

UNITED STATES DEPARTMENT OF LABOR

Frances Perkins, Secretary

BUREAU OF LABOR STATISTICS

Isador Lubin, Commissioner

Manual on Industrial-Injury Statistics

Prepared by

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Bureau of Labor Statistics



Bulletin No. 667

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1940

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Letter of Transmittal

UNITED STATES DEPARTMENT OF LABOR,
BUREAU OF LABOR STATISTICS,
Washington, D. C., November 15, 1939.

The SECRETARY OF LABOR:

I have the honor to transmit herewith a Manual on Industrial-Injury Statistics, prepared by Max D. Kossoris of the Bureau of Labor Statistics.

ISADOR LUBIN, *Commissioner.*

HON. FRANCES PERKINS,
Secretary of Labor.

PREFACE

Administrators of workmen's compensation acts are well aware of the multitude of problems which they must continually face in carrying out their duties. The proceedings of their meetings and their discussions clearly indicate the great variety of vexing questions that confront them. Increasing recognition is being given to the fact that adequate statistics, based largely on the reports required for the administration of workmen's compensation acts, can be of great assistance by pointing the way for informed action.

The primary purpose of this Manual is to make available to administrators and their statistical staffs simple and practical methods of statistical procedure. It goes without saying that these procedures can be effective only in the hands of trained personnel provided with adequate facilities.

Compensation laws, even at best, do not fully compensate injured workers or their dependents for wages lost, to say nothing of loss of life and limb. By far the largest number of injuries can be prevented if the causes of accidents are known. Efficient accident prevention can be promoted by administrators of workmen's compensation laws by prescribing types of reports to be submitted in cases of industrial injuries which can be used in analyzing accident causes. Useful forms into which accident-cause statistics can be cast are suggested in this Manual. The appendix contains a description of how the data have been developed specifically for the use of factory inspectors in one State.

Those familiar with developments in the field of accident reporting will appreciate the contribution of the American Standards Association, especially through its Sectional Committee on the Standardization of Methods of Recording and Compiling Accident Statistics, under the chairmanship of Dr. Leonard W. Hatch; its Subcommittee on Definitions and Rates, for which Dr. Hatch likewise served as chairman; and the Subcommittee on Cause Classification, under the chairmanship of Mr. H. W. Heinrich. Without the notable reports of these two subcommittees an important section of the present Manual could not have been written.

In the development of the Manual, assistance was received from an advisory committee consisting of Dr. Leonard W. Hatch, former member of The Industrial Board, New York Department of Labor;

Mr. H. W. Heinrich, Assistant Superintendent, Engineering and Inspection Division, The Travelers Insurance Company; Dr. E. B. Patton, Director, Division of Statistics and Information, New York Department of Labor; Mr. A. Z. Skelding, Actuary, National Council on Compensation Insurance; Professor S. B. Sweeney, Director, Institute of Local and State Government, University of Pennsylvania, and formerly Director, Bureau of Workmen's Compensation, Pennsylvania Department of Labor and Industry. The members of the committee functioned as individuals and not as representatives of the organizations with which they were connected. They are not to be held responsible for the points of view expressed in this Manual on which indeed there was some difference of emphasis or opinion. On one thing, however, they were all and always in agreement—that in the field of workmen's compensation and accident prevention, statistics could and should be useful tools towards practical ends.

Acknowledgment is also made of the valuable assistance of the late Dr. A. D. Lazenby, Chief Surgeon of the Maryland Casualty Company, in the preparation of the data bearing on medical costs, and of Miss Miriam Noll of the Children's Bureau of the United States Department of Labor, in the shaping of the material dealing with injuries to minors. Mr. S. W. Wilcox, Chief Statistician of the Bureau of Labor Statistics, supervised the preparation of the manuscript.

ISADOR LUBIN,
Commissioner of Labor Statistics.

NOVEMBER 1939.

Manual on Industrial-Injury Statistics

Chapter 1.—Purpose of the Manual

The number of workers killed at their jobs during 1937 was more than 4 times the number of soldiers killed during the entire Revolutionary War. In addition to the 17,800 fatalities during 1937, 112,000 workers were permanently maimed and about 1,500,000 more temporarily disabled. The wage loss, medical expense, and insurance costs for the year have been estimated at about \$660,000,000.¹ The incidental cost of these accidents—counted in terms of spoiled materials, damage to equipment, production loss, time lost by fellow workers, cost of training new workers to replace those injured, etc.—is estimated at about \$1,600,000,000.² The total cost of occupational accidents for this single year, by no means a high spot in industrial employment, may therefore be placed at over \$2,000,000,000.

This cost of human life, limb, health, and money was as unwarranted as it was staggering. Competent safety engineers are convinced that more than half of all industrial accidents are practically preventable, and any number of instances can be cited where intelligent safety work has effectively decreased accidents and injuries in industrial establishments.

The experience of a select group of iron and steel establishments from 1913 through 1936 may be cited as one example. In 1913, for every million employee-hours worked, 60 workers were either killed, crippled, or temporarily disabled. By 1935, persistent and intelligent safety work had reduced this ratio to about 6 such injuries per million hours worked. In other words, *over this span of years, the frequency of disabling injuries was reduced approximately 90 percent.* For every 10 disabling injuries in 1913, only 1 occurred in 1935. (See chart, p. 2.)

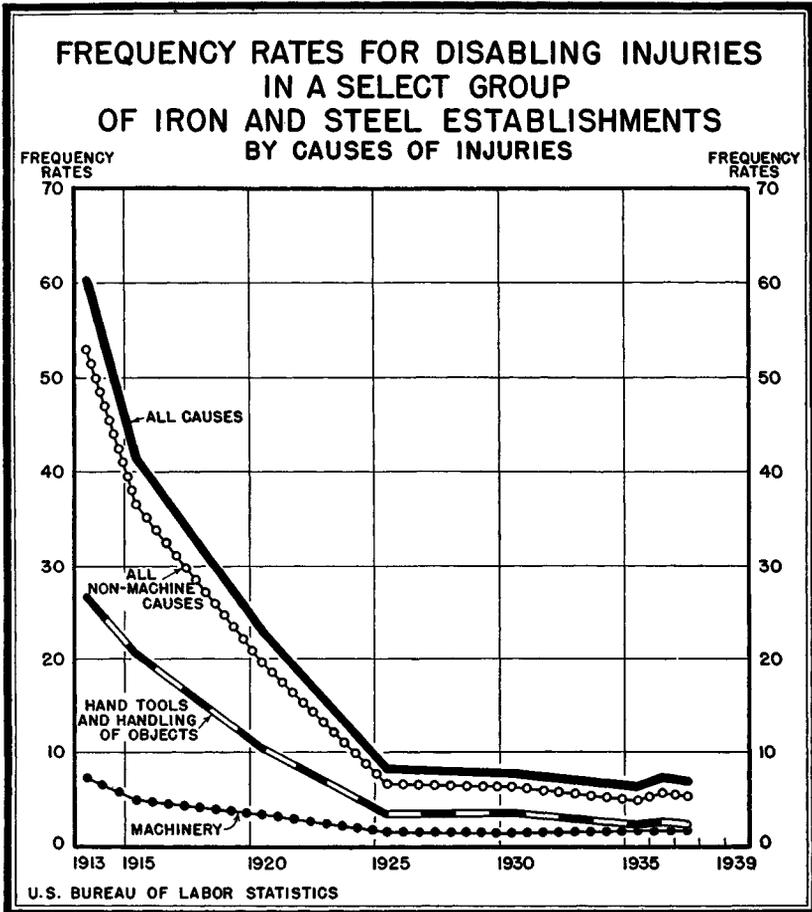
In the petroleum-refining industry, the frequency rate of disabling industrial injuries was cut to less than half the 1929 rate during the comparatively brief period of 6 years. In 1930, the rate was 31.36. By 1935 it was 10.46—a decrease of nearly 67 percent. There is no

¹ Based on the National Safety Council estimate of the following losses: Wages, \$510,000,000; medical expense, \$40,000,000; and overhead cost of insurance, \$110,000,000.

² Four times the estimated cost of \$400,000,000 for compensation payments, insurance overhead, and medical services.

question that careful, continuous, and comprehensive safety work had much to do with this result.³

The shore establishments of the U. S. Navy, which engage in a large variety of industrial activities, had a frequency rate of industrial injuries of 20.32 in 1926. By 1932, this rate had been reduced to



10.50, and by 1935 to 5.17. During this period safety work had decreased the frequency rate by nearly 75 percent. For every 4 disabling injuries per million employee-hours in 1926, only 1 occurred during 1935.³

Similar figures could be cited for cement manufacturing, the public utilities, automobile manufacturing, and a large number of other industries. Of the membership of the National Safety Council, several thousand firms reduced their disabling injuries by about 55 percent between 1927 and 1936. The Council has estimated that

³ Monthly Labor Review, March 1938, pp. 579-594: Industrial Injuries and the Business Cycle.

safety work has been largely responsible for the saving of 270,000 lives during the period 1913 to 1936. That accidents can be prevented therefore appears to be beyond dispute.

The problem of prevention ties in closely with the administration of workmen's compensation. Broadly speaking, the basic philosophy of workmen's compensation embodies: (1) Care for the injured worker during his disability, including both medical services and compensation benefits; (2) the utmost restoration of the injured worker's vocational ability; and (3) the prevention of occupational injuries.

In some States workmen's compensation agencies not only administer the workmen's compensation law, but also formulate safety rules and enforce them. In most of the States, however, safety work is carried on as a separate activity, and often by a separate agency within the State department of labor. But no matter what their organizational structure may be, the agencies administering the workmen's compensation laws are in a position to contribute greatly toward the elimination of industrial injuries to workers. They have the authority to require the reporting of the causes which set in motion the train of events which finally result in bodily injury, and consequently are in a position to determine and analyze the accident-cause factors and to pass this information on to the department or agency concerned with accident prevention. Adequate information must precede intelligent action.

Too often statistics have been attacked as "bulky and ill-arranged tomes" serving no practical function. Also the charge cannot be overlooked that the compilers of such statistics often are ignorant of the real nature of the material and problems with which they have to deal, and that they are unable to select and classify facts and to show their significant characteristics in an intelligible and interesting manner. Whatever the justification of such charges may be, it must be admitted that one major difficulty is the lack of a statistical technique flexible enough to meet the limitations, whether budgetary or of personnel, of the workmen's compensation administrations. The problem, to a considerable extent, involves the adoption of proper standards.

Statistics in themselves, it will be generally conceded, make dry reading. Their primary function, however, is to furnish, not reading material, but facts which may be utilized for intelligent and informed action. For administrators of workmen's compensation it is believed that statistical facts are desirable along three directions: (1) The volume of work handled, the speed with which it is handled, and the difficulties which cause delay; in short, facts concerning the efficiency of administration; (2) the practical functioning of the medical and benefit provisions of the law; i. e., how the law affects injured workers; (3) the incidence and causes of accidents.

The material in the Manual has been organized around these three focal points. In the chapters which follow, suggestions are given of the type of statistical tables to be developed, the codes to be utilized for this purpose, and the objectives for which the statistical material can be used.⁴ In the appendix specific illustrations are given of significant practices in some of the States.

The techniques and codes suggested throughout the Manual are flexible enough to meet the limitations or the needs of the individual State administrations. The methods suggested can be carried through on several levels of statistical activity, each more detailed than the one preceding. The purpose of this device is to permit agencies with limited facilities to operate on the most generalized and least detailed level, while others, having the necessary staff and equipment, may wish to carry their work into greater detail. Even such groups, however, may not in all instances care to carry their work to the greatest detail indicated, either in the coding process or in the presentation of their reports. Where possible, it is urged that the greatest amount of detail be coded so as to provide the data when wanted. A person familiar with the codes will find that coding in greater detail will not be much more of a task than limiting it to a more general level.

⁴ This Manual is a successor to Bulletin No. 276, Standardization of Industrial Accident Statistics, published by the U. S. Bureau of Labor Statistics in 1920. Bulletin No. 276 was the outgrowth of 5 years of work by a committee of 13, having among its members such outstanding pioneers in the field of workmen's compensation as E. H. Downey, Leonard W. Hatch, and Carl Hookstadt. Although Bulletin No. 276 embodied the most advanced and comprehensive thinking of the period, there has been so much progress since then as to make desirable the development of a publication which reflects present standards and thinking. In 1920, experience with workmen's compensation in the States dated back scarcely a decade. During the 19 years which have elapsed since then, some of the conclusions and suggestions of the committee have proved to be as sound in 1939 as they were in 1920, while others have become impracticable because of subsequent developments.

Chapter 2.—Administrative Statistics

Managers of private business establishments are vitally interested in data concerning their volume of production, the efficiency with which this volume is produced, and the weak points in their operations which reduce efficiency and increase costs. Administrators of workmen's compensation laws also want to know the volume of work handled by their administrations, the type of cases decided, the problems involved, the speed with which the work is handled, the quality of the work as reflected by decisions on appealed cases, and the weak spots which slow down efficient operation.

The tables presented in this chapter have been built around this idea. Some of these tables are believed to be more important than others, and deserving of priority. They have therefore been labeled "priority." Others are intended to give information which, though valuable and desirable, is not so essential and in some States is too well known to require study. Tables in this second group do not carry the label "priority."

Needless to say, the number of tables and the scope suggested are not exhaustive. Some agencies may find it desirable to go beyond them. Other administrations, particularly those with small case loads, may not feel the need for all of them. It is believed, however, that the tables marked "priority" are desirable for every administration, regardless of size, while those not so marked provide a group from which the various administrations can choose as their needs dictate.

Volume of Cases Handled

Table 1 presents a simple bookkeeping device for indicating the volume of cases handled during a year or month, or any other period of time. If the cases pending at the beginning of the year and the number of cases received during the year are added, the total volume to be acted upon is obtained. By deducting the number of cases disposed of during the year, the amount of unfinished business at the end of the year is determined. If more work is pending at the end than at the beginning of the year, then obviously the pace must be quickened. Table 2 presents the same table adjusted to the keeping of monthly data.

TABLE 1.—Volume of cases handled¹

Priority

From ——— to ———, 19—

Disposition of compensation cases	Pending at beginning of year 1	Received during year 2	Total (cols. 1 and 2) 3	Disposed of during year 4	Pending at end of year (col. 3 — col. 4) 5
Cases handled:					
(a) Without adjudication ²					
(b) Through adjudication—					
By referees or arbitrators ³					
By commissioners.....					
By courts.....					

¹ The data can be compiled by months or any other period of time, but the dates shown should be included in the period.

² If such cases are verified as to adequacy of payment, this fact should be stated in a footnote.

³ Or examiners, if performing the same function. Item to be omitted if cases are heard directly by commissioners.

NOTE.—Do not total columns vertically, as the same case may be handled by each of the groups shown under (b).

TABLE 2.—Volume of cases handled

From ——— to ———, 19—

CASES WITHOUT ADJUDICATION

Compensation cases	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
At beginning.....													
Received.....													
Total.....													
Disposed of.....													
Pending.....													

CASES ADJUDICATED BY REFEREES¹

At beginning.....													
Received.....													
Total.....													
Disposed of.....													
Pending.....													

CASES ADJUDICATED BY COMMISSIONERS

At beginning.....													
Received.....													
Total.....													
Disposed of.....													
Pending.....													

CASES ADJUDICATED BY COURTS

At beginning.....													
Received.....													
Total.....													
Disposed of.....													
Pending.....													

¹ Or arbitrators or examiners, depending on the terminology of the particular State. Where cases are heard directly by commissioners, this part of the table is to be omitted.

The methods of claim settlement found in the various jurisdictions present a considerable variety in processing the reports of industrial injuries. These methods, briefly, may be summarized as follows:

(1) Agreement system: This method requires the filing of an agreement for every compensable injury which does not require a decision by the administrative agency to settle a controversy. Agreements so filed, however, may or may not be examined for the adequacy of the terms agreed to, so as to safeguard the rights of injured workers or their dependents. Agreement cases should be shown as handled "without adjudication." If the agreements are scrutinized by the compensation administration, this fact should be indicated in a footnote (for instance, this footnote might read: "Every agreement submitted has been checked by the board for accuracy"), and the cases should be included in column 4 as "disposed of during year."

(2) Direct settlement system: Under this system cases involving no controversy may or may not be examined for adequacy of payment. In some jurisdictions, final-settlement receipts which show the basis of settlement are required to be filed with the administrative agency. In other jurisdictions no such reports are required. But even where such reports are filed, they may or may not be verified. Where verification does occur, it should be so noted in a footnote, because this involves additional work which should be recorded. The footnote applies to cases "handled without adjudication" and should be related to column 4, "cases disposed of during year."

(3) Hearing system: Only one jurisdiction uses the system under which a hearing is provided automatically for every compensable injury of more than a minor character. In this instance, the phrase "without adjudication" could be changed to "hearings not appealed from," and the phrase "through adjudication" to "appeals from referee decisions."

(4) Court administration: Under court administration, as a rule, no accessible records exist of the majority of cases settled outside of court. Where records of claim agreements are filed with courts for approval, they are usually rubber stamped by the clerk who examines them for the signature of the proper parties. Jurisdictions operating under court administration may find it more difficult to compile accurate, adequate statistics, which can be put to practical use.¹

Adjudicated cases may involve hearings before referees, examiners, or arbitrators, and decisions by these officials in turn may be subject to review by commissioners. In many jurisdictions, particularly those with small case loads, there are no referees or examiners, the commissioners hearing cases directly. In such instances, the phrase "by referees or arbitrators," or its equivalent, is to be omitted.

¹ Attention is called to the fact that there is a growing advocacy of the keeping of administrative statistics by courts.

In the United States jurisdictions, decisions by commissioners (or in the case of the U. S. Employees' Compensation Commission, by referees) are subject to court review. Table 1 provides for keeping account of the work of the courts, a relatively simple process because the administrative agency is always one of the parties involved in the suits before the courts as one of the contesting parties.

Disposition of Cases

Table 3 carries the analysis of the volume of work completed during the year one step farther, and shows how the work was disposed of. For the cases which were compensated, the number of cases and the amounts of compensation paid, agreed to, or awarded are to be shown. For the cases not compensated, a break-down is furnished to indicate that these cases received no compensation either because the period of disability did not exceed the waiting period, or for some other reason. For jurisdictions which require the reporting of *all* disabling injuries, whether compensable or not, and there are a considerable number of such jurisdictions, it is important to know the volume of noncompensable cases reported. Even if nothing further is done with the reports than to scrutinize them to make sure that on the basis of the information submitted they represent in fact non-compensable injuries, they do represent a heavy volume of work which should be recognized. Further, they are important in case the question of shortening the waiting period arises. And finally, they are very important in reflecting a fuller measure of the occurrence of disabling injuries, regardless of the legal waiting period. In the examination of accident causes, these noncompensable cases offer the possibility of a clearer and more comprehensive conception of the hazards involved. In the final analysis, it is often a mere matter of chance that an accident results in a minor rather than a major injury. A falling box may just as easily fracture a skull as bruise a hand, and the one or the other may be a matter of only seconds or inches. The hazard, however, is the same.

By far the largest number of cases, aside from those not compensated, are usually disposed of without any formal hearing. It is important, however, to indicate just what is included in the term "disposed of" in this connection. In one jurisdiction, a case may be considered disposed of if an agreement has been reached by the parties concerned as to the amount of compensation involved. In other jurisdictions, a case is not considered disposed of until a final receipt has been filed.

