a great many workers, especially girls, who tend to be anemic. These are particularly workers who, because of the nature of their occupation, do not get a sufficient amount of fresh air and sunshine, particularly the latter. Workers of this type should eat more than the usual amount of protein foods, particularly rare beef and liver, since these are important in building up the hemoglobin of the red blood cells. I shall discuss iron intake as it effects these persons later on.

The Inorganic Salts

These include such substances as sulphur, phosphorus, sodium, potassium, calcium, magnesium, and iron. Foods differ very greatly in the amount of these substances which they contain.

The sulphur is required for the building of body protein, and is best supplied by milk. Any diversified diet, however, will ordinarily automatically supply a sufficient quantity of this constituent without the need for any further attention being paid to it.

Phosphorus forms a part of every active cell in the body and, with calcium, helps to give rigidity to the bones and the teeth. This substance is to be found in the proteins and especially in egg yolk, milk, and cheese. It is also found in whole-wheat flour, oatmeal, dried beans, and nuts. It is desirable that foods of this type be adequately represented in the daily dietary.

The calcium salts are necessary for the proper coagulation of the blood, and for the purpose of regulating the action of the heart muscle. The calcium requirements are not ordinarily well met in the so-called mixed diet of the city dwellers either in America or in

Europe. Deficiency is common, and is a very serious matter. Calcium is essential for strong bones and teeth and is required by the body for the maintenance of a proper relationship between the acid and base constituents of the body fluids. Women require more calcium during pregnancy than at other times. Milk is by far the most available source of calcium. One hundred calories of milk yields more calcium than twenty-four hundred calories of white bread or meat. Vegetables are also a source of calcium, but not to the same extent as milk. A glass of milk per day, added to a diet rich in fruit or vegetables, will insure an adequate supply of this important element in the diet. Calcium tends also to conserve the iron in the body; and for those workers who tend to be anemic it is quite as important that their food contain a sufficiency of calcium as that it contains enough iron.

Iron enters into the composition of the red blood cells, being one of the important constituents of the hemoglobin. The hemoglobin is essential to the conveyance of oxygen to the cells of the body and is used in the oxidation or burning of the ingested foods in the process of digestion. Iron is required in small amounts and is found primarily in egg yolk, cream, and vegetables—especially in spinach. It is also a constituent of the protein foods. Workers who are anemic should eat larger quantities of the foods which contain iron than others.

The sodium salts play an important part in the maintenance of normal osmotic pressure in the body. It has also been found that the normal contractions and relaxations of the heart muscle, constituting the normal heart beat, is dependent upon a definite quantitative relationship between the calcium and sodium salts present in the body. In general, it might be said that the ordinary diet in itself automatically supplies us with a sufficient amount of sodium, potassium, and magnesium without giving these any further attention. The amount of table salt which is ordinarily found in the food which is served to us is more than ample to fill the sodium requirement.

An investigation made some time ago by the bureau of industrial hygiene revealed the fact, however, that workers who are exposed to high temperatures and humidities, such as are found in the steam-laundry industry, for example, tend to lose considerable quantities of salt from the body in their perspiration. Examination of their blood showed a deficiency of sodium in many cases. It is considered desirable, therefore, that such workers use liberal quantities of salt in their diet, more than is regarded as proper for other individuals. Potassium and magnesium are found in quantities in meat muscle and in most plants, so that the ordinary mixed diet can be relied upon to supply a safe surplus in these elements.

The Vitamines

There are four vitamines which are known at the present time. These are called vitamines A, B, C, and D. Others probably exist which have not as yet been isolated. It would be manifestly impossible to discuss the chemistry of the vitamines in the time allotted to a single lecture. They are extremely complex, and although they appear in our foods in relatively small amounts, they are dramatic in

their influence upon nutrition. A deficiency of these elements in the diet causes lack of growth and development, as well as some of the deficiency diseases such as beri-beri and scurvy.

The important sources of vitamine A are milk, cream, butter, eggs, carrots or other yellow vegetables, sweet potatoes, cabbage, spinach, or other thin green leaves of plants, tomatoes, liver, cod liver oil.