TABLE 3.—Disposition of cases
From _____ to _____, 19—

Disposition of compensation cases	Cases compensated		Cases not compensated ¹ —			Total, all cases
	Number	Amount of compensation	Because not exceeding waiting period	For other reasons ²	Total not compensated	
Cases disposed of:						
(a) Without adjudication ³						
(b) Through adjudication—						
By referees or arbitrators.....						
By commissioners ⁴						
By courts.....						
By decision of commission or board—						
Upheld.....						
Modified.....						
Reversed.....						

¹ Means no compensation payment even though medical aid may have been furnished.

² Subject to further elaboration; may be subdivided.

³ Specify that closed cases have been verified, if that is the case.

⁴ Or members of board or commission handling appeals.

NOTE.—Do not total columns vertically, as the same case may be handled by each of the groups shown under (b).

It is, therefore, essential that the basis on which cases are considered “closed” be definitely specified in a footnote to the table. For instance, the footnote for Pennsylvania, an agreement State, could indicate: “Table based on agreements approved by the Bureau of Workmen’s Compensation”; or, in the case of Illinois, a direct settlement State: “Table based on cases in which payments were verified as correct by the Industrial Commission.”

In that part of the table dealing with court decisions, provision is made for indicating whether such decisions upheld, modified, or reversed the decision of the administrative agency.

Compensation Awards and Agreements

Another measure of the volume of work disposed of is furnished in table 4, which shows by extent of disability the number of cases, and the costs of benefits and services. The definitions of the five classifications of extent of disability are given in chapter 5. The item of temporary partial disability may be omitted where not applicable.

The distinction between compensation awards and compensation agreements or settlements is quite obvious—the former indicates a hearing and decision on the part of some officer of the administration and applies only to contested cases, while the latter indicates that there was no such hearing. Whether the term “agreement” is used or “direct settlement” depends, of course, on the practice prescribed by the law or by the administration.

Priority**TABLE 4.—Compensation awards and settlements***From ——— to ———, 19—*

Extent of disability	Number of cases	Compensation	Medical	Burial	Other	Total
Death:						
No dependents.....		\$	\$	\$	\$	\$
With dependents.....						
Permanent total.....						
Permanent partial.....						
Temporary total.....						
Temporary partial.....						
Total.....						

*Compensation agreements or direct settlements*¹*From ——— to ———, 19—*

Extent of disability	Number of cases	Compensation	Medical	Burial	Other	Total
Death:						
No dependents.....		\$	\$	\$	\$	\$
With dependents.....						
Permanent total.....						
Permanent partial.....						
Temporary total.....						
Temporary partial.....						
Total.....						

¹ Specify which, and omit the inapplicable.

NOTE.—All dates shown for the period covered are to be included in the period. This rule should be observed in all tables giving dates.

No detail is shown for the number of dependents in death cases, but this may easily be added if desired.

As in the case of table 1, this table may be compiled either on an annual or monthly basis.

Controverted Cases

An analysis of controverted cases should serve at least three purposes: (1) To show the frequency with which certain types of issues are raised, so that the number of controversies may be curtailed by adequate provisions in the compensation law itself or by the formulation of specific rules by the administrative agency; (2) to indicate who initiates the controversies before the administration; and (3) to give the outcome of these controversies.

It is not unusual for a case to involve more than one issue. In such instances it is suggested that the case be classified on the basis of the major issue involved. The detail suggested is given in table 5.

TABLE 5.—*Issues in controverted cases*
 From ——— to ———, 19—

Priority

Issues controverted	Action started by—			Outcome of controversy						
	Injured or dependents	Self-insured employer	Insurance company	Case dropped by—		Case compromised		Decision for—		
				Injured or dependents	Employer or insurance company	Without hearing	After hearing	Injured or dependents	Self-insured employer	Insurance company
Coverage by act.....										
Industry.....										
Occupation.....										
Establishment size.....										
Disease.....										
Causal relation.....										
Extraterritoriality.....										
Interstate or intrastate commerce.....										
Admiralty.....										
Others.....										
Notice of injury.....										
Illegal employment.....										
Average weekly wage.....										
Extent of disability.....										
Need for medical treatment.....										
Need for artificial members, teeth, etc.....										
Extent of disability.....										
Termination of disability.....										
Dependency.....										
Statute of limitation.....										
Others.....										

NOTE.—Where more than one issue was controverted, tabulate the case according to the major issue. If, for instance, the issues raised were coverage by the act and average weekly wage, the major issue is coverage by the act. If that issue is decided against the employee, the average weekly wage is not material.

ADMINISTRATIVE STATISTICS

Where the board or commission sets attorney's fees, it may be desirable to add three additional columns: (1) Amount of compensation awarded; (2) amounts of attorney's fees, and other hearing costs; and (3) net amount remaining for worker. The question of attorney's fees is important and deserving of special attention and study, for ultimately these fees come out of the compensation paid to injured workers. Some additional suggestions concerning attorney's costs are given subsequently.

Time Lag—Reporting and First Payment

It is important for the administrative body to know how promptly disabling injuries are reported to it. There are several reasons for this: (1) It enables the administration to bring about compliance with the legal reporting requirements; (2) it enables the administration to establish contact with the injured worker soon after the injury and to advise him of his rights; and (3) the administration may make clear to him soon after the injury that in the absence of controversy there is no need to engage an attorney, and that he can save himself the cost of attorney's fees by writing for advice directly to the administration. Table 6 was developed to show the promptness with which insurance carriers or employers report industrial injuries to the administration. The report lag is the time interval between the date of the onset of disability and the date on which the report was filed with the administration. This latter date is generally stamped on the report when it reaches the office and consequently is readily available. Needless to say, there can be added to the list of insurance carriers a list of self-insured employers, and, if desirable, the insurance carriers can be grouped as stock or mutual concerns.

This type of table, particularly if sent to the home office of insurance carriers, has proved very effective in stimulating prompt reporting. It will be noted, however, that this table is not labeled "priority," indicating that, although desirable, it is not considered essential.

Table 7 shows for first benefit payments the same information as does table 6 for reports. The time lag of payments is important, for promptness of benefit payments is an essential of workmen's compensation, and consequently an item which competent compensation administrators watch carefully. The reason this table is not marked "priority" is because not all jurisdictions can compile it, owing to the fact that a considerable number do not require the filing of first receipts or any other information as to the first payment. Agencies which have the data are urged to compile this table.

TABLE 6.—Time lag in reporting injuries to workmen's compensation board

From ——— to ———, 19—

Insurance carrier	Number of reports filed within periods shown after onset of disability ¹							Percentage of reports filed within periods shown after onset of disability ¹						
	Less than 7 days	1 week, less than 2	2 weeks, less than 3	3 weeks, less than 4	4 weeks, less than 6	6 weeks and over	Total	Less than 7 days	1 week, less than 2	2 weeks, less than 3	3 weeks, less than 4	4 weeks, less than 6	6 weeks and over	Total
<i>X Insurance Co.</i>	40	100	200	250	150	60	800	5.0	12.4	25.0	31.3	18.8	7.5	100.0
Total.....														

¹ The time periods may require adjusting to the provisions of workmen's compensation act in the particular jurisdiction.

TABLE 7.—*Time lag in making first compensation payment*

From _____ to _____, 19—

Insurance carrier	Number of first payments made within periods shown after onset of disability ¹							Percentage of first payments made within periods shown after onset of disability ¹						
	Less than 2 weeks	2 weeks, less than 3	3 weeks, less than 4	4 weeks, less than 6	6 weeks, less than 8	8 weeks and over	Total	Less than 2 weeks	2 weeks, less than 3	3 weeks, less than 4	4 weeks, less than 6	6 weeks, less than 8	8 weeks and over	Total
<i>Y Insurance Co.</i>	25	75	125	175	150	50	600	4.2	12.5	20.8	29.2	25.0	8.3	100.0
Total														

¹ The time periods may require adjusting to the provisions of the workmen's compensation act in the particular jurisdiction.

Time Intervals in Controverted Cases

Two of the basic principles of workmen's compensation are (1) prompt medical attention and (2) prompt payment of compensation benefits. In most compensation cases no dispute arises as to either of these two services, and such cases can be disposed of by routine handling. But where an employer denies all liability, or denies that the medical services or compensation benefits in the amount claimed by an injured employee are justified, the speed with which these controverted issues are decided forms an important criterion of the efficiency of workmen's compensation administration.

The agency administering workmen's compensation wants to know at what points its machinery fails to function so as to insure speedy rulings in controverted cases. Table 8 gives the structure of a statistical compilation showing at what points delays occur—whether between the date of disability and filing of a claim, in which instance the delay may not be the fault of the administrative agency; whether between the filing of the claim and the first hearing; whether between the date of this hearing and the date of the decision; whether between the date of appeal and the decision of the reviewing board or commission, etc. Some delay, of course, must always occur. The question therefore becomes one of *how much* delay there is, and *at what points* of administration it occurs. By distributing the delay in terms of time periods, it is possible to obtain quickly a picture of the situation. If desirable, and in most instances it will be, there may be substituted for the general classifications of referees and commissioners the names of the individual officials concerned. Once the points at which undue delays occur have been determined, it should not be difficult to determine the reasons for these delays and to take measures toward reducing them.

TABLE 8.—*Time intervals in controverted cases*

From ——— to ———, 19—

Time elapsed between date of—	Less than 2 weeks	2 weeks, less than 1 month	1 month, less than 2	2 months, less than 3	3 months, less than 4	4 months, less than 6	6 months, less than 12	Over 1 year
Disability and filing of claim.....								
Filing claim and first hearing.....								
First hearing and making of award.....								
Appeal from award and hearing in review.....								
Hearing in review and award.....								
Appeal to court and trial.....								
Court trial and court decision.....								

NOTE.—Table can be expanded to include appeal to and decision by appeal bodies or courts. Depending on methods of insurance allowed, data can be tabulated by insurance carriers, self-insured, and State funds.

The table is not suggested for priority because agencies with small numbers of controverted cases may be so well aware of what causes undue delays that no such tabulation is necessary, except, perhaps, to demonstrate efficient handling or the short-handedness of the administration. Even such administrations, however, may find it desirable to use this tabulation as a periodic check on their own performances.

Lump-Sum Settlements

During the last two decades there has been considerable discussion pro and con as to the desirability of granting lump-sum settlements. Recent studies have indicated the desirability of approving few such settlements, and then under conditions that will guard against squandering or unwise investment.² In any case, the agency administering workmen's compensation may be interested in an analysis of the reasons for which lump-sum settlements have been approved. In some States, as in Illinois, the analysis of lump-sum settlements is highly important in safeguarding the rights of injured workers, because the law provides that such settlements bar any future reopening of these claims.

Table 9 suggests a convenient form for statistical data bearing on this point. It provides not only for a tally of the number of applications made and the number approved and denied, but also the reasons for which these applications are made. The table, although not marked for priority, is of great significance and is strongly recommended.

TABLE 9.—*Lump-sum settlements*

From ——— to ———, 19—

Reason for settlement given in application	Applications		Approved		Number denied
	Number	Amount	Number	Amount	
Compensation accrued.....		\$		\$	
To pay debts.....					
To go into business.....					
To buy home.....					
To take care of family's needs.....					
For rehabilitation.....					
As compromise settlement, etc.....					
Others.....					
Total.....					

NOTE.—If a settlement is approved for more than one reason, classify according to major reason, i. e., the one for which the largest part of the sum is allocated.

² For instance, see Vocational Rehabilitation and Workmen's Compensation, by Carl Norcross of the Rehabilitation Division, New York State Education Department, New York, 1936. An abstract of this publication appears in the Monthly Labor Review for December 1936 (pp. 1364-1369), under the title "Lump-Sum Settlements in Workmen's Compensation in New York."

Comparative Geographical Records

The discussion on administrative statistics would not be complete without some attention to the problems of geographical performances and comparative costs which are encountered in some jurisdictions. In New York State, for instance, the administration of the workmen's compensation law is decentralized, with a regional office serving each of five districts. Administratively, it is important to know how the work progresses in each of these areas; whether, for instance, the New York office operates at a slower tempo than the Albany office, etc. To provide such comparisons, it is necessary to compile tables for each district in addition to those for the State as a whole. As for the relative cost of operation, the total cost of operating each office can be compared easily with the case load handled, thus providing an average cost per case for each district.

Medical Costs

It is recognized that medical-cost data (including cost of hospitalization, drugs, etc.) have a bearing on compensable-injury costs generally, and that such data should provide the key to administrative action regarding adequacy and quality of medical benefits. Medical-cost data have additional significance because of the light they can throw on debated questions concerning the freedom of choice of physicians by the injured worker. Is medical cost higher when the injured worker chooses his own physician than when the carrier selects and furnishes the physician? Is the period of recovery shorter when he is treated by the physician of the insurance carrier or of the employer rather than by the physician of his choice? Still another question is: Are medical costs rising faster than compensation benefits, and if so, why?

The answers to these and similar questions are by no means simple. They are complicated by differences due in some instances to the qualifications which different industries require of injured workers before reemploying them at their regular occupations. A man with a healed arm fracture may be able to go back to work much sooner in an industry requiring little physical strain than in one requiring heavy muscular exertion. The seasons and general climatic differences exert similar influences. A doctor may not hesitate to pronounce a worker with a healed leg fracture fit to return to work when there is no danger of falling on ice, but he may well hesitate to do so in February, when that danger exists. Similarly, there would be little danger in returning such a man to work in Florida during March, while it might be more desirable in Maine to wait several weeks longer

so as to remove the danger of slipping on ice and breaking the leg again.

Nevertheless, it is possible to provide statistical data which can throw considerable light on the problems of medical costs. Tables 10 to 13 are suggested as means toward this end. Table 10 provides for major types of injuries classified according to the part of the body affected and for an analysis of average cost per case, both medical and compensation, as well as the average healing period.³ It may show, for instance, that for a given year the average medical cost for arm fractures, not complicated by infection, was \$155; that the average compensation cost was \$500; and that the average healing period was 12 weeks. If the law limits medical costs to a maximum of \$100, then clearly it falls short of meeting this situation. If in a given case the healing period is stated as 3 weeks and the medical fee as \$20, whereas the compensation ran to \$500, then on the face of it the medical service appears to have been inadequate, and the case may require a thorough examination. On the other hand, if the amount of compensation is \$500, and the healing period is shown to have been 20 weeks and the medical cost \$250, then on the face of it the medical treatment appears to have been excessively prolonged. A detailed check may prove this to be so, or may reveal a severe, slowly healing compound fracture. But, in any case, the data provide a yardstick by which to measure costs in individual cases.

It would be a simple matter to provide for a ratio of medical to compensation costs. This ratio has been omitted deliberately because it serves no particular purpose in the analysis of the figures of any given year, and is likely to mislead if used for a comparison of costs over a series of years. If the time period, for instance, covers one or more depression years, then the ratio may reflect an increase in medical cost, whereas in fact there may have been no such increase at all, but a decrease in the average amount of compensation because of the lower wage of the injured workers. In fact, there may even have been a decrease in the average amount of medical cost, and the ratio may still show an increase if the average compensation cost decreased more sharply than the medical cost. It is therefore suggested that all comparisons be made in terms of the average costs themselves, rather than in the medical-compensation ratio.

³ Individual jurisdictions may wish to make some changes in the items enumerated. For instance, it may be found desirable to group together fractures with and without infections as "fractures," and then to provide for "burns and scalds without infection" and "burns and scalds with infection."

TABLE 10.—Average compensation and medical costs, by nature and location of injury ¹

From _____ to _____, 19—

Nature and location of injury	Number of cases	Average cost per case		Average healing period (days)
		Compensation	Medical	
Amputation (surgical or traumatic)—				
Without infection:				
Eye (enucleation).....		\$	\$	
Arm.....				
Hand.....				
Fingers.....				
Leg.....				
Foot.....				
Toes.....				
With infection:				
Eye (enucleation).....				
Arm.....				
Hand.....				
Fingers.....				
Leg.....				
Foot.....				
Toes.....				
Burns and scalds.....				
Cuts, lacerations, punctures, abrasions—				
Without infection.....				
With infection.....				
Strains, ² sprains, bruises—				
Shoulder.....				
Arm.....				
Elbow.....				
Wrist.....				
Hand.....				
Fingers.....				
Back.....				
Hip.....				
Knee.....				
Leg.....				
Ankle.....				
Foot.....				
Toes.....				
Other.....				
Fractures—				
Without infection:				
Skull.....				
Spine.....				
Ribs, breastbone, shoulder blade, collarbone.....				
Arm, above elbow.....				
Elbow.....				
Arm, below elbow.....				
Wrist.....				
Hand.....				
Fingers (including thumb).....				
Leg, above knee.....				
Knee.....				
Leg, below knee.....				
Ankle.....				
Foot.....				
Toes.....				
Other.....				
With infection:				
Skull.....				
Spine.....				
Ribs, breastbone, shoulder blade, collarbone.....				
Arm, above elbow.....				
Elbow.....				
Arm, below elbow.....				
Wrist.....				
Hand.....				
Fingers (including thumb).....				
Leg, above knee.....				
Knee.....				
Leg, below knee.....				
Ankle.....				
Foot.....				
Toes.....				
Other.....				
Hernia.....				
Industrial disease.....				
Nature of injury, n. e. c.....				

¹ If this includes compensable cases for which the total amount of compensation due is known, this fact should be indicated in a footnote.

² Not including hernia.

NOTE.—If it is impossible or not feasible to distinguish between injuries with and without infection, the nature of injury classifications are to be shown simply as amputation, burns and scalds, cuts, etc.

The averages themselves, however, are open to objections. Obviously, there may be a considerable range between the figures included, and for any given nature of injury and part of body affected a hundred instances of medical fees of \$150 per case will outweigh 200 cases at \$50 per case. Table 11 has been prepared to show the range of medical costs in terms of convenient dollar intervals, which jurisdictions may vary to suit their needs. It may be found, for instance, that for a given nature of injury and part of body affected, a very heavy concentration occurs within a very narrow dollar range, say from \$10 to \$15. In such instances it may safely be concluded that any marked deviations from this cluster, such as a medical fee of \$75, requires looking into. If, on the other hand, the clustering occurs in a wider range, say between \$25 and \$100, medical charges falling within that range probably would not require detailed checking. A medical fee of \$200, however, would require such checking. Table 11 should be used as a check on the significance of the average medical costs shown in table 10.

TABLE 11.—Distribution of medical costs by nature and location of injury¹

From ——— to ———, 19—.

Nature and location of injury	Total		Average cost per case	Distribution of cases by medical cost										
	Cases	Cost		Less than \$10	\$10, less than \$15	\$15, less than \$20	\$20, less than \$25	\$25, less than \$50	\$50, less than \$100	\$100, less than \$150	\$150, less than \$200	\$200 and over		
Amputation (surgical or traumatic)—														
Without infection:														
Eye (enucleation).....		\$	\$											
Arm.....														
Hand.....														
Fingers.....														
Leg.....														
Foot.....														
Toes.....														
With infection:														
Eye (enucleation).....														
Arm.....														
Hand.....														
Fingers.....														
Leg.....														
Foot.....														
Toes.....														
Burns and scalds.....														
Cuts, lacerations, punctures, abrasions—														
Without infection.....														
With infection.....														
Strains, ² sprains, bruises:														
Shoulder.....														
Arm.....														
Elbow.....														
Wrist.....														
Hand.....														
Fingers.....														
Back.....														
Hip.....														
Knee.....														
Leg.....														
Ankle.....														
Foot.....														
Toes.....														
Other.....														

See footnotes at end of table.

TABLE 11.—Distribution of medical costs by nature and location of injury—Con.
From _____ to _____, 19—

Nature and location of injury	Total		Average cost per case	Distribution of cases by medical cost												
	Cases	Cost		Less than \$10	\$10, less than \$15	\$15, less than \$20	\$20, less than \$25	\$25, less than \$50	\$50, less than \$100	\$100, less than \$150	\$150, less than \$200	\$200 and over				
Fractures—																
Without infection:																
Skull.....		\$	\$													
Spine.....																
Ribs, breastbone, shoulder blade, collarbone.....																
Arm, above elbow.....																
Elbow.....																
Arm, below elbow.....																
Wrist.....																
Hand.....																
Fingers (including thumb).....																
Leg, above knee.....																
Knee.....																
Leg, below knee.....																
Ankle.....																
Foot.....																
Toes.....																
Other.....																
With infection:																
Skull.....																
Spine.....																
Ribs, breastbone, shoulder blade, collarbone.....																
Arm, above elbow.....																
Elbow.....																
Arm, below elbow.....																
Wrist.....																
Hand.....																
Fingers (including thumb).....																
Leg, above knee.....																
Knee.....																
Leg, below knee.....																
Ankle.....																
Foot.....																
Toes.....																
Other.....																
Hernia.....																
Industrial disease.....																
Nature of injury, n. e. c.....																

¹ If this includes compensable cases for which the total amount of compensation due is known, this fact should be indicated in a footnote.

² Not including hernia.

NOTE.—If it is impossible or not feasible to distinguish between injuries with or without infection, the nature of injury classifications is to be shown simply as amputation, burns and scalds, cuts, etc.

Considerable differences may exist in the liberality of insurance carriers, whether private or State fund, in connection with medical costs. Some may follow the enlightened policy of being liberal with medical costs, because adequate medical care will minimize the cost of compensation and will create good will toward the employer. Others may feel that medical cost should be rigidly curtailed and held to a bare minimum. Table 12 is suggested for developing significant information bearing on this point. The insurance carriers (including State funds) and the self-insured can be listed on the left-hand margin, and the average cost of compensation and medical cost per case can be shown for each of the nine types of injury. Aside from summarizing

TABLE 12.—*Compensation and medical costs, by nature of injury and individual insurance carriers*
 From _____ to _____, 19—

Insurance carrier	Average cost per case, by nature of injury ¹																					
	Amputation (surgical or traumatic) without infection		Amputation (surgical or traumatic) with infection		Burns and scalds		Cuts, lacerations, punctures, abrasions without infection		Cuts, lacerations, punctures, abrasions with infection		Strains, ² sprains, bruises		Fractures without infection		Fractures with infection		Hernia		Industrial disease		Nature of injury, n. e. c.	
	Compen-sation	Med-ical	Compen-sation	Med-ical	Compen-sation	Med-ical	Compen-sation	Med-ical	Compen-sation	Med-ical	Compen-sation	Med-ical	Compen-sation	Med-ical	Compen-sation	Med-ical	Compen-sation	Med-ical	Compen-sation	Med-ical	Compen-sation	Med-ical
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$

¹ If this includes compensable cases for which the total amount of compensation due is known, this fact should be indicated in a footnote.

² Not including hernia.

NOTE.—If it is impossible or not feasible to distinguish between injuries with and without infection, the nature of injury classifications are to be shown simply as amputation, burns and scalds, cuts, etc.

the medical-cost experience of each carrier, the table permits a comparison by carriers. If the experience of any one of them appears to be significantly out of line, it may be advisable to make for that individual carrier a break-down according to tables 10 and 11, and then compare these tables with those for the entire group. If the clusters are significantly above or, what is more important, below the average for the group, a further examination into the actual medical practices of the carrier may be in order.

The discussion thus far has dealt with both medical and compensation costs, and obviously was restricted to compensated or compensable cases in which compensation payments either had been completed or, if uncompleted, had been definitely determined. But cases where the period of disability was not sufficiently long to be compensable also, as a rule, involve some medical expense. Table 13 is suggested for the compilation of this information, as well as to permit comparison with the medical cost of compensated cases. The data are to be shown for each type of nature of injury. For such items as amputations and fractures, there will be, of course, very few cases under the noncompensable group.

TABLE 13.—Medical costs of compensated and uncompensated cases, by nature of injury

From ——— to ———, 19—

Nature of injury	Compensated cases ¹			Uncompensated cases		
	Number	Total medical cost	Average medical cost per case	Number	Total medical cost	Average medical cost per case
Amputation (surgical or traumatic)—						
Without infection.....		\$	\$		\$	\$
With infection.....						
Burns and scalds.....						
Cuts, lacerations, punctures, abrasions—						
Without infection.....						
With infection.....						
Strains, ² sprains, bruises.....						
Fractures—						
Without infection.....						
With infection.....						
Hernia.....						
Industrial disease.....						
Nature of injury, n. e. c.....						

¹ If this includes compensable cases for which the total amount of compensation due is known, this fact should be indicated in a footnote.

² Not including hernia.

NOTE.—If it is impossible or not feasible to distinguish between injuries with and without infection, the nature of injury classifications are to be shown simply as amputation, burns and scalds, cuts, etc.

Although the items shown under “nature of injury” are described in detail in chapter 7, a few words are pertinent here as to the reasons for the selections and groupings suggested in tables 10 to 13. Where several types of injuries have been grouped, the injuries are similar. There is relatively little difference, for instance, between cuts, abra-

sions, punctures, and lacerations. Similarly, from a medical viewpoint, strains, sprains, and bruises fall essentially into similar categories. There are important differences, however, in the severity of the injury and the length of the healing period when injuries to body tissue are complicated by infection. In cases of amputation, the infection may follow the traumatic or surgical amputation, or it may be the cause for a surgical amputation. Fractures not complicated by infection will, on the whole, involve shorter disability periods than fractures complicated by infections. The basic emphasis on the nature-of-injury items, therefore, has been the presence or absence of infection.

The body locations shown under the nature-of-injury items have been selected because they occur with sufficient frequency to be shown. Body locations not shown are involved less frequently, but may be added, if desirable, by use of the location-of-injury code in chapter 7.

Legal Costs

In the discussions at the annual meetings of the International Association of Industrial Accident Boards and Commissions the problem of legal fees and how to control them has been raised frequently. In some States the administrators of workmen's compensation laws have set definite maximum amounts an attorney may collect—such as 10 percent of the award, but not to exceed a total of \$100, in Wisconsin. In other States the commission or board has the authority to set the fees, but in some jurisdictions only at the request of the party engaging the attorney. And in still other States, the commissions have no authority to do anything about legal fees, even if they want to. But whatever the situation, many jurisdictions are concerned over the problem, partly because they want to be informed, partly because they want to know whether or not some degree of control over fees is necessary and how to determine what are proper fees in related or similar instances, and partly because they wish to recommend legislative changes. Unlike medical cost, legal fees come out of the pocket of the injured workers engaging the attorneys and therefore decrease the net amounts they obtain for their injuries.

Tables 14 and 15 are suggested for the compilation of data which should be of considerable assistance concerning the problem of legal fees. Table 14 provides for each classification by extent of disability

the total amount and the average amount of compensation awarded, as well as the total legal costs and the average legal cost per case. The column showing legal fees as a percentage of compensation may be found valuable in gaging individual charges. Legal fees are often charged on the contingency basis, and the objections to the use of the ratio urged in connection with medical costs do not hold here with equal force. In many instances the percentage an attorney may charge bears little relation to the amount of legal service performed. A case involving a small amount of compensation may involve considerable legal work, while, on the other hand, a case involving a large amount of compensation may require very little legal work. That absence of direct relationship is not true of medical costs. The use of the ratio in this table and for purpose indicated therefore appears to be proper.

TABLE 14.—Comparison of legal fees and compensation¹
From _____ to _____, 19—

Extent of disability	Number of cases	Compensation		Legal fees		Legal fees as percentage of compensation
		Total	Average per case	Total	Average per case	
All cases, total.....		\$	\$	\$	\$	
Fatal.....						
Permanent total.....						
Permanent partial.....						
Temporary total.....						
Temporary partial.....						

¹ Covers only cases in which the injured was represented by an attorney or other agent to whom a fee was paid.

Table 15 is suggested to show by a distribution of compensation awards the total legal cost for each of these award groups, the average fee per case, and also the legal fee as a percentage of compensation. This table disregards extent of disability and is based entirely on the amount of compensation awarded. As in table 14, the ratio shows the percentage of the total award which the injured worker on the average pays out in legal fees. Individual fees can be measured against the average per case for each of the compensation groups in order to determine whether or not it is in line, and the percentage ratio can be used to judge whether or not the entire fee structure is reasonable or unreasonably high.

TABLE 15.—Comparison of legal fees and amount of compensation award ¹

From ——— to ———, 19—

Amount of compensation award	Number of cases	Average amount awarded or agreed upon	Legal fee		Legal fee as percentage of compensation
			Total amount	Average per case	
Under \$100.....		\$	\$	\$	
\$100 to \$199.....					
\$200 to \$299.....					
\$300 to \$399.....					
\$400 to \$499.....					
\$500 to \$599.....					
\$600 to \$699.....					
\$700 to \$799.....					
\$800 to \$899.....					
\$900 to \$999.....					
\$1,000 to \$1,999.....					
\$2,000 to \$2,999.....					
\$3,000 to \$3,999.....					
\$4,000 to \$4,999.....					
\$5,000 to \$5,999.....					
\$6,000 to \$6,999.....					
\$7,000 to \$7,999.....					
\$8,000 to \$8,999.....					
\$9,000 to \$9,999.....					
\$10,000 to \$14,999.....					
\$15,000 to \$19,999.....					
\$20,000 to \$24,999.....					
\$25,000 and over.....					
Total.....					

¹ Covers only cases in which the injured was represented by an attorney or other agent to whom a fee was paid.

Chapter 3.—Compensation Statistics

This chapter is designed to provide for the presentation of data portraying the results of the workmen's compensation act in actual practice. The objectives of these statistics may be enumerated as follows: (1) To show how much has been paid, or has been awarded or agreed to be paid, for compensable injuries; (2) to show compensation by industry, type of injury, wage, age, and sex of injured, and in general to indicate the incidence and extent of disabling injuries; (3) to permit an analysis of the law in actual operation, i. e., just what the various provisions of the law mean in actual application; (4) to make possible intelligent recommendations for changes in the act and to provide the data from which the monetary cost of such changes can be reasonably estimated, and consequently to permit intelligent application of known facts to such problems.

Some of the table outlines in this chapter are also labeled "priority." Among the tables not so labeled are those giving detailed cost breakdowns. These tables are actually preferable to those marked "priority" and covering the same subject matter, but are not so labeled only because a considerable number of jurisdictions do not have the cost information necessary to compile them. But nearly every jurisdiction—except most court administrations—should be able to prepare the "priority" tables. Although these tables are simpler, the detailed cost tables are more valuable. It is suggested that jurisdictions having the data and the necessary staffs and equipment compile the detailed tables, and that jurisdictions not so well situated compile the "priority" tables.

As already indicated, there is considerable variation (see ch. 2) as to the meaning of "closed cases." Whatever the basis for determining when cases are considered "closed," pains should be taken to explain what it is. This can be done by the addition of an explanatory footnote to each table presenting such material. For instance, in a State using the direct-settlement system, this footnote might read, "Closed cases are those for which final receipts were filed during the year and approved by the workmen's compensation board"; or in an agreement State, "Closed cases are those for which agreements were filed with the workmen's compensation board during the year and approved by the board." Other language will readily suggest itself for varying practices, but *no matter what the practice, it should be clearly stated.* In the absence of such identifying material, the statistics of the various juris-

dictions may be subjected to incorrect comparisons and unjustifiable conclusions.

In a considerable number of the tables shown in this chapter the term "compensation" is used. The term is intended to cover the total compensation benefits paid by the time the cases are closed. In a direct-settlement State, for instance, the amount to be tabulated would be the total compensation paid in the cases closed during the year, and not the compensation actually paid during the year. If, for instance, a case is closed in which a total of \$1,500 was paid, then the amount of compensation to be shown is \$1,500, even though only a fraction of that total was actually paid in the year in which the case was closed. In a jurisdiction using the agreement method, the amount of compensation to be shown may be the total amount agreed upon. If final receipts are requested, it is possible to use these as the basis for closing cases. If this is done, the procedure will be the same as for direct-settlement jurisdictions.

The statistical codes pertaining to the tables in this chapter will be found in chapter 7.

Closed Cases, by Extent of Disability

Tables 16, 17, and 18 give the number of injuries which resulted in the specified types of disabilities shown. The terms used—death, permanent total, permanent partial, temporary total, and temporary partial—are standard, and definitions of them will be found in chapter 5. The column on noncompensable injuries is included so as to complete the accident picture by giving the number of disabling injuries which do not exceed the waiting period; provided, of course, the jurisdictions enforce legal requirements for the reporting of such cases. The number of noncompensable cases is important from the compensation angle when considerations for shortening the waiting period arise. Where it is not possible to obtain accurate and comprehensive reporting of such cases, statistics based on them must be used with caution.

Table 16 calls for the number of cases under each of the various types of disability, by industry. Table 17 carries the analysis into greater detail by showing, not only the number of such cases, but also the total benefit costs. In table 18 these costs are given in still more detail—compensation cost, medical and hospital cost, and funeral cost for death cases. In permanent total and permanent partial disability cases, the medical and hospital cost is to include the cost of artificial appliances. Logically, tables 17 and 18 should be combined in one table, but because the combined table would be unwieldy, the two tables are presented.

In each of the preceding three tables the data on extent of disability are classified by industry, for which a standard code is suggested in chapter 8.

In some jurisdictions the amounts of medical cost for individual cases will not be known because such data are not reported by self-insurers or insurance carriers having their own medical service. In such instances, it may be necessary to omit the item of medical cost, unless good estimates can be developed. Figures involving such estimates, however, should be identified by appropriate footnotes.

Similarly, a considerable number of States do not provide for temporary partial disability. Such jurisdictions will, of course, omit this section. On the other hand, some States may wish to show the item of disfigurement separately under extent of disability.

Death cases in which no payments were made to dependents, or in which payments were made into a special State fund provided for this purpose, should be referred to in a footnote, giving both the number of cases and the amounts paid. It is important to segregate these cases in order (1) to show payments made into such funds, and (2) to permit a better analysis of payments actually made to dependents. Because payments into such funds are generally much lower than those made to dependents, the inclusion of payments to the fund in the total will depress the average paid per case and also the average amounts paid to dependents. Consequently it is necessary to identify State-fund cases, which can be done easily in a footnote.

Location of Injury and Extent of Disability

Information as to the particular parts of the body injured and the type of disability resulting from the injury are important partly because of its bearing on the benefit provisions of the compensation act, and partly because of its relevancy to accident prevention. Tables 19, 20, and 21 are recommended for this type of analysis, the choice of table depending on the amount of detail available and considered desirable. The type of break-down represented by table 21 is a supplementary analysis of the type of data shown for table 20. The general comments previously made regarding tables labeled "priority" and those not so labeled also apply here.

In these tables the various parts of the body are not listed in great detail. For instance, no difference is made between the first digit of a finger and the entire finger, or for that matter the specific finger involved, e. g., index, middle, etc. The code furnished for this information (see ch. 7) permits the coding of much of this detail, but in turn omits such items as scapula, sternum, patella, fibula, etc., because it is believed that such detail is generally of no great significance. If desirable, the data as to location of injury can be shown in greater detail than indicated in the following tables—in fact, in as

much detail as the code permits. Unless some special purpose is to be served, however, the suggested tables should be satisfactory for most jurisdictions.

TABLE 19.—Location of injury and extent of disability

Priority

Cases closed from ——— to ———, 19— 1

Location of injury ²	Number of cases of specified disability						Non-compensable ⁵
	Death	Perma- nent total	Perma- nent partial ³	Tempo- rary total	Tempo- rary partial ⁴	Total	
Eye(s).....							
Head, n. e. c.....							
Throat.....							
Chest (lungs).....							
Back.....							
Arm(s).....							
Hand(s).....							
Finger(s).....							
Leg(s).....							
Foot or feet.....							
Toe(s).....							
Abdomen (hernia).....							
Body, n. e. c.....							

¹ Closed cases are those ——— (specify meaning of "closed"—whether closed as result of awards, agreements, or completed payments).

² When more than one part of the body is injured, tabulate that part which contributes most seriously to the injury.

³ State whether disfigurement cases are included.

⁴ Omit if such injuries are not compensable under law.

⁵ "Noncompensable" because not outlasting the waiting period of — days. Omit if law does not require the reporting of such cases.

TABLE 20.—Compensation by location of injury and extent of disability

Cases closed from ——— to ———, 19— 1

Location of injury ²	Extent of disability										
	Death and permanent total ³		Permanent partial ⁴		Temporary total		Temporary partial ⁵		All compensated injuries		Non-compensable ⁶
	Number	Total compensation	Number	Total compensation	Number	Total compensation	Number	Total compensation	Number	Total compensation	
Eye(s).....		\$		\$		\$		\$		\$	
Head, n. e. c.....											
Throat.....											
Chest (lungs).....											
Back.....											
Arm(s).....											
Hand(s).....											
Finger(s).....											
Leg(s).....											
Foot or feet.....											
Toe(s).....											
Abdomen (hernia).....											
Body, n. e. c.....											
Total.....											

¹ Closed cases are those ——— (specify meaning of "closed"—whether closed as result of awards, agreements, or completed payments).

² When more than one part of the body is injured, tabulate that part which contributes most seriously to the injury.

³ State the number of permanent total cases and their costs in parentheses after each of the combined figures. For instance, to show that 7 out of 75 cases were permanent total disability, show as 75 (7).

The number of fatal cases for which payments are made into State funds should be given in a footnote, together with amounts paid.

⁴ State whether disfigurement cases are included.

⁵ Omit if such injuries are not compensable under law.

⁶ "Noncompensable" because not outlasting the waiting period of — days. Omit if law does not require the reporting of such cases.

NOTE.—It is recommended that, if possible, this table be repeated by sex of injured.

TABLE 21.—*Compensation by location of injury and extent of disability*
Cases closed from ——— to ———, 19—¹

Location of injury ²	Extent of disability												Noncompensable ⁶
	Death and permanent total ³			Permanent partial ⁴		Temporary total		Temporary partial ⁵		All compensated injuries			
	Compensation	Medical and hospital ⁷	Funeral	Compensation	Medical and hospital ⁷	Compensation	Medical and hospital	Compensation	Medical and hospital	Compensation	Medical and hospital	Funeral	
Eye(s).....	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Head, n. e. c.....													
Throat.....													
Chest (lungs).....													
Back.....													
Arm(s).....													
Hand(s).....													
Finger(s).....													
Leg(s).....													
Foot or feet.....													
Toe(s).....													
Abdomen (hernia).....													
Body, n. e. c.....													
Total.....													

¹ Closed cases are those ——— (specify meaning of "closed"—whether closed as result of awards, agreements, or completed payments).