The important sources of vitamine B are milk, whole-grain cereals, eggs, fruits such as oranges, lemons, grapefruit; vegetables such as celery, cabbage, tomatoes, onions, lettuce, potatoes, beans, peas, lentils, carrots, spinach; such meats as liver, kidneys, and sweetbreads.

The important sources of vitamine C are such fruits as oranges, lemons, and grapefruit, and such vegetables as tomatoes, cabbage, onions, lettuce, potatoes, and yellow turnips. Vitamine C is very easily destroyed by heat. It is very important, therefore, to make it a point to have one or another of these foods raw each day, so as to insure the presence of this vitamine in the daily dietary.

Vitamine D is to be found principally in egg yolk and in cod liver oil.

A normally balanced diet which is rich in fruit and vegetables and which contains one of the food stuffs listed under vitamine C in its raw state, supplemented by at least one glass of milk per day, one egg, and a single portion of meat will of itself insure a diet containing all of the necessary elements which we have discussed. The amount of starches, sugars, and fats which are then to be added, in the way of cereals, bread and butter or desserts, will depend entirely upon the caloric requirements of each individual—this requirement being dependent primarily upon the work which he does, and his basal metabolism.

Basal Metabolism

In determining the amount of food for a given worker, one must determine his size, his age, the amount of energy which he expends in the course of his work and his basal metabolism. The basal metabolism as we have already pointed out, is the amount of energy, that is to say, the number of calories which the individual expends in carrying on his physiological processes. These physiological processes are concerned with the action of the heart, the lungs, the digestive tract, the kidneys and all of the other biochemical activities of the body which are functioning all of the time—even when the body is at complete rest. Individuals differ very considerably in their basal metabolic rate, just as they differ in the rapidity with which their hearts beat, the rapidity with which they breathe, etc. When one considers that the normal basal metabolism requires an expenditure of approximately 1,500 to 1,800 calories per day and that sedentary workers rarely use up more than 2,500 calories per day in all, it can be readily seen what an important factor in the total expenditure of energy is the basal metabolism. The relative importance of this factor grows somewhat less, of course, as the number of calories expended in the day's work increases. Individual differences in basal metabolism play a very important factor in determining the widely diverse reactions of individuals to essentially the same environmental and dietary conditions.

It is a well-known fact, for example, that of two individuals of the same age and size, who are doing approximately the same amount of

work, and eating the same kind of food, the one may gain, while the other lose in weight. The reason for these great differences in individual reaction is not so difficult to understand when one considers that approximately 75 per cent of the total caloric expenditure per day in a factory worker, for example, is used up in the performance of his physiological functions, while only 25 per cent additional is expended as a result of his day's work. The actual amount of work done, therefore, by individuals at varying occupations is a far less important factor than is generally supposed—far less, indeed, than is their rate of metabolism. It is entirely conceivable, therefore, that a person with a high metabolic rate will lose weight even though he may do less work and eat as much or even more than his friend who has a low basal metabolism; even though the latter may have a much more strenuous job. It is extremely important to recognize these individual differences, and I want to stress them very particularly because we are all so prone to lay down set rules and expect them to apply equally to everyone.

The maintenance of a normal weight for one's age and height is one of the prerequisites to good health and efficiency. While the basal metabolism is by far the most important factor in determining one's tendency to gain or lose in weight, it is unfortunately a factor over which a worker has no control. Nevertheless, much can be done to maintain a normal weight by the average person if he will give attention to striking a balance between the number of calories which he expends in the course of his day's work and his caloric intake in the food he eats. Workers who tend to lose weight very easily, or who have difficulty in gaining weight, despite a liberal diet, should be taught to relax both at work and in their recreations. In this way they markedly reduce their energy expenditure and so help to shift the balance in their favor. Relaxing while at work does not mean shirking one's work, as many suppose. It means rather that the work will be done with the greater efficiency which is associated with lack of nervous tension and the elimination of lost motion. In this connection, I might call your attention to the fact that workers who are underweight usually are more nervous, more high strung and more emotionally unstable than are those whose weight is normal. The institution of a careful régime designed to bring their weight to a normal level or slightly above will almost invariably result in a very striking change in the nervous mechanism of these individuals. Their efficiency, as well as their sense of well-being, will be tremendously increased. They will become more stable personalities.