² When more than one part of the body is injured, tabulate that part which contributes most seriously to the injury.

³ State the cost of permanent total cases in parentheses after each of the combined figures. For instance, to show that \$250 out of \$2,750 medical and hospital costs was for permanent total disability, show as \$2,750 (\$250). The number of fatal cases for which payments are made into State funds should be given in a footnote, together with amounts paid.

⁴ State whether disfigurement cases are included.

⁵ Omit if such injuries are not compensable under law.

⁶ "Noncompensable" because not outlasting the waiting period of — days. Omit if law does not require the reporting of such cases.

⁷ Include cost of artificial appliances.

NOTE.—It is recommended that, if possible, this table be repeated by sex of injured.

Nature of Injury and Extent of Disability

In an analysis of industrial injuries, the nature of injuries and the types of disabilities which result from them are pertinent details. In how many instances, for example, did dismemberment result in death or in permanent total disability? How many cases were there of fractures, or hernias, or industrial diseases? And what kinds of disabilities resulted from them? Table 22 was drawn to answer such inquiries; and tables 23 and 24 show in some detail the cost of these injuries, both as regards compensation benefits and medical expense, table 24 being supplementary to table 23.

It will be noted that the term "industrial disease" is used instead of "occupational disease." The reason for this is that the cases tabulated always arise out of the industrial environment of the injured workers, but may have no relation at all to their occupations as such. For instance, a machinist may be exposed to chemical fumes or to various types of dusts, such as silica or asbestos, and contract a disease not peculiar to machinists. When a stonecutter contracts silicosis, he has contracted an occupational disease; but when a machinist in the same plant contracts silicosis, he does not have a disease which flows from his occupation of machinist. The term "industrial disease" is broad enough to include both types of cases.

Priority

TABLE 22.—*Nature of injury, by extent of disability**Cases closed from ——— to ———, 19—¹*

Nature of injury	Number of cases of specified disability						Noncompensable ⁴
	Death	Permanent total	Permanent partial ²	Temporary total	Temporary partial ³	Total	
Amputation (surgical or traumatic)—without infection...							
Amputation (surgical or traumatic)—with infection.....							
Burns and scalds.....							
Cuts, lacerations, punctures, abrasions—without infection.							
Cuts, lacerations, punctures, abrasions—with infection.....							
Strains, ⁴ sprains, bruises.....							
Fractures—without infection.....							
Fractures—with infection.....							
Hernia.....							
Industrial disease.....							
Nature of injury, n. e. c.....							

¹ Closed cases are those ——— (specify meaning of "closed"—whether closed as result of awards, agreements, or completed payments).

² State whether disfigurement cases are included.

³ Omit if such injuries are not compensable under law.

⁴ "Noncompensable" because not outlasting the waiting period of — days. Omit if law does not require the reporting of such cases.

⁵ Not including hernia.

NOTE.—If it is impossible or not feasible to distinguish between injuries with and without infection, the nature-of-injury classifications are to be shown simply as amputation, burns and scalds, cuts, etc.

TABLE 23.—*Compensation by nature of injury and extent of disability*

Cases closed from ——— to ———, 19— 1

Nature of injury	Extent of disability										
	Death and permanent total ²		Permanent partial ³		Temporary total		Temporary partial ⁴		All compensated injuries		Non-compensable ⁵
	Number	Total compensation	Number	Total compensation	Number	Total compensation	Number	Total compensation	Number	Total compensation	
Amputation (surgical or traumatic)—without infection.....		\$		\$		\$		\$		\$	
Amputation (surgical or traumatic)—with infection.....											
Burns and scalds.....											
Cuts, lacerations, punctures, abrasions—without infection.....											
Cuts, lacerations, punctures, abrasions—with infection.....											
Strains, ⁶ sprains, bruises.....											
Fractures—without infection.....											
Fractures—with infection.....											
Hernia.....											
Industrial disease.....											
Nature of injury, n. e. c.....											

¹ Closed cases are those ——— (specify meaning of "closed"—whether closed as result of awards, agreements, or completed payments).

² State the number of permanent total cases and their costs in parentheses after each of the combined figures. For instance, to show that 7 out of 75 cases were permanent total disability, show as 75 (7).

³ The number of fatal cases for which payments were made into State funds should be given in a footnote together with amounts paid.

⁴ State whether disfigurement cases are included.

⁵ Omit if such injuries are not compensable under law.

⁶ "Noncompensable" because not outlasting the waiting period of — days. Omit if law does not require the reporting of such cases.

⁷ Not including hernia.

NOTE.—It is recommended that, if possible, this table be repeated by sex of injured. If it is impossible or not feasible to distinguish between injuries with and without infection, the nature of injury classifications are to be shown simply as amputation, burns and scalds, cuts, etc.

TABLE 24.—*Compensation by nature of injury and extent of disability*
Cases closed from ——— to ———, 19— 1

Nature of injury	Extent of disability												
	Death and permanent total ²			Permanent partial ³		Temporary total		Temporary partial ⁴		All compensated injuries			Noncompensable ⁵
	Compensation	Medical and hospital ⁶	Funeral	Compensation	Medical and hospital ⁶	Compensation	Medical and hospital	Compensation	Medical and hospital	Compensation	Medical and hospital ⁶	Funeral	Medical
Amputation (surgical or traumatic)—without infection.....	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
Amputation (surgical or traumatic)—with infection.....													
Burns and scalds.....													
Cuts, lacerations, punctures, abrasions—without infection.....													
Cuts, lacerations, punctures, abrasions—with infection.....													
Strains, ⁷ sprains, bruises.....													
Fractures—without infection.....													
Fractures—with infection.....													
Hernia.....													
Industrial disease.....													
Nature of injury, n. e. c.....													

¹ Closed cases are those ——— (specify meaning of "closed"—whether closed as result of awards, agreements, or completed payments).
² State the cost of permanent total cases in parentheses after each of the combined figures. For instance, to show that \$250 out of \$2,750 medical and hospital costs was for permanent total disability, show as \$2,750 (\$250). The number of fatal cases for which payments are made into State funds should be given in a footnote together with amounts paid.
³ State whether disfigurement cases are included.
⁴ Omit if such injuries are not compensable under law.

⁵ "Noncompensable" because not outlasting the waiting period of — days. Omit if law does not require the reporting of such cases.
⁶ Include cost of artificial appliances.
⁷ Not including hernia.

NOTE.—It is recommended that, if possible, this table be repeated by sex of injured. If it is impossible or not feasible to distinguish between injuries with and without infection, the nature of injury classifications are to be shown simply as amputation, burns and scalds, cuts, etc.

Nature and Location of Injury

A detail in the operation of the workmen's compensation law which is of minor significance but of considerable general interest involves the part of the body affected as related to the nature of the injury. In a given number of dismemberments, how many involved arms, or hands, or fingers, or enucleation of eyes, etc.? Or, in the more recently discovered "occupational" (i. e. industrial) diseases, in how many instances was the throat affected, or lungs, or hands, etc.?

Although the break-down shown for the detailed cost tables already suggested—i. e., by cost of compensation and medical expense—can also be made here, it is not suggested. If desired, it can easily be set up, following the structure of such table forms.

Similarly, the suggested detail for location of injury can be enlarged, if so desired, to the full extent permitted by the code. The table can be repeated to show separately cases involving male and female workers, or minors.

TABLE 25.—*Nature and location of injury for cases closed*¹

From _____ to _____, 19—

Nature of injury	Location of injury ²													
	Eye(s)	Head, n. e. c.	Throat	Chest (lungs)	Back	Arm(s)	Hand(s)	Finger(s)	Leg(s)	Foot or feet	Toe(s)	Abdomen	N. e. c.	Total
Amputation (surgical or traumatic)—														
Without infection.....														
With infection.....														
Burns and scalds.....														
Cuts, lacerations, punctures, abrasions—														
Without infection.....														
With infection.....														
Strains, ³ sprains, bruises.....														
Fractures—														
Without infection.....														
With infection.....														
Hernia.....														
Industrial disease.....														
Nature of injury, n. e. c.....														

¹ Closed cases are those _____ (specify meaning of "closed"—whether closed as result of awards, agreements, or completed payments).

² When more than one part of the body is injured, tabulate that part which contributes most seriously to the injury.

³ Not including hernia.

NOTE.—If possible, this table should be repeated by sex of injured. If it is impossible or not feasible to distinguish between injuries with and without infection, the nature of injury classifications are to be shown simply as amputation, burns and scalds, cuts, etc.

Weekly Wages and Sex of Injured

Data on weekly wages of injured workers are important because they show the economic status of the worker at the time of injury, and also permit deductions as to the effect of the benefit provisions of the law. If, for instance, a law provides for benefit payments of 66⅔ percent of the weekly wages, an analysis of the wage distribution of injured workers will show what the prevailing weekly benefit rates are. Further, if the law contains maximum and minimum features, it is possible to gage their effects. For instance, suppose a law provides that the weekly benefit rate shall be 66⅔ percent, but that the amount of weekly benefit shall not exceed \$20. Then, obviously, the maximum weekly wage compensated in full under this provision is \$30, and all earnings above \$30 are disregarded. If the question arises of permitting a higher maximum, say, up to \$25, then it will become important to know the proportion of injured workers in the group between the old maximum wage of \$30 which is fully compensated and the new maximum of \$37.50. By such a calculation it is easy to determine what the absolute increase in compensation benefits would have been in a given year, and in that way to determine the percentage of increase which would have been necessary in insurance premium rates to cover the additional cost. Such a calculation, based on the experience of 1 or more years (preferably more), is far superior to the unsupported claims as to cost increases which are often raised when more liberal compensation provisions are under consideration.

The same method can be applied to changes in rates generally. If it is proposed, for instance, to raise the weekly benefit rate from 55 percent to 60, table 26 will permit a determination of the number of cases involved in a particular year, and what the increased cost would have amounted to for that year. The comparison of the increase with the amount actually paid gives the relative increase in cost.

In all such calculations it is necessary to consider whether or not present premium rates are sufficiently high to absorb the additional cost. If they are not, then it is important to compute the necessary increase on the basis of *net* premium, deducting from the over-all premium the usual carrying charges. For instance, if the increased cost is indicated as 10 percent, then the increase in premium rates (supposing the carrying charge is 40 percent of the premium) is 6 percent, i. e., 10 percent of the 60 percent going toward the payment of claims.

Table 26 would undoubtedly be more effective for the purposes described if actual compensation costs were given. This, however, is not possible in some of the States. Where the cost information is available, and where it is desired to combine the wage distribution with compensation cost, the item of sex can be omitted and the

detailed break-down as to cost shown in tables 20 or 21 substituted. It is suggested, however, that such tables be compiled in addition to the table suggested here.

Priority

TABLE 26.—*Injuries classified by weekly wages and sex of injured*
Cases closed from ——— to ———, 19— 1

Weekly wages 2	Extent of disability											
	Death		Permanent total		Permanent partial 3		Temporary total		Temporary partial 4		Total	
	Males	Fe-males	Males	Fe-males	Males	Fe-males	Males	Fe-males	Males	Fe-males	Males	Fe-males
Less than \$5.00.....												
\$5.00 to \$5.99.....												
\$6.00 to \$6.99.....												
\$7.00 to \$7.99.....												
\$8.00 to \$8.99.....												
\$9.00 to \$9.99.....												
\$10.00 to \$10.99.....												
\$11.00 to \$11.99.....												
\$12.00 to \$12.99.....												
\$13.00 to \$13.99.....												
\$14.00 to \$14.99.....												
\$15.00 to \$15.99.....												
\$16.00 to \$16.99.....												
\$17.00 to \$17.99.....												
\$18.00 to \$18.99.....												
\$19.00 to \$19.99.....												
\$20.00 to \$20.99.....												
\$21.00 to \$21.99.....												
\$22.00 to \$22.99.....												
\$23.00 to \$23.99.....												
\$24.00 to \$24.99.....												
\$25.00 to \$25.99.....												
\$26.00 to \$26.99.....												
\$27.00 to \$27.99.....												
\$28.00 to \$28.99.....												
\$29.00 to \$29.99.....												
\$30.00 to \$34.99.....												
\$35.00 to \$39.99.....												
\$40.00 to \$44.99.....												
\$45.00 to \$49.99.....												
\$50.00 to \$59.99.....												
\$60.00 to \$69.99.....												
\$70.00 and over.....												

1 Closed cases are those ——— (specify meaning of "closed"—whether closed as result of awards, agreements, or completed payments).

2 Use *actual* weekly wages at time of injury, regardless of method of computing wages for purposes of compensation benefits.

3 State whether disfigurement cases are included.

4 Omit if such injuries are not compensable under law.

Weekly Wages and Compensation Paid

Another wage-distribution table considered of primary importance is table 27, which gives for dollar wage intervals the distribution by length of disability. The table is intended to cover only the *period* during which injured workers were actually disabled, i. e., the period of recovery, at the end of which workers were able to resume work. Obviously, then, both fatal and permanent total disabilities must be omitted. States which do not require the reporting of the period of disability for permanent partial injuries will be able to construct this table only for temporary total disabilities, and should revise the title of the table accordingly.

TABLE 27.—Weekly wages and compensation paid for cases of permanent partial¹ and temporary total disability
Cases closed² from ——— to ———, 19—

Weekly wages ³	Weeks of disability																Non-compensable ⁵			
	1 or less ⁴		Over 1, less than 2 ⁴		2, less than 3		3, less than 4		4, less than 5		5, less than 6		6, less than 14		14 and over			Total		
	Number of cases	Compensation	Number of cases	Compensation	Number of cases	Compensation	Number of cases	Compensation	Number of cases	Compensation	Number of cases	Compensation	Number of cases	Compensation	Number of cases	Compensation		Number of cases	Compensation	Number of cases
Total																				
Less than \$5.00		\$		\$		\$		\$		\$		\$		\$		\$		\$		
\$5.00 to \$5.99																				
\$6.00 to \$6.99																				
\$7.00 to \$7.99																				
\$8.00 to \$8.99																				
\$9.00 to \$9.99																				
\$10.00 to \$10.99																				
\$11.00 to \$11.99																				
\$12.00 to \$12.99																				
\$13.00 to \$13.99																				
\$14.00 to \$14.99																				
\$15.00 to \$15.99																				
\$16.00 to \$16.99																				
\$17.00 to \$17.99																				
\$18.00 to \$18.99																				
\$19.00 to \$19.99																				
\$20.00 to \$20.99																				
\$21.00 to \$21.99																				
\$22.00 to \$22.99																				
\$23.00 to \$23.99																				
\$24.00 to \$24.99																				
\$25.00 to \$25.99																				
\$26.00 to \$26.99																				
\$27.00 to \$27.99																				
\$28.00 to \$28.99																				
\$29.00 to \$29.99																				
\$30.00 to \$34.99																				
\$35.00 to \$39.99																				
\$40.00 to \$44.99																				
\$45.00 to \$49.99																				
\$50.00 to \$59.99																				
\$60.00 to \$69.99																				
\$70.00 and over																				

¹ State whether disfigurement cases are included.

² Closed cases are those ——— (specify meaning of "closed"—whether closed as result of awards, agreements, or completed payments).

³ Tabulate according to actual weekly earnings at time of injury, and not the wage basis used to arrive at the determination of benefits, if that basis differs from the actual

weekly earnings at the time of injury. This table is intended to permit the calculation of wage loss not covered by compensation benefits.

⁴ To be changed in conformance with the State's waiting period.

⁵ "Noncompensable" because not outlasting the waiting period of — days. Omit if law does not require the reporting of such cases.

The table serves three purposes: (1) It gives a wage distribution for a large number of the injured workers (probably 90 percent of the total) whose disabling injuries have been reported; (2) it gives a distribution of the time periods of disability; and (3) it permits a computation of wage loss to injured workers. If no compensation is paid for temporary total in cases of permanent partial disability, then such cases will have to be omitted. The title of the table should be changed accordingly.

(1) Wage distribution: The wage distribution in table 27, as in table 26, concerns wages actually earned at the time of the injury, but, unlike table 26, does not show the wage distribution by extent of disability and sex of injured.

(2) Period of disability distribution: This distribution is very important because it shows the relative proportion of cases which involve specified time periods for healing. It shows, for instance, the number of cases which do not outlast the waiting period and consequently are not compensable. It shows the number of cases which last more than 1 week (i. e., 7 days) but less than 2 weeks in disability; 2 weeks and over but less than 3, etc. The first periods shown may have to be modified in various jurisdictions, depending on reporting requirements. If cases with disabilities of 7 days or less need not be reported, then obviously the first time period shown on the table has no significance and should be omitted, as should the column concerning noncompensable cases. If the waiting period is 3 days, and cases with disabilities not exceeding this period need not be reported, then the first column should read, "4 to 7 days." The same principle should be followed whether the waiting period is 5 days, 7 days, 2 weeks, etc.

(3) Wage loss: It will be noted that the table calls for amount of compensation as well as number of cases, and consequently jurisdictions requiring no reports of total payments in each case in all probability will not be able to compile the table. To determine the wage loss, it is necessary to estimate what workers would have earned had they not been injured, and what they received in compensation instead. To estimate the former, the midpoint of each wage group should be multiplied by the total number of workers shown for that group as well as by the midpoint of the time period. This will give a close approximation of the wage loss in the particular wage group. The total for all wage groups will give the estimated total wage loss. The difference between the wage loss and compensation for the period of disability measures the extent of the injured workers' personal monetary loss. If this amount is contrasted with the total wage loss, the percentage of wage loss not compensated becomes apparent. This table takes no account of losses due to amputation or impairment

of a member of the body. Techniques for evaluating such losses adequately still remain to be developed.

Age, Sex, and Extent of Disability

The significance of table 28 lies in the age distribution. The particular emphasis is on ages below 21, for which data are to be shown separately for each age year. This permits an analysis of disabling injuries to minors and is valuable in the light of either child-labor laws or punitive provisions in workmen's compensation laws applicable to illegal employment of children.

The number of disabling injuries, by extent of disability and by sex of the injured, are to be shown for each age group. The age groups, if too detailed, may be condensed as suggested on page 45. As given here, the age groups permit ready comparison with basic census population data.

Priority

TABLE 28.—*Injuries classified by age, sex, and extent of disability*¹

From ——— to ———, 19—

Age (years)	Extent of disability, by sex												Total	
	Death		Permanent total		Permanent partial ²		Temporary total		Temporary partial ³		Noncompensable ⁴			
	Males	Fe-males	Males	Fe-males	Males	Fe-males	Males	Fe-males	Males	Fe-males	Males	Fe-males	Males	Fe-males
Under 14 ⁵														
14.....														
15.....														
16.....														
17.....														
18.....														
19.....														
20.....														
21 to 24.....														
25 to 29.....														
30 to 34.....														
35 to 39.....														
40 to 44.....														
45 to 49.....														
50 to 54.....														
55 to 59.....														
60 to 64.....														
65 and over ⁵														

¹ Indicate in footnote the character of case used for tabulation—whether cases for which payments have been completed, awards made, agreements entered into, etc.

² State whether disfigurement cases are included.

³ Omit if such injuries are not compensable under law.

⁴ "Noncompensable" because not outlasting the waiting period of — days. Omit if law does not require the reporting of such cases.

⁵ It is desirable to identify in a footnote the number of cases for each age under 14 and for each age over 65 years.

Table 28 can be prepared either for cases reported during the year or for cases closed during the year. If the table is based on cases reported during the year—and this may be the only method feasible for jurisdictions which do not require the filing of final receipts or the filing of agreements—then another column should be added for cases

for which the extent of disability cannot reasonably be determined at the time the table is compiled. Statistical compilations by workmen's compensation administrations, as a rule, are not begun until several months after the end of the fiscal or calendar year, and by that time the extent of disability should be known for most of the cases reported. But there usually are some cases for which this information is not known, and rather than delay the tabulation, such cases should be shown in a column designated "extent undetermined."

Although few compensation acts make specific provisions for benefit-rate changes on the basis of the age of the person killed or permanently injured, the age distribution has considerable significance. Should compensation payments for young workers, whose earning powers have not yet developed fully, be based on what they actually earned, or on the earning power of adult workers? If a boy of 16 earning \$14 a week loses his arm, shall his compensation rate be based on \$14 or on the earnings of an adult laborer making, for instance, \$28 a week? What would be the cost of adopting this latter type of provision? To answer questions such as these, it is important to know how many minors are injured, the extent of the injuries, the wage groupings, etc. Table 28 provides a starting point.

There is also the problem of computing the economic cost to the community of fatalities. If the average age of workers fatally injured is found to be 35 years, and the average working-life termination may be placed at 60, then each fatality represents an average loss of 25 working years to the State. In computing the value to the State of adequate accident prevention, this item in itself may be of great importance.

Industrial Injuries to Minors

Need for Factual Data

Information regarding industrial injuries to minors as a group, although urgently needed, is either entirely lacking or very inadequate in most States. A strong incentive for compiling such information exists in the fact that both State and Federal Governments have recognized the importance of safeguarding minors from employment in particularly hazardous occupations, industries, or processes. Many of the State child-labor laws set a higher minimum age for employment in occupations which are considered dangerous than for general employment. Sometimes these occupations are specified in the law itself; in other cases the law provides that some State authority—usually the agency which enforces the State child-labor law—shall determine which occupations are hazardous and therefore should be forbidden to minors under a specified age. To permit making such determinations on a sound basis, statistical data based on industrial-injury reports are essential.

The need for such data exists also on the part of the Federal agency which administers the child-labor provisions of the Fair Labor Standards Act—the Children's Bureau of the United States Department of Labor. The act specifies the absence of "oppressive child labor" as one of the conditions under which products may be shipped in interstate commerce, and defines as one type of "oppressive child labor" employment in occupations found, and by order declared, by the Chief of the Children's Bureau to be particularly hazardous for minors between 16 and 18 years of age. Since there is no source of Nation-wide statistics on industrial injuries to minors, the Chief of the Children's Bureau, in making determinations as to hazardous occupations, must rely to a great extent on the industrial-injury statistics compiled by the various State industrial accident boards and commissions.

Statistics on injuries to minors are also needed for administrative purposes in those States in which workmen's compensation laws provide for additional compensation for injuries to minors who were illegally employed. As a growing number of States have adopted such a provision, they may be assumed to have the basis for compiling data showing their experience with regard to industrial injuries to illegally employed minors.

Tabulations of industrial injuries to minors serve as a variety of practical uses. When they are made available to the agencies responsible for enforcing State child-labor laws and the child-labor sections of the Fair Labor Standards Act, they are valuable in pointing out industries and localities where more effective enforcement of child-labor standards is needed. When they are employed in determining which occupations, industries, or processes are particularly hazardous for the employment of minors, they serve an all-important purpose in safeguarding young workers from possible death or permanent disability. When they are analyzed by age and the various causes of injury, they show the weak spots in the State child-labor or workmen's compensation laws which can be remedied by amendment of the law or by change in administrative policies or procedures. When they are carefully compiled and properly interpreted, they serve to direct public thinking along sound and constructive lines in the support of legislation which will further safeguard the young worker.

Need of Comparison Between Sexes and With Older Age Groups

Because of wide differences in the proportions of male and female workers in different industries, an important break-down for all tables, including those showing injuries to minors, is by sex.

Tabulation of all injuries by age groups greatly increases the usefulness of injury data for minors by making possible a comparison of minors with all age groups or with older age groups. This is particularly true when the tabulation is intended to show which industries, occupations, or processes are more hazardous than others.

Suggested Age Groupings

Since the legal minimum age for employment of minors varies from State to State, age classifications for minors should be sufficiently detailed to enable each State to know how many injuries occur to minors in specified age groups both within and without the range of the State regulatory provisions, and at the same time to make possible a comparison of injuries to minors in all States. The age standards in the child-labor provisions of the Fair Labor Standards Act are such that comparable industrial accident statistics should show at least the following age groupings: Under 14 years; 14 years and 15 years; 16 and 17 years; 18 years and over. Some States regulate employment in some occupations up to but not including 21 years. With such a variety of age standards, the suggested age groupings for minors are intervals of single years for ages 14 to 20 years, inclusive.

The more detailed the age groupings are, the more illuminating will be the possible comparisons. For this reason it is recommended that some tables, such as table 28, be prepared in considerable detail as regards age.

Where more condensed age groups are desired, the following groups are recommended: Under 16 years; 16-17 years; 18-20 years; 21-24 years; 25-34 years; 35-44 years; 45-54 years; 55-64 years; 65 years and over. If it is necessary to make further condensation, the following groups may be used: Under 16 years; 16-17 years; 18-20 years; 21 years and over.

In making any condensations of age groups for minors, care must be taken to adjust the age groupings to the standards of the State child-labor laws, as well as to preserve their comparability to the age groups for minors suggested above.

Recommended Tabulations

The several specific tabulations here suggested for the study of injuries to minors have been selected because of their practical usefulness to the agencies responsible for the administration of workmen's compensation legislation and child-labor laws. They represent the bare minimum of statistical information on injuries to minors which it is hoped the States will develop. Many States will undoubtedly wish to go beyond this minimum in order to meet the needs already described. The suggested tabulations are grouped according to the purpose for which they are most useful.

1. For determining hazardous employments as indicated by extent of disability or length of healing period:

(a) A table showing extent of disability for all age groups according to sex. The table form shown is table 28, entitled "Injuries classified by age, sex, and extent of disability, from _____ to _____, 19—."

(b) A table showing average compensation cost and average healing period for all compensated cases, by age group (preferably the most detailed age groups described above, ending with 65 years and over). This table would be similar to table 10, chapter 2, except that the stub would show age groupings instead of nature and location of injury, and average medical cost would not be given. Such a table would be useful to indicate the seriousness of the injury for the various age groups as shown by the length of healing period.

(c) Tables showing cause of accident in detail by age group (minors and adults), sex, and extent of disability. These are the most important of all suggested tables for revealing industrial injury hazards to minors as compared with adults. Since the analysis of cause of accident proposed in this Manual is broken into its various components and cannot be shown in one table, this tabulation will consist of four tables, in which the box headings will be the same but the stubs will be different. The four stub headings will be: (1) Agency and agency part involved; (2) accident type; (3) unsafe act; (4) unsafe mechanical or physical conditions. It is recommended that the part of the cause analysis entitled "unsafe personal factors" be disregarded for the purposes of this particular tabulation.

The table on agency and agency part involved is similar to table 31 (ch. 4) entitled "Injuries classified by agency, agency part, and extent of disability, from _____ to _____, 19—," except that age groups are added. The form suggested is the following:

TABLE 29a.—*Injuries classified by agency and agency part involved, according to extent of disability and age*

Agency and agency part involved	Extent of disability and age							
	All cases					Death and permanent total [same age groups]	Permanent partial [same age groups]	Temporary total and partial [same age groups]
	All ages	Under 16 years	16-17 years	18-20 years	21 years and over			
.....								
.....								
.....								
.....								
.....								
.....								

It is recommended that this table be repeated for each sex. Of all parts of the cause analysis, agency and agency part involved are the most useful in showing hazards to minors as compared with adults.

The other parts of the cause analysis can advantageously be tabulated by sex as well as by age group. They will resemble in form that shown above, except for the difference in the stub. Instead of "agency and agency part involved," the stub headings will read, respectively, "accident type," "unsafe act," "unsafe mechanical or physical conditions." The stubs will be the same as those in chapter 4, tables 32, 35, and 37, respectively.

(d) A table showing industry in detail, by age group (minors and adults), sex, and extent of disability. The age groupings suggested are: Under 16 years, 16-17 years, 18-20 years, 21 years and over, although individual States may wish to add greater detail, adapted to the provisions of their own child-labor laws.

This is an important table for use in determining the industries in which the more serious types of injury occur to minors. It is similar to table 16, entitled "Closed cases, by industry and extent of disability, from _____ to _____, 19—," except that the age groups and sex would be added as follows:

TABLE 29b.—Closed cases, by extent of disability and industry, according to sex
From _____ to _____, 19—

Age and industry	Extent of disability												
	Death		Permanent total		Permanent partial		Temporary total		Temporary partial		All cases		
	Males	Fe-males	Males	Fe-males	Males	Fe-males	Males	Fe-males	Males	Fe-males	Both sexes	Males	Fe-males
All ages—total													
Industry detail													
Under 16 years													
Industry detail													
16-17 years													
Industry detail													
18-20 years													
Industry detail													
21 years and over													
Industry detail													

2. For making comparisons between legally and illegally employed minors as to seriousness of disability, average compensation cost per case, and percentage of compensation spent for legal fees (these tabulations can usually be made only in those States which provide for additional compensation for illegal employment, since in other States the basic information on legality of employment of injured minors will probably not be available):

(a) The table suggested in 1 (b) on page 46 on average compensation cost and average healing period might well include an additional classification showing legality of employment for the appropriate age groups of minors affected by the State child-labor law.

(b) A table entitled "Comparison of average legal fees and average compensation per case for minors under — years, by legality of employment and extent of disability, from — to — 19—." This table would be similar to table 14 in chapter 2, except that only minors within the age range to which the State child-labor law applies would be included and the total amounts of compensation and of legal fees would be omitted. The table form would be as follows:

TABLE 29c.—Comparison of average legal fees and average compensation per case for minors under — years, by legality of employment and extent of disability

From — to —, 19—

Extent of disability	Number of cases		Average compensation per case		Average legal fees per case		Legal fees as percentage of compensation	
	Legally employed	Illegally employed	Legally employed	Illegally employed	Legally employed	Illegally employed	Legally employed	Illegally employed
All types.....								
Death.....								
Permanent total....								
Permanent partial....								
Temporary total....								
Temporary partial....								

3. For showing types of illegal employment of minors injured while illegally employed (this tabulation can be made only by those States where information on legality of employment is available, usually those which provide additional compensation for illegally employed minors):

(a) A table based on cases reported during a given period showing types of illegal employment of minors by age and sex, according to extent of disability, as far as it is known when tabulated. The types of illegal employment and the age groupings should be classified according to the requirements of the State child-labor laws. Such a table would be of great use to State factory inspectors and officials who are responsible for enforcing the State child-labor law.

Chapter 4.—Accident Statistics

If the workers who were killed and injured during 1937, together with their families, could have been assembled in one place, their number would have exceeded the population of any city in the United States, except New York. If, because of some sudden catastrophe, 17,800 of these people had been killed, 112,000 maimed, and 1,500,000 more temporarily disabled, the attention of the entire Nation would have been focused on the disaster. There certainly would have resulted a most thorough investigation of the factors leading up to this tremendous impairment of human lives and much thought would have been given to preventing a repetition.

The figures cited are estimates of the number of disabling industrial injuries in the United States during 1937, but because the accidents leading to these injuries occurred day in and day out, they did not crystallize the problem and did not focus the attention of the Nation on methods of prevention. Experts in industrial-accident prevention have estimated that as high as 95 percent of all occupational accidents are preventable. It therefore follows that those individuals or officials who have it within their power to probe and to disclose the causes of industrial accidents can make contributions of far-reaching and important social and economic significance.

“Industrial injuries don’t just happen. They are caused.” They are the result of unsafe working practices and unsafe working conditions. There are two possible causes for industrial accidents, under which, broadly speaking, industrial diseases are included: (1) Unsafe acts by workers, and (2) unsafe working equipment or environment. With very few exceptions, one or both of these factors will be found involved in every accident; and invariably, if these factors had been eliminated, the accident would not have occurred and the resulting injury would not have followed.

The tables suggested in this chapter are predicated on this idea. The purpose to be served is to shed some light on the unsafe practices and conditions which made the accidents possible, so as to focus attention on effective methods of prevention. *Adequate information must precede intelligent action.*

Although the codes on which these tables are based are described in considerable detail in chapter 9, it is advisable to refer to them briefly at this point in order to make the tables which follow more intelligible.

Basically, the cause analysis followed in this Manual is that developed by the Sectional Committee on Standardization of Methods of Recording and Compiling Accident Statistics of the American Standards Association and published in 1937. In this method of analysis, which is considered the most advanced that has been developed to date, an accident is broken into its various components. These are: (1) The agency, i. e., the defective object to which the injury is most closely related; (2) the agency part, i. e., the particular part of the agency most directly involved, such as the gears of a machine, the blade on a power saw, etc.; (3) the unsafe mechanical or material conditions; (4) the accident type, i. e., whether a fall, or struck by moving objects, or industrial disease, etc.; (5) the unsafe act; and (6) the unsafe personal factor which may explain the reason for the unsafe act. Applied illustrations of these rubrics are given in chapter 9.

The various accident factors cited suggest that a considerable number of tables can be developed because of the variety of combinations possible. The tables in this chapter, although by no means exhaustive, are suggested as being the most revealing and practically useful. They are all considered of primary importance, and none of them, except table 31, involves any break-down of the general groupings. It is obvious from an examination of the complete cause code that the analysis can be carried into very much greater detail than is here suggested, and officials interested in such break-downs may at times, to meet specific needs, wish to have tables constructed in all the detail given in the code. The tables given, however, are so general in their nature that every workmen's compensation administration or industrial organization using the suggested cause code can construct them without difficulty.

Additional significance is given to these tables by the endorsement of competent safety engineers. The primary purpose of these tables, to repeat, is to furnish adequate data on accident causes so that safety men, i. e., factory inspectors, safety engineers, etc., may know where to direct their efforts to the best advantage in preventing accidents. If accidents are prevented, then injuries are prevented, and accident prevention is preferable to workmen's compensation benefits.

Agency and Extent of Disability

Table 30 classifies injuries by the agency group most directly involved in accidents and by extent of disability. The purpose of the table is to indicate the frequency and seriousness of industrial injuries, including in that term industrial diseases. The number of injuries shown for each agency indicates the relative frequency with which such disabling injuries occur. Showing these disabilities by

extent, i. e., death, permanent total, etc., gives a measure of their seriousness. The table permits a quick orientation as to the agencies involved in disabling accidents and the relative seriousness of these disabilities. If desirable, each group under extent of disability can be subdivided further to show, in addition to the number of cases, the compensation and medical costs.

Where the classification of temporary partial disability is not recognized, this group must be omitted, but the kinds of cases classified should always be described properly either in the title or in an explanatory footnote. Obviously, the table cannot be compiled except from cases for which the extent of disability is known. Consequently, most workmen's compensation administrations may wish to use *closed* cases, i. e., cases in which the extent of disability has been definitely determined, either because compensation payments have been completed or because an agreement has been entered into by the parties involved. This, as pointed out earlier, requires that the meaning of "closed" be specifically stated; e. g., cases in which compensation payments have been completed, cases in which agreements have been approved, etc.

Priority

TABLE 30.—*Injuries classified by agency and extent of disability*

From _____ to _____, 19—

Agency involved	Extent of disability							
	Death	Perma- total	Perma- nent partial ¹	Tempo- rary total	Tempo- rary partial ²	Total	Non- compen- sable ³	Total, all re- ported cases
Machines.....								
Pumps and prime movers.....								
Elevators.....								
Hoisting apparatus.....								
Conveyors.....								
Boilers and pressure appa- ratus.....								
Vehicles.....								
Animals.....								
Mechanical power trans- mission apparatus.....								
Electrical apparatus.....								
Hand tools.....								
Chemicals.....								
Highly inflammable and hot substances.....								
Dusts.....								
Radiations and radiating substances.....								
Working surfaces, n. e. c.....								
Agencies, n. e. c.....								
Unclassified.....								

¹ State whether disfigurement cases are included.

² Omit if such injuries are not compensable under law.

³ "Noncompensable" because not outlasting waiting period of — days. Omit if law does not require the reporting of such cases.

In jurisdictions in which the coding of reported injuries is done some considerable time after the reports have been received, it should be possible to determine the extent of disability for most accidents

from the reports of the injuries. Injuries involving death or permanent disability are usually definitely known soon after the occurrence of the accidents, and employers usually describe them on the first report to the workmen's compensation administration. The same is true of temporary total disability cases of short duration. If the coding is delayed somewhat, i. e., is not done within a few days after the report has been received, the extent of disability may be ascertained in many cases from medical or other subsequent reports. Consequently, it is possible to build the suggested tables involving extent of disability on open cases, i. e., cases for which compensation payments have not been completed or in which no agreements have been reached between the parties involved.

Cases in which the report of the injury was accompanied by a final receipt, or in agreement States by an agreement, should also be included in the table. This has the tremendous advantage of providing data on current experience. It should be noted that the *duration* of disability is not important here. What matters is whether the injury reported involves death or permanent or temporary disability—factors which are relatively easy to determine.

Agency, Agency Part, and Extent of Disability

Table 31 carries table 30 one step further, by showing for each agency the agency part most directly involved. In the case of accidents in which machines are most directly involved, the table will show, for instance, the number of cases of deaths, permanent total, permanent partial, temporary total, and temporary partial disability which are related to some particular *part* of the machines. The table will show for such injuries how many occurred in connection with belts, pulleys or shafts, the frame or bed, or the point of operation, etc., and the type of disability which resulted. For elevators, for instance, the table will show the number most directly concerned with the car itself, or the car gates, the hoistway, platform, or steps, etc., and how many of each of these resulted in death, or permanent or temporary disability. In some of the agency groups no agency-part break-down is feasible, and consequently none is given. It would be next to impossible, for instance, to assign any agency part to chemicals.

The table is particularly useful for accident prevention because it identifies the agency parts most directly involved. The usefulness of the table will be enhanced if a break-down is made for individual industries, and, further, for individual types of agencies. Such detailed studies, however, are recommended for special investigations rather than for general tables. From the general table it should be possible to determine whether the data warrant further break-down and more detailed study, and at what points this expansion should

be undertaken. As in the case of table 30, tabulations on open cases will be more timely than tabulations based on closed cases and therefore of more practical value for accident prevention.