To summarize, the importance of maintaining a normal weight can not be overemphasized. In a normal individual, a simple balance between the caloric intake in food and the number of calories of energy expended in the course of the day's work can readily be established. It is considerably more difficult to strike a proper balance of this sort in individuals whose basal metabolism is either subnormal or unduly high. Persons of this type may require much less or much more food than normal in order to get the same result as the individual whose basal metabolism is normal. They should seek medical assistance with their problem. Normal weight means better health, more energy, increased resistance to disease, greater nervous and emotional stability, and greater working efficiency.

Clothing an Important Factor

THE amount of lost time due to illness and the diminished labor output due to poor health which results from improper understanding of what and how to eat are frequently further aggravated by a lack of knowledge of what to wear. That workers do not dress properly for their work is in part due to their ignorance of what clothes are suitable to their particular occupation; in part to their lack of appreciation of the importance of giving the question proper consideration; in part to inadequate facilities in the factories in the way of dressing rooms, lockers, etc., for conveniently changing their clothes. If workers knew how to dress properly for work and then required that proper facilities be provided to make it possible for them to change their clothes before entering their workrooms, the facilities would soon be forthcoming. At the present time there are a number of intelligent employers who have spent considerable money to provide proper dressing rooms, only to find that they are not used. Indeed, this is true not only of dressing rooms but of other facilities arranged for the worker's convenience and protection. Those of you who are teachers, or who are going to be teachers, have the unique opportunity of training the coming generation of workers to a proper appreciation not only of what they need for the maintenance of proper health standards in industry but also to an appreciation of how these things are to be obtained and how important is their intelligent cooperation in obtaining them.

That workers should be clothed with definite reference to atmospheric conditions of the workrooms, for example, is axiomatic. Nevertheless, the violation of this fundamental principle is the cause of an unbelievable number of respiratory infections among the workers of this State at the present time. In a recent investigation of the steam-laundries industry of the city of New York, made by the bureau of industrial hygiene, it was found, for example, that great numbers of the girls in the ironing departments wore woolen underwear and woolen dresses at work, although the temperature of their workroom was frequently 80° F. and more, and the humidity was high. This they did because of their misguided idea that it would prevent their taking cold. Proper clothing calculated to meet the needs of the working environment is basic to the maintenance of good health and working efficiency. It is an important factor, therefore, in production.

Uniforms

Any discussion of clothing in industry immediately suggests uniforms. These are important primarily because they can be made of a texture suitable to the atmospheric conditions which prevail in the workshop as well as to the materials handled. They can be made of such design as is calculated to minimize the possibility of any portion thereof being caught in moving belts or other machinery and so the number of accidents can be greatly reduced. The wearing of uniforms, moreover, makes for personal cleanliness, and this is reflected almost invariably in an improved morale on the part of the workers, a reduction in the rate of labor turnover, increased output, and therefore greater production. Their use, especially in conjunction with

individual lockers in the dressing rooms, tends, moreover, to reduce the possibility of transferring contagious or infectious diseases from the home into the workshop.

A uniform should always include a proper head covering. A workroom is rarely so clean that a worker is not the cleaner for wearing a cap of some sort to cover the hair. This is particularly true where there is lint or dust in the air resulting from one or another of the work processes. In the case of women whose hair is unbobbed, a cap prevents the possibility of a stray lock becoming entangled in moving belts or other machinery.