Priority

TABLE 31.—*Injuries classified by agency, agency part, and extent of disability*

From ——— to ———, 19—

Agency and agency part involved	Extent of disability							
	Death	Perma- nent total	Perma- nent partial ¹	Tem- porary total	Tem- porary partial ²	Total	Non- com- pen- sable ³	Total, all re- ported cases
Machines:								
Belts, pulleys, shafts, chains and sprockets, cables, and sheaves or gears.....								
Chucks, vises, carriages, tool posts, indicators, gages, and other attachments.....								
Ignition, heating, or cooling system parts.....								
Frame, bed, etc.....								
Point of operation.....								
Safety devices.....								
Parts, n. e. c.....								
Pumps and prime movers:								
Belts, pulleys, chains and sprockets, cables, and sheaves or gears.....								
Moving parts, n. e. c.....								
Ignition, heating, or cooling system parts.....								
Frame, bed, etc.....								
Valves.....								
Gaskets, packing, etc.....								
Safety devices.....								
Flywheel.....								
Parts, n. e. c.....								
Elevators:								
Belts, pulleys, chains and sprockets, sheaves or gears.....								
Cables and cable fastenings.....								
Car.....								
Car gates.....								
Hoistway.....								
Hoistway gates.....								
Safety devices.....								
Operating machinery.....								
Platform or steps.....								
Parts, n. e. c.....								
Hoisting apparatus:								
Belts, pulleys, chains and sprockets, cables, and sheaves or gears.....								
Cab.....								
Hooks or slings.....								
Magnet or bucket.....								
Moving parts, n. e. c.....								
Frame, bed, etc.....								
Safety devices.....								
Boom or mast or legs.....								
Fixed parts, n. e. c.....								
Conveyors:								
Belts, pulleys, chains and sprockets, cables, and sheaves or gears.....								
Moving parts, n. e. c.....								
Frame, bed, etc.....								
Safety devices.....								
Parts, n. e. c.....								

¹ State whether disfigurement cases are included.

² Omit if such injuries are not compensable under law.

³ "Noncompensable" because not outlasting waiting period of — days. Omit if law does not require the reporting of such cases.

Priority

TABLE 31.—Injuries classified by agency, agency part, and extent of disability—Continued

From ——— to ———, 19—

Agency and agency part involved	Extent of disability							
	Death	Perma- nent total	Perma- nent partial	Tem- porary total	Tem- porary partial	Total	Non- com- pen- sable	Total, all re- ported cases
Boilers and pressure apparatus.....								
Shell, drum, or header.....								
Tubes.....								
Gage glass, water column, or pressure and temperature gages.....								
All other valves.....								
Fusible plugs.....								
Gaskets, packing, etc.....								
Safety valves or devices.....								
Parts, n. e. c.....								
Vehicles:								
Belts, pulleys, chains and sprockets, cables, and sheaves or gears.....								
Coupler.....								
Ignition, heating, or cooling sys- tem parts.....								
Frame, bed, etc. (rigging, body).....								
Propeller or wheels.....								
Safety device.....								
Hatchway.....								
Brakes.....								
Parts, n. e. c.....								
Animals:								
Feet, or hoofs, claws, talons.....								
Mouth, stinger, teeth, etc.....								
Horns.....								
Tail.....								
Parts, n. e. c.....								
Mechanical power transmission ap- paratus.....								
Electrical apparatus.....								
Hand tools.....								
Chemicals.....								
Highly inflammable and hot sub- stances.....								
Dusts.....								
Radiations and radiating substances.....								
Working surfaces, n. e. c.....								
Agencies, n. e. c.....								
Unclassified.....								

Accident Type and Extent of Disability

An important aspect of accident analysis is the accident type. The nine specific types listed in table 32 identify an accident as involving striking against objects, being struck by a moving object, being caught in, on, or between objects, falls to different level, falls on the same level, slips, etc., and the extent of the disability that resulted. From this table it will be possible to determine, for example, how many falls to different levels resulted in death or permanent disability, and how many industrial diseases resulted in the various types of disability, as well as how the various types of accidents compare in frequency of occurrence. It will be possible to determine whether more accidental injuries are due to exposure to temperature

extremes than to strains, whether more are due to striking against objects than being caught in, on, or between objects, etc., and how the resulting injuries compare in severity. There may be fewer injuries due to falls to a different level than to falls on the same level, but proportionately more of the falls to a different level may result in death or permanent impairment. Accidents of this latter type, then, may be found to represent a more serious problem in terms of disability.

The meaning of "industrial disease" (usually called "occupational disease") should be made clear in a footnote. In some States the term includes *all* industrial diseases, while in others it has reference only to a limited and specifically described list of industrial diseases. A footnote is therefore highly desirable, so as to avoid comparison of data from various States when the data, as presented, are not comparable.

Attention is also directed to the inclusion of noncompensable cases. These, where available to any comprehensive degree, are important because they reveal accident hazards. As already indicated, it is often mere chance that an accident results in a minor rather than a major injury. If the hazard exists, it should be recognized and, if possible, prevented.

Priority

TABLE 32.—*Injuries classified by accident type, and extent of disability*

From _____ to _____, 19—

Accident type	Extent of disability							
	Death	Perma- nent total	Perma- nent par- tial ¹	Tempo- rary total	Tempo- rary par- tial ²	Total	Non- com- pensa- ble ³	Total, all re- ported cases
Striking against.....								
Struck by moving objects ⁴								
Caught in, on, or between.....								
Falls to different level.....								
Falls on same level.....								
Slips and overexertion.....								
Contact with temperature extremes.....								
Inhalation, absorption, ingestion.....								
Contact with electric currents.....								
Accident type, n. e. c.....								
Unclassified.....								
Total.....								

¹ State whether disfigurement cases are included.

² Omit if such injuries are not compensable under law.

³ "Noncompensable" because not outlasting waiting period of days. Omit if law does not require the reporting of such cases.

⁴ Falling, flying, sliding, or moving objects.

As is true in all tables dealing with data on extent of disability, the data suggested may be supplemented by further break-downs to show amounts of compensation, and medical and hospital expense. Such analyses, of course, must be based on closed cases. The advan-

tion is wanted, a further break-down may be made of each or as many of these groups as may be desirable. Under manufacturing, for example, may be shown the general major groups of food, textile, iron and steel, automobile, etc. Each of these, in turn, may be broken down into considerably more detail, and even to the full limit of the suggested code.

The table is significant because it will show in what industries most of the reported disabling injuries occur, and will indicate what further analysis may be necessary. The analysis should also reveal the types of accidents which are characteristic of certain industries, and the results of such examination should make clear to the accident-prevention personnel where to apply their efforts most effectively.

The data can also be prepared in a 3-entry table in which are shown for each industry the accident types subdivided by extent of disability. Deaths and permanent total cases can be combined by the device suggested for table 17.

Agency and Accident Type

Table 34 is to show the frequency with which the various accident types occur and the agencies most directly involved. When completed, it will show, for instance, the number of falls to different levels involving elevators; the number of injuries in which workers were struck by moving vehicles, or involved in falls from vehicles; the number of injuries involving electrical apparatus or chemicals and resulting from temperature extremes (hot or cold), etc. In other words, it will show the occurrence of the types of accidents in relation to the agency involved, as well as the types of accidents which stand out for the individual agencies. Data for these agencies, of course, can be broken down to furnish all the detail provided under the agency code, as well as the agency parts. As suggested, the data to be provided will be of general interest, and, what is more significant, will make possible the determination of the agency class or classes which warrant more detailed analysis for accident-prevention purposes. For instance, if a significantly large number of disabling injuries are shown for machines, it will be desirable to determine the specific types of machines involved in these machine injuries.

The table may be enlarged and shown as a three-entry table by showing under "accident type" the extent of disability, such as fatals and permanent total and permanent partial disability, etc. A similar break-down by industry offers another three-entry table analysis.

Priority

TABLE 34.—Injuries classified by agency involved and accident type
From ——— to ———, 19—

Agency involved	Accident type											
	Striking against	Struck by moving object ¹	Caught in, on, or between	Falls to different level	Falls on same level	Slips and overexertion	Contact with temperature extremes	Inhalation, absorption, ingestion	Contact with electric currents	Accident type, n. e. c.	Unclassified	Total
Machines												
Pumps and prime movers												
Elevators												
Hoisting apparatus												
Conveyors												
Boilers and pressure apparatus												
Vehicles												
Animals												
Mechanical power transmission apparatus												
Electrical apparatus												
Hand tools												
Chemicals												
Highly inflammable and hot substances												
Dusts												
Radiations and radiating substances												
Working surfaces, n. e. c.												
Agencies, n. e. c.												
Unclassified												
Total												

¹ Falling, flying, sliding, or moving objects.

Unsafe Act and Extent of Disability

The types of unsafe acts which are partly or wholly responsible for the occurrence of disabling accidents are to be shown, by general groupings, in table 35, which also gives the extent of disability which resulted from these acts. For instance, workers operating at unsafe speed brought about accidents resulting in a given number of fatalities and cases of permanent or temporary disability. The use of defective tools or equipment, or, equally important, the unsafe use of tools or equipment, resulted in a certain number of cases of disability, to be shown by extent. It will be apparent from the codes in chapter 9, that the number of unsafe acts listed in table 35 may be enlarged considerably. The table may also be prepared for individual industries, plants, or departments, either by preparing separate tables for each, or by means of three-entry tables. The items of death and permanent total disability may be combined, if desirable, by the device suggested for table 17.

Priority

TABLE 35.—Injuries classified by unsafe act and extent of disability

From _____ to _____, 19—

Unsafe act	Extent of disability							
	Death	Perma- nent total	Perma- nent partial ¹	Tempo- rary total	Tempo- rary partial ²	Total	Non- compen- sable ³	Total, all reported cases
Operating without author- ity, failure to secure or warn.....								
Operating or working at unsafe speed.....								
Making safety devices in- operative.....								
Using unsafe equipment, hands instead of equip- ment, or equipment un- safely.....								
Unsafe loading, placing, mixing, combining, etc.....								
Taking unsafe position or posture.....								
Working on moving or dangerous equipment.....								
Distracting, teasing, abus- ing, startling, etc.....								
Failure to use safe attire or personal protective de- vices.....								
Unsafe act, n. e. c.....								
Unclassified.....								
No unsafe act of person.....								
Total.....								

¹ State whether disfigurement cases are included.

² Omit if such injuries are not compensable under law.

³ "Noncompensable" because not outlasting waiting period of — days. Omit if law does not require the reporting of such cases.

Unsafe Act and Industry

To facilitate accident prevention, it is essential that the types of unsafe acts be shown by industries so as to make clear the type of unsafe-act hazard to be guarded against in each of these.¹ As indicated in connection with table 35, the unsafe acts listed are general types and may be enlarged, if desired, by following the detailed code in chapter 9. Similarly, the industry classification can be made as detailed as the industry code permits, or it may be expanded or contracted to meet the needs or desires of individual jurisdictions. In some States, for instance, the food industries may present no problem requiring detailed analysis, so that this group of concerns or firms may be treated without any other break-down than "food industries." In other jurisdictions, however, further break-down may be desirable into firms or concerns producing meat products, dairy products, baked foods, beverages, etc. In some instances it may be desirable to break down these groups into still greater detail. For instance, instead of grouping all establishments manufacturing or processing milk, butter, ice cream, condensed milk, etc., under the general classification of "dairy products," they may be shown as individual industries.

¹ The same approach may be used for smaller industry subdivisions, or even for departments of a single plant.

Unsafe Mechanical or Physical Condition and Extent of Disability

As already indicated, information for safety purposes involves the disclosure of unsafe mechanical or physical condition. It is important to know how many disabling accidents involved improper guarding, hazardous arrangement, improper illumination, improper ventilation, etc. Table 37 will show this information, as well as the extent of disability, i. e., fatal, permanent, etc., that resulted from the existence of these defects. As in the tables already discussed, the data on extent of disability may, when compiled for closed cases, also show compensation and medical and hospital costs. The items called for under "unsafe mechanical or physical conditions" are general and may be broken down so as to show all the detail which is permitted by the code given in chapter 9. Defects of agencies, for example, may be broken into rough, slippery, sharp edged, poorly designed, low material strength, poorly constructed, inferior composition, decayed, aged, frayed, worn, cracked, etc. Improper illumination may be broken into insufficient light, glare, and unsuitable location or arrangement (producing shadows or contrasts).

Priority

TABLE 37.—*Injuries classified by unsafe mechanical or physical condition and extent of disability*

From _____ to _____, 19—

Unsafe mechanical or physical condition	Extent of disability							
	Death	Perma- nent total	Perma- nent partial ¹	Tem- porary total	Tem- porary partial ²	Tota	Non- com- pensable ³	Total, all reported cases
Improperly guarded agencies.....								
Defective agencies.....								
Hazardous arrangement, procedure, etc., in, on, or around the selected agen- cy.....								
Improper illumination.....								
Improper ventilation.....								
Unsafe dress or apparel.....								
Unsafe mechanical or phys- ical condition, n. e. c.....								
Unclassified.....								
No unsafe mechanical or physical condition.....								
Total.....								

¹ State whether disfigurement cases are included.

² Omit if such injuries are not compensable under law.

³ "Noncompensable" because not outlasting waiting period of — days. Omit if law does not require the reporting of such cases.

Agency and Unsafe Mechanical or Physical Condition

Aside from knowing the types of disabilities which resulted from unsafe mechanical or physical conditions, factory inspectors and safety engineers will need to know the types of agencies which were defective,

and the frequency with which the injuries reported may be due to given defects involving particular agencies. How many injuries, for example, were due to machines which were improperly guarded? How many disabling injuries were due to boilers which were defective? When the frequency with which these accidents occur is clearly shown, it will be possible to determine at what points safety efforts should be concentrated. The general table suggested here will serve to indicate whether any break-down is desirable and along what particular points.

PriorityTABLE 38.—*Injuries classified by agency and unsafe mechanical or physical condition*

From ——— to ———, 19—

Agency involved	Unsafe mechanical or physical condition									Total
	Im- prop- erly guard- ed agency	De- fective agen- cies	Haz- ardous arrange- ment, pro- cedure, etc.	Im- prop- er illum- ination	Im- prop- er venti- lation	Unsafe dress or ap- parel	N. e. c.	Un- class- ified	No un- safe me- chan- ical or physi- cal con- dition	
Machines.....										
Pumps and prime mov- ers.....										
Elevators.....										
Hoisting apparatus.....										
Conveyors.....										
Boilers and pressure ap- paratus.....										
Vehicles.....										
Animals.....										
Mechanical power trans- mission apparatus.....										
Electrical apparatus.....										
Hand tools.....										
Chemicals.....										
Highly inflammable or hot substances.....										
Dusts.....										
Radiations and radiat- ing substances.....										
Working surfaces, n. e. c.										
Agencies, n. e. c.										
Unclassified.....										
Total.....										

Unsafe Mechanical or Physical Condition and Industry

For purposes of accident prevention it is also necessary to know in what industries the unsafe mechanical or physical conditions were responsible for accidents. In table 39, the data to be shown cover this point. Both the industry and unsafe mechanical or physical condition classifications can be expanded to include considerable detail. This more detailed analysis, of course, may be limited to particular industries and to particular types of defects.

Priority

TABLE 39.—*Injuries classified by industry and unsafe mechanical or physical condition*

From ——— to ———, 19—

Industry	Unsafe mechanical or physical condition									Total
	Im- prop- erly guard- ed agency	De- fective agen- cies	Haz- ardous arrange- ment, pro- cedure, etc.	Im- prop- er illum- ination	Im- prop- er venti- lation	Unsafe dress or ap- parel	N. e. c.	Un- classi- fied	No un- safe me- chanical or phys- ical condition	
Mining:										
Coal.....										
Metal.....										
Manufacturing:										
Foods.....										
Textiles.....										
Etc.....										
Total.....										

Unsafe Act and Type of Accident

The question as to what types of accidents result from the various unsafe acts is answered by table 40. Here are to be shown the number of disabling injuries which resulted from striking against objects because of operating at unsafe speeds, making safety devices inoperative, etc. Similarly, data are to be shown for other unsafe acts and the types of accidents resulting from them. As in earlier tables involving unsafe acts, the types listed may be broken into greater detail. The table, of course, can also be constructed for individual industries, plants, departments, etc., either by being repeated for each, or by the use of three-entry tables.

TABLE 40.—Injuries classified by unsafe act and type of accident
From ——— to ———, 19—

Unsafe act causing injury	Type of accident											
	Striking against	Struck by moving objects ¹	Caught in, on, or between	Falls to different level	Falls on same level	Slips and over-exertion	Contact with temperature extremes	Inhalation, absorption, ingestion	Contact with electric currents	Accident type, n. e. c.	Unclassified	Total
Operating without authority, failure to secure or warn.....												
Operating or working at unsafe speed.....												
Making safety devices inoperative.....												
Using unsafe equipment, hands instead of equipment, or equipment unsafely.....												
Unsafe loading, placing, mixing, combining, etc.....												
Taking unsafe position or posture.....												
Working on moving or dangerous equipment.....												
Distracting, teasing, abusing, startling, etc.....												
Failure to use safe attire or personal protective devices.....												
Unsafe act, n. e. c.....												
Unclassified.....												
No unsafe act of person.....												
Total.....												

¹ Falling, flying, sliding, or moving objects.

Type of Accident and Unsafe Mechanical or Physical Condition

Table 41 is a companion to table 40, and is intended to show the types of accidents that result, either wholly or in part, from unsafe mechanical or physical conditions. It answers the question: What types of accidents result from the various unsafe mechanical or physical conditions? The table will show the number of disabling agencies which resulted from striking against objects because of improper guarding, hazardous arrangement, improper illumination, etc. Similarly, it will reveal the frequency with which falls are related to hazardous arrangements (of materials or equipment), improper illumination, etc. The tabulation for unsafe mechanical or physical conditions may be further subdivided, and the entire table may be constructed for *all* reported injuries, or for individual industries, departments, geographic locations, etc., either by repetition or by the use of three-entry tables.

Priority

TABLE 41.—*Injuries classified by type of accident and unsafe mechanical or physical condition*

From ——— to ———, 19—

Accident type	Unsafe mechanical or physical condition									
	Im- Prop- erly guard- ed agency	De- fective agen- cies	Haz- ardous arrange- ment, proce- dure, etc.	Im- prop- er illumi- nation	Im- prop- er venti- lation	Unsafe dress or apparel	N. e. c.	Un- classi- fied	No un- safe me- chanical or phys- ical condition	Total
Striking against.....										
Struck by moving ob- jects ¹										
Caught in, on, or be- tween.....										
Falls to different level...										
Falls on same level.....										
Slips and overexertion...										
Contact with tempera- ture extremes.....										
Inhalation, absorption, ingestion.....										
Contact with electric currents.....										
Accident type, n. e. c. ...										
Unclassified.....										
Total.....										

¹ Falling, flying, sliding, or moving objects.

Unsafe Acts and Unsafe Personal Factors

The only suggested table involving unsafe personal factors is table 42. It can be compiled only by jurisdictions or organizations in a position to determine the essential facts. Some of the unsafe personal factors listed, and they are given in greater detail in chapter 9, are not difficult to determine. The question whether an accident was occasioned, either wholly or in part, by a workers' lack of knowledge or skill, or whether he was hard of hearing or had defective eyesight,

may be determined with relative ease, although even here a considerable amount of subjective judgment is involved. Improper attitudes, on the other hand, are much more difficult to determine. For instance, was the accident partly due to a worker's willful disregard of instructions, or violent temper, or recklessness, or sluggish mental reaction? A worker's thoughts may wander for a moment, and at that very moment and for that very reason the accident may have occurred. But there are no visible facts to indicate that this happened, and the problem then hinges on whether or not the worker, if he can be questioned, will admit that he was not paying attention to his job.

Because of the inherent difficulties in determining personal defects, only one table is suggested. Such factors as can definitely be ascertained, e. g., lack of skill or inexperience, disregard of instructions, should be recognized.

Table 42 is intended to show the unsafe acts related to unsafe personal factors. It should show how many injuries occurred because inexperienced workers operated at unsafe speed or unnecessarily exposed themselves to danger (such as standing under a loaded shovel of a derrick); or how many injuries were due to workers with bodily defects (such as impaired eyesight) working on moving or dangerous equipment. Safety men are anxious for this type of information. It can be compiled for all industry, individual industries, individual plants or departments, etc. But, it is again pointed out, although these data are very important, they will be difficult to obtain because of the element of personal judgment involved, which, in many instances, may be nothing more than guesswork.

TABLE 42.—*Injuries classified by unsafe act and unsafe personal factors*

From ——— to ———, 19—

Unsafe act	Unsafe personal factors occasioning unsafe act						Total
	Improper attitude	Lack of knowledge or skill	Bodily defect	Unsafe personal factors, n. e. c.	Unclassified	No unsafe personal factor	
Operating without authority, failure to secure or warn							
Operating or working at unsafe speed							
Making safety devices inoperative							
Using unsafe equipment, hands instead of equipment, or equipment unsafely							
Unsafe loading, placing, mixing, combining, etc.							
Taking unsafe position or posture							
Working on moving or dangerous equipment							
Distracting, teasing, abusing, starting, etc.							
Failure to use safe attire or personal protective devices							
Unsafe act, n. e. c.							
Unclassified							
No unsafe act							
Total							

Chapter 5.—Extent of Disability

For a comprehensive analysis of accident causes it would undoubtedly be advisable to have available reports of *all* accidents, whether or not they involved damage to person or to property. Such comprehensive reporting, however, obviously is not possible of attainment. The question therefore arises as to how far accident reporting can be carried.

For purposes of regulation, the Interstate Commerce Commission requires the reporting, not only of disabling personal injuries, but also of all accidents involving property damage to railway property in excess of \$150. Agencies administering workmen's compensation laws, however, are interested only in injuries to workers and do not concern themselves with accidents which involve no personal injury. The practices in the various States, however, vary widely. Some require the reporting of *all* injuries, including those involving only medical first aid. Others require the reporting of all disabling injuries, and still others the reporting of only those injuries which exceed the waiting period. In all reporting requirements, of course, only injuries covered by the acts are reportable. Certain industries or services—for example farming, domestic service, and casual employments—are entirely outside the coverage of most workmen's compensation acts. Moreover, in many of the States, employers are not covered by the act if they have fewer workers than the prescribed minimum number.

Because of the variety of reporting requirements, it is important that the various injuries be clearly classified and described by extent of disability. Unless this is done, persons not intimately acquainted with all the reporting requirements of the various States, or even with the reporting requirements of a single State, may draw unjustifiable conclusions from the data or make comparisons of things that are unlike.

Since 1937 there has been available the American Standard Method of Compiling Industrial Injury Rates, which contains standard definitions of the various extents or types of disability. This standard method was prepared under the auspices of the American Standards Association and under the joint sponsorship of the International Association of Industrial Accident Boards and Commissions, the National Safety Council, and the National Council on Compensation Insurance.

Six classifications of extent of disability are recognized in this standard. They are named and defined as follows:

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

2. Permanent total disability: Permanent total disability shall be the term applied to any injury other than death which permanently and totally incapacitates the injured from following any gainful occupation. The loss of, or loss of use of, both hands, or both arms, or both legs, or both feet, or both eyes, or any two [i. e., one arm and one leg, etc.] thereof, suffered in one accident, shall be considered a permanent total disability.

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

4. Temporary total disability: Temporary total disability shall be the term applied to any injury other than death, permanent total disability, or permanent partial disability which, in the opinion of the doctor, makes it impossible for the injured employee to return to work on the calendar day following the day on which the injury occurred, or on some later day.

5. Temporary partial disability: Temporary partial disability shall be the term applied to any injury other than death, permanent total disability, permanent partial disability, or temporary total disability which in the opinion of the doctor makes it possible for the injured person to return to work but not to his regular job on the calendar day following the day on which the injury occurred, or some later day.

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

Little needs to be said here concerning death. It should be noted, however, that every injury which directly leads to death is to be classified as such, regardless of whether or not considerable time elapses between the date of injury and the date of death. There is no recognition here of any difference between "immediate death," such as may result from a broken neck caused by a fall from a ladder, and a "subsequent death" which may flow directly from an injury, such as the amputation of a leg, 3 weeks after the occurrence of the accident. It therefore follows that corrections may be called for in statistical

compilations when injuries classified as permanent total or permanent partial, etc., disability subsequently result in death.

The items listed under permanent total disability are not intended to be exclusive. The first sentence of the definition is controlling. Consequently, any injury which permanently and totally incapacitates a worker, whether because of a fractured skull, a broken back, an industrial disease, a nervous derangement, etc., is classed as a permanent total disability, as is the total loss or total loss of use of both hands, both arms, both legs, both feet, both eyes, or a combination of any two of these, such as, for instance, the loss of one arm and one eye. If the definition of permanent total disability in a tabulation differs from that given above, a footnote should explain how the term is used.

The classification of types of injuries as permanent partial by individual jurisdictions depends in part on the provisions of the workmen's compensation laws. Some States, for instance, compensate for disfigurement, while others do not. Of those which compensate for disfigurement, a few do so for disfigurement of the head, face, neck, and hands, while others do so only for disfigurement of the head and face. Some compensate for loss of hearing, others do not, etc. Obviously, statistical compilations in the various jurisdictions will be based on the injuries recognized in the individual compensation acts as permanent partial. Because of the differences in such provisions, it is desirable to tie this classification by extent of disability to a standard enumeration of items, so that jurisdictions which differ from this standard may so indicate in a footnote, thus making possible more accurate State-by-State comparisons. These items are: Arm or arms; hand or hands; thumb or thumbs; finger or fingers; leg or legs; foot or feet; toe or toes; eye or eyes; loss of hearing; and body generally.

When a tabulation includes cases of disfigurement under permanent partial disability, this fact should be stated in a footnote, as should the parts of the body for which the law provides compensation for disfigurement. Preferably, the number of such cases should also be stated. Permanent partial impairment of the body generally may include back injuries or industrial diseases which have not reached the stage of permanent total disability. In general, the extent of such injuries will be rated as a percentage of permanent total disability. As in the case of disfigurement, any tabulation which includes industrial diseases under permanent partial disability should be provided with adequate footnotes explaining this inclusion.

Another point to be considered here relates to second injuries, i. e., a permanent partial injury which, because of an earlier permanent partial injury, results in permanent total disability. For instance, a worker who lost an arm in one accident may lose an eye, or a leg, or

the other arm in a subsequent accident. The second injury in itself, of course, is only a permanent partial injury. But because of the earlier injury, the resulting disability is permanent and total. Such injuries should be shown under permanent total disability, but the number of such cases should be definitely identified in a footnote, which should also include the cost of these cases when the table includes cost data.

In any tabulation of temporary total disability which omits those disabilities not exceeding a specified waiting period, it is essential to indicate this fact in a footnote, which should also give the length of the waiting period. If, for instance, the waiting period is 7 days, a footnote might read: "Includes only cases with disability exceeding 7 days."

In counting days of disability, all calendar days, and not merely working days, should be included. The term "disability" means inability to work, and this inability is true of every day in the disability period, including all Sundays and holidays. If, for instance, a worker is injured on June 1, and is unable to return to work until July 1, he is disabled for 29 days, even though the month contains 4 Sundays during which he normally would not have worked.

A considerable number of States do not recognize temporary partial disability in their workmen's compensation laws. In the tables already suggested, the columns for temporary partial disability may be included or excluded to accord with the classifications named in the law.

The fact that the definition of temporary total disability uses the phrase "return to work," whereas that for temporary partial disability uses the phrase "return to work but not to his regular job," requires some explanation. Basic to this explanation is the difference between these two types of disability. Temporary total disability requires that a worker be unable to perform any work during his period of disability. The disability ceases when the worker is physically fit to resume work. If the work involves some other than his regular job *because he has not sufficiently recovered from his injury to perform his regular job*, then his temporary total disability has merged into temporary partial disability. In jurisdictions recognizing this latter type of disability, it is often found to be preceded by temporary total disability, which in turn may have been coupled with permanent partial disability. Not infrequently, however, the temporary partial disability is found by itself. If a worker cuts his hand, for instance, and because of that injury is unable to continue with his regular job, but is able to carry on some other work—usually at a lower wage rate—then he has a temporary partial disability.

Practical considerations, however, require that the extent of disability of all cases to be included in a statistical tabulation be deter-

mined as of a given time. A case of temporary disability may in time become a case of permanent partial disability. If it does so *before* "the books are closed," then the extent of disability to be tabulated is the permanent partial injury. If it does so *after* "the books are closed," then it is advisable to use the extent of disability which is determined at the point of closing. A rule recently adopted by a subcommittee of the American Standards Association provides that all cases be tabulated for the extent of disability as ascertained within a period of 1 month after the end of the year covered. If the period is in the calendar year of 1939, for instance, then all cases are to be tabulated for the extent of disability determined by January 31, 1940.

Some States require the reporting, not only of all disabling injuries arising out of employment, but also of all nondisabling injuries which require medical attention. In these jurisdictions the value of cause analysis can be greatly enhanced by a consideration of these minor, noncompensable injuries, which after all present accident hazards. The fact that an accident results in a minor rather than in a major injury is merely a matter of chance, sometimes a matter of a fraction of an inch or a split second. For purposes of accident prevention it is important to analyze all known accident-hazard data—regardless of whether the type of injuries which resulted from these were minor or major in character. If disabling injuries are to be prevented, then the unsafe practices or conditions which lead to these injuries must be recognized.

Chapter 6.—Report Forms

The primary requisite of all statistics dealing with industrial injuries and accident causes is adequate reports of the injury. Basically, these consist of two reports: (1) The report of the injury, at times supplemented by a medical report; and (2) the final receipt, showing that payments have been completed, the amounts paid, and for what.

Report of Industrial Injury

Statistically, the report of an industrial injury is a very important document. It specifies that a worker has been injured, states the employer for whom he worked, the industry, the name, age, sex, and wage of the worker, the cause of accident, and the injury that resulted to specified parts of the worker's body. It contains all of the information necessary for workmen's compensation and accident statistics, except the element of costs and the period of disability or medical treatment subsequent to the filling out of the report. It is therefore important that this report be adequate, for it is impossible to obtain accurate and useful statistics from inadequate reports.

Reports may be inadequate for two reasons: (1) The report form itself may not call for the information necessary for proper analysis; and (2) the report form, no matter how adequate, may not be filled out accurately or completely by the reporting employer. The first deficiency can be met only by a form developed to bring out the desired information. The second can be met by the insistence of the workmen's compensation administration that reporting employers furnish all the information requested. This problem and a suggested method for solving it are considered later in this chapter.

Need for Adequate Injury-Report Form

As a rule, workmen's compensation laws require the reporting of industrial injuries to the workmen's compensation boards. As indicated in chapter 5, the reporting requirements vary widely. The fact remains, however, that in a large majority of jurisdictions the reporting of accidental injuries, and more recently industrial (occupational) diseases, is mandatory on employers under workmen's compensation laws.

Some twenty-odd States are now using an Employer's First Report of Injury form which has been approved by the International Association of Industrial Accident Boards and Commissions (usually

referred to as the I. A. I. A. B. C.), and which was developed by representatives from a wide variety of interested groups, including the National Council on Compensation Insurance.

The committee which developed this form voted, by a slender majority, to confine it to the traditional fields and to favor the introduction of another form for those jurisdictions which desired to utilize the cause analysis along the lines recommended in this Manual. There is much to be said for this point of view, because, obviously, there is no object in providing a standard form embodying questions relating to this method of cause analysis for jurisdictions either not interested or not equipped to do much along the line of accident prevention through the utilization of accident-cause statistics. The form recommended here involves sufficient departure from the present standard form to suggest that jurisdictions not concerned with accident prevention retain their present form and do not shift to the new form until there is sufficient interest in accident prevention and the necessary statistical information to guide such preventive activities.

The present standard form, as already indicated, does not meet the needs of the accident-cause analysis recommended here. Additional information is required. The form suggested for this purpose has been developed to supply this information and at the same time to provide the information necessary for workmen's compensation purposes and to meet the needs of insurance carriers.¹ A comparison of the form proposed here with the so-called I. A. I. A. B. C. standard form shows clearly that the new form contains all the information called for on the I. A. I. A. B. C. form, at times in a different phrasing or location on the form, plus the information necessary for adequate cause analysis.²

Before undertaking a detailed discussion of the new form, it is necessary to indicate briefly the reasons for the adoption of a *single* form, rather than a *supplementary* form to the present standard report, a procedure suggested by various experts. This supplementary form was to be labeled "Confidential—for accident-prevention purposes," was not to become part of the general record, and therefore would not be involved in any of the formal hearings in contested cases. In favor of this procedure it was pointed out that it would take some time to obtain the accident-cause data and that consequently the reporting of the accident would be delayed, as would the payment of compensation. Further, it was urged that employers might be unwilling to state correctly and honestly the facts involved in the accident, partly because they did not wish to admit fault, and partly because

¹ A variation of this new form has been in use in Pennsylvania since January 1, 1938.

² The proposed form can be used for industrial (occupational) diseases as well as for traumatic injuries. It may be desirable, however, to use a different color paper for industrial-disease cases, so as to distinguish such cases readily from those due to traumatic injuries.

such statements might prejudice the officials of the workmen's compensation agency.

On the other hand, there are very strong reasons for asking for all of the information on one form. Certainly an employer can at once notify his insurance carrier of an accident to one of his employees—and this is usually the practice—with a formal report following later. And there is no reason why compensation, if due, must be delayed pending the completion of the report. In most States no compensation is due until the injured worker has been disabled for 1 week—and the report should be available within several days at the most.

As for the objection that an employer may be reluctant to admit that he is at fault, it is pointed out that workmen's compensation laws disregard the question of fault, and that an employer has little, if anything, to lose by admitting that equipment or environment were not what they should have been; provided, of course, that he has not violated a safety order in a State which exacts additional compensation for such violations. But, by and large, employers have more to gain than to lose by permitting a good analysis of accident causes, for accidents are costly, and can be prevented. An honest appraisal of these cause factors may indicate to the employer the hazards to be overcome in preventing a recurrence of accidents having the same causal factors.

The strongest reason for a single form, however, lies in the fact that workmen's compensation administrators will insist on the submission of a single report because it is essential for compensation purposes. They may not have the same interest in a second report dealing essentially with the causes of each accident, and consequently, there is a strong likelihood that not nearly so much insistence will be placed on the actual filing of this separate accident-cause report. Nor will individual employers, for the most part, wish to be bothered by more than one report. If they have reported once, they are apt to think that they have complied with the law. In short, then, if the accident-cause facts are asked for on one report, there is a much greater chance of their being reported than if they are asked for on a supplementary form. As for their being reported accurately, that is a matter of education, in which the fairness of administrators and the assistance of factory inspectors will be exceedingly helpful.³

In the development of the form, it was recognized that the instructions for the filling in of the items called for could be handled in at least two ways: (1) In a small bulletin or pamphlet giving specific instructions as to the type of information called for; or (2) condensing these instructions and placing them on the report form in

³ It is to be noted that, at its worst, the new form will function as well as the present standard form. The accident type and the agency can always be identified, even if the other data necessary for a more thoroughgoing analysis cannot be obtained.

EMPLOYER'S REPORT OF INDUSTRIAL INJURY

(Answer every question fully to avoid further correspondence)

EMPLOYER

- (1) Name (Give name under which concern does business) Employer's or Carrier's file No.
- (2) Office address: No. and Street City State
- (3) Nature of business (List principal product or service of the concern)

ACCIDENT

- (4) Accident occurred where? (City and State) (5) On employer's premises? (Yes or no)
- (6) Date of accident: 19..... Hour: A. M. P. M.
- (7) Date disability began: (8) Was injured paid in full for this day? (Yes or No)

INJURED EMPLOYEE

- (9) Name (First name) (Middle initial) (Last name)
- (10) Address: No. and street City State
- (11) Age: (12) If under 18, did you have on file an age or employment certificate? No. of certificate
- (13) Check (): Single Married Divorced Widowed Male Female
- (14) Number of hours worked per day (15) Number of days worked per week
- (16) Wages: per hour per day \$ per week \$ If board, lodging, fares or other advantages were furnished in addition to wages, give estimated value per week: \$ per month: \$

CAUSE OF ACCIDENT

- (17) What was employee doing when the accident occurred? (Describe briefly, such as: loading truck; operating a drill press; shoveling dirt; painting with spray gun; etc.)
- (18) Occupation
- (19) How long employed by you at this occupation?
- (20) What machine, tool, substance or object was most closely connected with the accident? (Name the machine, tool, appliance, gas, liquid, etc., involved)
- (21) If machine or vehicle, what part of it? (State if gears, pulley, motor, etc.)
- (22) How did the accident happen? (Describe the accident fully, stating whether the injured person fell or was struck, etc., and all the factors contributing to the accident. Use other side of report for additional space.)
- (23) In what way was the machine, tool or object defective?
- (24) How can you prevent this type of accident? (Specify the remedial measure, such as: better illumination, better ventilation, providing goggles, providing a better guard, better supervision, etc.)
- (25) Were mechanical guards, or other necessary safeguards (such as goggles) provided?
- (26) Was injured using them?
- (27) How could the injured have prevented the accident? (Do not say "by being more careful," but specify what employee should or should not have done. For instance: should not have used defective ladder; should not have oiled machinery in motion; should have worn goggles; etc.)

NATURE AND LOCATION OF INJURY

- (28) (Describe in detail the nature of the injury and the part of the body affected. For instance: amputation of right arm, crushing injury to chest, lead poisoning, dermatitis of right arm and hand, etc.)
- (29) Name and address of physician
- (30) Name and address of hospital
- (31) Has employee returned to work? (32) If so, give date (33) At what weekly wage? \$
- (34) Did injury result in death? (35) If so, give date
- (36) In case of death, give name and address of nearest relative

INSURANCE

- (37) Name and address of workmen's compensation insurance carrier
- (38) Date of this report Made out by Official position

DO NOT WRITE IN THIS COLUMN

CASE NO.

EMPLOYER NO.

PLACE OF ACCIDENT

INDUSTRY

DATE OF ACCIDENT

AGE

CONJUG. COND. AND SEX

TIME EMPLOYED

WEEKLY WAGE

OCCUPATION

AGENCY

AGENCY PART

ACCIDENT TYPE

UNSAFE ACT

MECHANICAL DEFECT

PERSONAL DEFECT

NATURE

LOCATION

INSURANCE

REPORT LAG

CODED BY

small type directly below the spaces provided for the answers. As is apparent from the proposed form, the second alternative was adopted, for the reason that it will keep the instructions before the person making out the report every time he has occasion to prepare one. A pamphlet of instructions might be read once, and then be laid aside or lost. If a new person chanced to make out a report, he might not even know that such a pamphlet existed.

A word is in order concerning the general structure of the form, before discussing in detail the questions asked. It will be noted that the questions are grouped under the headings of "employer," "accident," "cause of accident," "nature and location of injury," and "insurance," so as to permit quick orientation. Every question is numbered to permit of easy reference. The right-hand margin has been set aside for statistical coding, so as to make unnecessary a duplicate code form, or coding on the report form without any special coding space, a practice which encourages faulty statistical compilation and generally detracts from the appearance of the report.