Care of the Feet

Perhaps the most important part of a worker's uniform is his shoes. Almost every worker tries to take care of his feet, for it is very common in industry for workers to have to stand all day long. In many instances they use their feet to run machinery. Generally speaking, however, the hours are long and their feet tend to become tired even when there has been no undue strain put upon them. It has been our experience from the observation of large numbers of workers that the efforts to protect their feet are frequently quite misguided, often being confined to the use of hot foot baths in the evening. The hot foot bath is all right as far as it goes, but it is far more logical and more effective to prevent the foot ache than to try to remedy it afterwards. All workers should be given an opportunity to see a skeleton of the foot and personally to examine it. These skeletons are neither expensive nor difficult to obtain. Only then will they be sufficiently impressed with the complexity of the mechanism. It has been our experience that workers are greatly surprised at the large number of bones which go to make up the foot; the number of articulations of these bones, one with another; and the numerous ligaments and muscles which exert a pull upon them, each in its own direction. It is largely due to their ignorance of the anatomy of the foot that workers give their feet so little attention. It is their tendency at the present time to keep their oldest and most broken-down shoes for work. Many girls may be seen wearing either bedroom slippers or else high-heeled pumps which are so out of shape that they can not be worn any longer for "dress." When one considers that the major part of a worker's day is spent at work, and usually on his feet, it is not surprising that they have so much trouble with their feet. Uncomfortable shoes and tired aching feet are a handicap not merely through the local discomfort which they cause and the difficulty of walking, but in the secondary strain upon the whole nervous system, resulting in early and intense fatigue. Fatigue not only reduces output, but predisposes to accidents.

For those in the audience who are teachers, and have the opportunity of presenting some of these facts to their students, I should like to outline a few of the fundamental principles which it is felt should be brought to their attention before they enter the workshop. Standing stock still, as you all know, causes very much greater strain upon the feet than moving about. Many workers, especially those tending machines, stand still for hours on end in the course of their work. Standing still tends to induce stagnation of the venous circulation, and thereby predisposes to the formation of varicose veins. For those workers, therefore, who have to re-

main in one place for long periods of time, it is desirable that they continually shift their weight from one foot to another and take a step or two back and forth while they are standing. Rising on the toes, from time to time, still further reduces the strain; and standing on the outer margins of the feet for a while now and again rests them a great deal and tends to prevent the arch from breaking down. For those who either stand or walk a great deal, it is highly undesirable to wear round garters or anything which causes constriction around the leg, since this tends still further to impede the return of venous blood, impairs the circulation, and predisposes to the formation of varicose veins. Those workers who already have varicose veins or whose legs tend to swell upon standing for any length of time should be urged to consult a physician. Frequently the use of elastic stockings while at work will greatly improve the comfort of the worker and increase his efficiency as well as his general health.

Workers should be taught the proper position of their feet while walking. It is surprising how few of them know it at the present time. The toes, as you all know, should point straight ahead, not outward. When the toes point outward, the weight of the body is thrown upon the inner part of the foot instead of on the outer part, and the foot tends to "roll in," as we call it, or get out of balance. The ligaments and bones are pulled in the wrong direction, and if this is continued for a long time, the feet will become permanently out of shape. It will then be increasingly difficult to get shoes which are comfortable, and unless radical measures are resorted to, the worker will find that he can not stand on his feet for any length of time without great pain. Callouses and bunions are formed in just this way. Workers should be taught the necessity of rising on their toes ever so slightly, when they walk, and getting a springiness into their gait. They should not use their legs as inflexible stilts, the way so many of them do at the present time, if they would save their feet from becoming unduly tired.

The foot bath is a common and a very good remedy for tired, aching feet. There are improvements on the foot bath as originally carried out, however, which should be brought to the workers' attention. After the warm foot bath, it is an excellent procedure to immerse the feet first in very hot and then in very cold water, alternately, about 15 or 20 times. This provides exercise for the muscular coats of the blood-vessel walls. Exercise of this type for the blood vessels of the feet and the legs keeps them more pliable and gives them better tone, thereby greatly improving the circulation.

Other exercises which are of value for the feet, and which can be carried out at night, are the so-called corrective exercises. The most important of these are: (1) Rising on the toes about 20 times, (2) walking on the toes, (3) standing on the outer margin of the foot, and (4) using the feet to grasp with, as one grasps with the hand. The best way to perform the last of these is to stand on a book with the toes extending over its front edge. The toes are then bent down as far as they will go. This exercise is repeated 15 to 20 times.

If we can teach our growing boys and girls the proper care of their feet, and make them appreciate the need for it, much will be accomplished toward making them happy and efficient workers. The number of accidents will be materially reduced.

Respirators

The majority of our workers to-day fail completely to appreciate the need for wearing respirators for protection against injurious dusts; the need for wearing gloves and boots for the protection of their hands and feet from the various chemicals to which they are exposed, and the need for wearing eyeglasses for the protection of their eyes, not merely from excessive glare, but from the danger of injury from flying particles. They are notoriously negligent in the use of these devices provided for their own protection, just as they are negligent in the use of guards which have been especially designed for the machines which they operate in order that their hands may be protected from injury. Each worker from the beginning of time has always been certain that whatever the hazards of his occupation, nothing will happen to him. Plant managers are constantly supplying their workers with all sorts of safety devices and appliances only to find that the workers regard them as nothing but a nuisance, and refuse or neglect to use them. Sometimes workers actually remove them when their foreman is not looking. In the inevitable accident which follows, a workman may be maimed for life. It is essential that our *new* generation of workers have a greater appreciation of the need for cooperating with the department of labor in its efforts to protect them from accidents. Until they do so, the unnecessary and preventable loss of life and limb, which is so common at the present time, will continue.

It is particularly difficult to persuade workers to wear respirators. Those who have had any experience with respirators will understand the reason for this very readily. They are unquestionably uncomfortable to wear at best, despite the attention which has been centered upon improving their design. Their use, however, is essential to health where the atmosphere of the workshop is laden with injurious dusts, fumes, or gasses. Every attempt is being made by the department of labor to have these injurious substances removed at their source—before they can pollute the air of the workroom. In many instances this has already been accomplished. Where these substances have not been removed, however, workers must understand the need for protecting themselves against inhaling them. Here, as in all other things, the hope is primarily with the younger generation of workers. They must be made to appreciate the harm which such dusts and fumes can do to their health. They must be made to realize that the various safety devices are not being arbitrarily imposed upon them for the purpose of making them uncomfortable or making their work more difficult to do, but that they are given to them entirely for their own protection. Indeed, they should be educated to ask for them instead of discouraging their use, as many do at the present time.

Progress in the direction of better health, greater working efficiency, and greater production as a result of an understanding of the two fundamental factors in personal hygiene—proper food and suitable clothing—lies with our new workers. The older generation has been brought up on the idea of compensation. Any condition in the workshop is acquiesced in provided compensation will be available in case of disability. That they should get compensation for industrial diseases and accidents goes without saying, of course. Indeed,

it is the tendency at the present time to increase this compensation to include all of the industrial diseases instead of the selected few which are in the labor law of this State at the present time. Far more important, however, than to receive compensation is not to need it. The younger generation must be taught the importance of prevention—prevention of accidents as well as the prevention of disease. The prevention of disease rather than its cure is the keynote of all public health effort at the present time. The slogan, "Have a health examination every birthday by your family physician" is becoming more and more popular. Whatever the merit of prophylaxis as a guiding principle in public health measures in general, however, it is all the more applicable to workers exposed to the many hazards of industry.

Our workers should be taught what the hazards of industry are. They should be familiar with them before they are out of school. They should leave school with intelligence enough to investigate the hazards of any occupation in which they anticipate working. These hazards can not be met by being ignored. They should, of course, be minimized wherever possible. But they must be intelligently—not hysterically—understood by the workers exposed to them in order that these workers may properly protect their health. An intelligent understanding of the industrial hazards to which they are exposed, coupled with an understanding of the general principles of diet and general hygiene underlying good health and a willingness to cooperate with existing authorities—such as the department of labor—in their attempt to eliminate these hazards from industry will result in better working conditions, healthier workers, and a greater industrial productivity.