Details of Report Form

The report is called "employer's report of industrial injury" because it is the injury which is reported rather than the accident. If the report were of the accident, then one single report might cover as many injuries as resulted from the one accident. If, for instance, a scaffold collapsed, causing two deaths and three nonfatal injuries, a single report could cover the accident, giving the names of the five persons killed and injured. But for compensation purposes a report is required for every injured worker; consequently, the report covers an *injury*, rather than an *accident*.

Employer:

(1) *Name.*—The name called for is that under which the concern does business. Much confusion results in the files of workmen's compensation administrations by reports which, although pertaining to the same injury, give the name of the concern differently. On the report of the industrial injury, the name of the employer may be given as "John Smith, Jr." On the final receipt it may be shown as the "X-Y-Z- Laundry." The usual practice of the administration will be to call for a final receipt for the injury to Tom Brown from employer "John Smith, Jr.," and to call for a report of injury to Tom Brown from employer "X-Y-Z- Laundry." The difficulty, of course, lies in the fact that the employer's name is not uniformly reported. It is desirable to have it reported as here indicated—the name under which the employer or employing concern does business—so as to avoid confusion and needless irritation.

(2) *Office address.*—This address is wanted to facilitate any correspondence that may be necessary, and to permit a better identification of the employer.

(3) *Nature of business.*—What is desired here is sufficient information to classify the concern according to its major industrial activity. Any analysis of frequency of injuries, compensation costs, accident causes, etc., must necessarily be placed within the framework of an industry classification. The small print indicates that the information wanted is the principal types of products manufactured or the principal type of service of the concern, such as rolling mill; furniture factory; wholesale dry goods; grocery store; advertising agency; window cleaning; garage; etc.

It will also be noted that space has been provided for the employer's or carrier's file number, under which the case is indexed by the employer, if self-insured, or the insurance carrier. Reference to this file number in subsequent correspondence will facilitate the locating of the necessary papers and records on the part of the employer or insurance carrier. Above the coding space, provision has been made for the insertion of the industrial commission number for the report.

Accident:

(4) *Accident occurred where?*—The information to be filled in is the city and State. These data help to identify the accident and also offer some clue as to whether the accident occurred within or outside the State.

(5) *On employer's premises?*—This question is to be answered by either "yes" or "no" and is intended to throw more light on the circumstances concerning the accident for compensation purposes.

(6) *Date of accident.*—The day, month, and year are to be inserted, as well as the hour at which the accident occurred.

(7) *Date disability began.*—If the injury was so severe that work was discontinued at once or soon after but on the same day on which the accident occurred, the date to be shown here will be the date of the accident. There are a considerable number of injuries, however, which do not incapacitate a worker at once, so that he is able to remain at work for some time. Particularly is this true of infections arising out of minor injuries. In cases such as these, the date disability began will be the first day on which the worker was unable to work because of the injury.

(8) *Was worker paid in full for this day?*—This is to be answered simply by "yes" or "no" and is essential for compensation purposes.

Injured employee:

(9) *Name.*

(10) *Address.*

(11) *Age*.—To be given as of the last birthday.

(12) *If under 18, did you have on file an age or employment certificate? Number of certificate*.—This question is prompted by the child-labor provisions of a large number of the States, as well as those of the Fair Labor Standards Act, under which the Chief of the Children's Bureau of the United States Department of Labor (1) has the authority to issue age certificates certifying that a particular child is above the oppressive child-labor age, i. e., that the child is at least 16 years of age, and (2) has the authority to find certain occupations to be hazardous and bar minors from being employed in them if under 18 years of age. (See pp. 43-48.)

(13) *Marital status and sex*.—For compensation purposes the marital status and sex of the injured worker are often significant.

(14) (15) (16) *Number of hours worked per day, number of days worked per week, wages*.—These facts are important in the determination of compensation benefits, and also have some significance in computing workers' wage loss due to accidents, and to relate hours per day and week to the frequency of accidents.

Cause of accident:

It is in the questions in this section of the report that the proposed form differs most radically from the forms now generally in use. The aim of the questions included here is to throw light on the various factors involved in the accident, as well as to bring out the unsafe act or condition which must be remedied if similar accidents are to be prevented.

(17) *What was employee doing when the accident occurred?*—What is wanted here is a brief description of exactly what the injured worker was doing when the accident occurred, so as to make possible a reconstruction of the accident. This question is not the same as question (18) "Occupation." The injured worker might be a drill-press operator, but he might have been loading castings from a truck on his machine when one of the castings slipped and fell on his foot. The proper answer in such a case would be: "Loading castings from truck onto drill press," whereas the answer to question (18) would be: "Drill-press operator."

(18) *Occupation*.—What is wanted here is the name of the occupation in which the injured worker was regularly employed by the employer.

(19) *How long employed by you at this occupation?*—This question is intended to indicate the worker's familiarity with the job hazard, and to permit some conclusions as to whether newly hired employees have more disabling accidents than those with longer service and experience.

(20) *What machine, tool, substance or object was most closely connected with the accident?*—If a machine was most closely connected

with the accident, then, of course, the machine should be named. If, for instance, the operator of a paper cutter had his hand caught under the knife in the absence of a proper guard, or on a cutter equipped with an improper guard, then the machine most closely connected with the accident was the cutter. If, on the other hand, the truck from which he was unloading paper was improperly blocked so that it moved and struck and injured the operator, then the object to be named here should be the truck. But if the accident was due to the operator's dropping of a load of paper on his foot, then the answer to the question should be "load of paper." If a worker swinging a sledge hammer receives a steel splinter in his eye from the sledge hammer, then the answer to this question should be "sledge hammer," etc.⁴

(21) *If machine or vehicle, what part of it?*—The parts to be named may be belts, pulleys, gears, sprockets, point of operation, wheels, crank, tires, etc.

(22) *How did the accident happen?*—This is the key question in this section because it calls for the description of the accident itself. Such brief descriptions as "worker fell," etc., should be rejected. What is wanted here is a description of *how* the accident happened. For instance, "worker slipped on grease on the floor and struck head against cement post."

(23) *In what way was the machine, tool, or object defective?*—There may have been no defect, in which case the proper answer should be "none." But if there were defects—if, for instance, the machine was unguarded, or the sledge or chisel was mushroomed, etc.—this fact should be stated.

(24) *How can you prevent this type of accident?*—This question, of course, is directed at the employer. It should accomplish two things: (1) Make clear the unsafe condition or unsafe act; and (2) focus the employer's attention on the unsafe condition or unsafe performance which made the accident possible. As indicated, the answers may be, "by providing better illumination"; "by providing more adequate safeguards"; "closer supervision and better safety training of workers," etc.

(25) *Were mechanical guards or other necessary safeguards (such as goggles) provided?*—If no such safeguards were provided, then this fact should be stated. If safeguards were provided, but the accident occurred anyhow, then there is a possibility that the safeguards were inadequate or that someone, perhaps the injured worker himself, tampered with them.

(26) *Was injured using them?*—If safeguards were provided but the injured did not use them, an unsafe act on the part of the employee

⁴ See chapter 9 for the rules for the selection of the proper agency for coding purposes.

is clearly indicated. The question, if applicable, should be answered by either "yes" or "no."

(27) *How could the injured have prevented the accident?*—This question is intended to bring out the unsafe act which made the accident possible or at least contributed to it. Answers such as "by being more careful" are meaningless. A proper answer should indicate what the employee should or should not have done; for instance, "by using proper method for lifting"; "by wearing proper clothes"; "by wearing goggles"; "employee should not have attempted to board moving vehicle," etc.

Nature and location of injury:

(28) *Nature and location of injury.*—This question calls for a brief description of the injury as well as the identification of the part of the body affected; for instance, amputation of left index finger; severe lacerations of right hand; fracture of left leg; dermatitis on both hands; silicosis; lead poisoning; infection of right arm resulting from puncture wound to right hand, etc.

(29) (30) *Name and address of physician, hospital.*—These data are of great value to insurance carriers.

(31) *Has employee returned to work?*—If the employee has returned to work, this fact should be indicated by "yes"; if not, by "no." It is important, of course, to know the length of disability in order to determine whether, on the basis of this report, compensation benefits may be in order.

(32) *If so, give date.*

(33) *At what weekly wage?*—If the wage is less than that indicated by the answer in question (16), then there is a possibility that the injury may be responsible for the difference, in which case compensation benefits for temporary partial disability may be in order.

(34) *Did injury result in death?*

(35) *If so, give date.*

(36) *In case of death, give name and address of nearest relative.*—This will enable the workmen's compensation board to be of prompt assistance to dependents at the time when such assistance is most needed.

Insurance:

(37) *Name and address of workmen's compensation insurance carrier.*—If the employer is self-insured, he should state in answer to this question: "Self-insured." If his insurance is carried by an insurance company, it is likely that the name of the carrier will be printed directly on the form, as will the carrier's address. If this is not the case, it should be written in by the employer.

(38) *Date of this report; made out by; official position.*—This information indicates how soon after the injury the report was made out and by whom.

Obtaining Complete Information

The point has already been made that if the report form is to attain its stated objective, i. e., furnish data essential for compensation purposes *and for accident prevention*, the form must be filled out completely. Experience has proved, however, that it is not possible to rely completely on the understanding or cooperation of employers, and that reports will be submitted which are lacking in some important details. Particularly will this be true of questions (24) through (27) which are aimed at unsafe conditions and unsafe acts.

A simple and convenient follow-up method is needed. A brief mimeographed form letter may point out that the report submitted concerning the accident was incomplete for the items checked on the enclosed form of the Employer's Report of Industrial Injury, and request the employer to fill in the missing data checked on that form and to return it promptly. The employer should be requested to return the form sent him rather than to submit another report.⁵

The report form to be enclosed should bear the name of the employee and the file or case number of the board or commission, so that the report can be identified easily even if returned without any accompanying letter. The items lacking on the report originally submitted can be marked, preferably by the coder, by check marks or circles around the number of the question, preferably in red pencil so that the marking will stand out unmistakably.

When addressing the form letter, a carbon copy should be prepared to serve as a file copy. The letter and copy should contain the employer's name and address, the name of the employee, the date of accident, and the commission's or board's file number. If the employer or insurance carrier gave a file number on the original report, this number should be listed.

At no time, however, should the original report itself be returned for completion. Doing so deprives the board or commission of the report

⁵ The Pennsylvania Department of Labor and Industry used the following form letter:

[Copy]
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF LABOR AND INDUSTRY
Harrisburg

F-86-LBC

Bureau Case No.
Your File No.

GENTLEMEN:

The report of industrial injury to on 19.. is incomplete. Please fill in the answers to the questions marked on the attached form and return it as soon as possible to the Bureau of Workmen's Compensation, Department of Labor and Industry, Harrisburg, Pennsylvania.

Your attention is called to the fact that correspondence of this type can be avoided by answering fully the questions called for on the Employer's Report of Industrial Injury.

Yours very truly,

AUSTIN L. STALEY,
Director, Bureau of Workmen's Compensation.

FINAL REPORT AND SETTLEMENT RECEIPT

(1) Employer's name: Employer File No.
 (2) Office address: (Number and street) (City or town)
 (3) Name of injured employee:
 (4) Address: (Number and street) (City or town)

<p>(5) Date of injury: 19..</p> <p>(6) Last day employee worked: 19..</p> <p>(7) Date on which employee was able to return to work: 19..</p> <p>(8) Employee returned to work on 19..</p> <p>(9) Did employee work between date of injury and last day of disability?</p> <p>(10) If so, give dates:</p> <p>(11) Length of temporary disability: weeks days</p> <p>(12) Average weekly wage: \$.....</p> <p>(13) Rate of weekly compensation: \$.....</p>	<p>Compensation payments were made on following basis:</p> <p>(14) weeks days temporary total disability \$.....</p> <p>(15) weeks days temporary partial disability \$.....</p> <p>(16) weeks permanent partial disability for— loss of % loss of use of</p> <p>(17) weeks permanent total disability</p> <p>(18) weeks for death</p> <p>(19) Other (specify)</p> <p style="text-align: right;">Total Compensation \$.....</p> <p>(20) Hospital expense</p> <p>(21) Medical expense</p> <p>(22) Other (specify)</p> <p style="text-align: right;">Total Cost \$.....</p>
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(23) Were payments made on basis of (1) decision by commission? (2) Settlement contract?
 Was there a lump-sum payment?

FINAL RECEIPT

(24) Received from the sum of
 (Name of employer or insurance carrier)
 dollars and cents (\$.....)
 making in all, with payments already received, a total of
 dollars and cents (\$.....)
 as compensation for the disability indicated above.

Date, 19..

Witnessed by* Employee's signature
 (*To be signed when injured employee is not able to sign his name) (Or agent or beneficiary)
 Address

(25) Insurance carrier Insurance Co.
 File No.

(26) If full compensation was not paid, explain why

Signed by
 Position

for some time, and the report may never be returned. *It is a far safer procedure, and perhaps safer legally, to retain the original report and ask for the missing information on another form.*

When the report with the additional information has been returned, the carbon copy is to be drawn from the file and added to the record of the case. As long as the carbon copy remains in the file, it indicates that the employer has not replied and that further follow-up work is necessary. In obstinate cases, factory inspectors may be utilized to confer with employers to obtain the desired data and to prevent a recurrence of the delay in future cases. In particularly obstinate cases, legal proceedings may be threatened or instituted.

Final Report and Settlement Receipt

The final-settlement receipt proposed here serves two functions: (1) It shows the amount of compensation paid and the disability compensated; and (2) it serves as a final receipt, indicating the date of the last payment and the total amount received by the worker or his beneficiary. From the date on which the injury occurred, the last day the employee worked, the date on which disability ended, and the date on which the employee returned to work, it is relatively simple to compute the actual period of disability. The questions have been phrased so as to make clear whether or not the employee continued at work after his injury and started to lose time later. The question as to whether the employee worked between the date of injury and the last day of disability specifically covers this point. It also covers the possibility of the employee's having returned to work after some time out, only to be compelled again to absent himself from work for an additional period as the result of his injury.

The distinction between question (7) "Date on which employee was able to return to work" and question (8) "Employee returned to work on ——" may require some explanation. The disability ends on the day preceding the one on which the employee was physically able to return to work. If he was able to return to work on August 14, then the last day of disability was August 13. An illustration of how this section of the form is to be filled out may be helpful. Suppose a worker is injured on August 1, works through August 2, but cannot return to work on August 3. Suppose further that he works on August 8, cannot return to work on the 9th, but returns completely recovered on August 14. His weekly wage is \$24, and the law requires a compensation rate of 66% percent and provides for a 3-day waiting period. This section of the report should be filled out as follows:

Date of injury:	<i>Aug. 1, 1938.</i>
Last day employee worked:	<i>Aug. 2, 1938.</i>
Date on which employee was able to return to work:	<i>Aug. 13, 1938.</i>

Employee returned to work on:	<i>Aug. 14, 1938.</i>
Did employee work between date of injury and last day of disability?	<i>Yes.</i>
If so, give dates:	<i>Aug. 2 and 3.</i>
Length of temporary disability:	<i>1 week 3 days.</i>
Average weekly wage:	<i>\$24.00.</i>
Rate of weekly compensation:	<i>\$16.00.</i>

From this information it is clear that the employee was disabled for 10 days and that, deducting the 3-day waiting period, he is entitled to compensation for 1 week at the rate of \$16, or a total of \$16. This should check with the information furnished under the section "Compensation payments were made on the following basis," which should indicate the payment for 1 week 0 days temporary total disability of \$16. If the treatment involved two visits to a physician at \$3 per visit, then there should also be the entry of \$6 for medical expense, and a total cost of \$22.

The items listed under the compensation-payment data require little, if any, explanation. Data are to be inserted showing the number of weeks of compensation paid, the extent of disability involved (whether temporary total, permanent partial, death, etc.), and the total amounts paid. In a jurisdiction in which compensation is payable for the healing period in addition to a permanent partial disability, there will, of course, be entries under both items. Suppose that in such a jurisdiction, with a waiting period of 3 days, a worker is disabled for 3 weeks and 3 days because of an injury which results in a loss of use of 20 percent of the hand. Suppose further that the weekly compensation rate for this worker is \$16 and that the law specifies 300 weeks of compensation for the loss or complete loss of use of the hand. Suppose also that medical costs amounted to \$75. The entries in this section of the report, in such case, should be:

3 weeks 0 days temporary total disability.....	<i>\$48. 00</i>
60 weeks permanent partial disability for—	
20 percent loss of use of hand.....	<i>960. 00</i>
	<hr/>
Total compensation.....	<i>1, 008. 00</i>
Medical expense.....	<i>75. 00</i>
	<hr/>
Total cost.....	<i>1, 083. 00</i>

The questions pertaining to whether compensation payments were made on the basis of a decision by the commission, or a settlement contract, or a lump-sum settlement are intended to direct the attention of commission personnel verifying the accuracy of payments to other commission records.

The receipt section also requires little comment, except to point out that it ties the amount received to the preceding statements concerning the disability. The receipt should be signed by the worker or his beneficiary. If he can only make a cross (X) for his signature, then it is desirable to have it witnessed.

At the bottom of the form, space is provided for the insertion of the name of the insurance carrier and the carrier's file number of the case. There is also a provision for stating why full compensation was not paid, if such was the case. This statement should be signed and the official position of the person making it should be shown.

Chapter 7.—Classifications and Codes—General

Most of the tables suggested require classification and statistical codes. They are given in this chapter and in chapters 8 and 9, together with explanatory detail concerning their uses.

Attention is called to the elastic structure of most of these classifications. They permit classifying in great detail as well as in more general groupings. The numbering system is on the decimal basis, with each successive number unit a more detailed break-down of the subject matter. This structure lends itself to the varying needs and statistical facilities of the workmen's compensation administrations in the various States. Some jurisdictions may want to carry all the detail given. Others may wish to use only the general classifications. Still other jurisdictions may wish to use detail for some items and general classifications for others.

The classifications and codes which follow are grouped under (a) administrative, (b) compensation, and (c) accident causes. Chapter 8 is devoted to industry and occupational classifications, and chapter 9 to accident-cause analysis.

Administrative

Of the 15 tables in chapter 2, 8 require the use of codes. Table 4, Compensation Awards and Settlements, requires a code for extent of disability and a code for dependency; table 6, Time Lag in Reporting Injuries to the Workmen's Compensation Board, requires a code for report lag; table 7, Time Lag in Making First Compensation Payment, requires a code for payment lag; tables 10 to 13, dealing with medical costs, require codes for nature of injury and location of injury; and table 14, Comparison of Legal Fees and Compensation, requires a code for extent of disability. All of these codes, except those dealing with time lag, are given in the "compensation" group of classification and codes because of their greater applicability there.

Report Lag

The report lag is the time interval between the date of the onset of disability, usually the date of the accident, and the date the report of industrial injury was received by the agency administering the workmen's compensation act. This last date is usually stamped on the report as soon as it reaches the administering agency. By counting the days which elapsed (including Sundays and holidays) between

the date of the accident and the date the report was received, the applicable code number can be assigned for the interval.

In most instances, the day of the accident is the date on which an injured worker is disabled, but this is not true of infections and strains. Similarly, there is no date of accident for an industrial disease. In instances in which there is no "accident" because the disability is developed over a period of time, the date of "accident" is to be construed as the last day on which the injured worked. The same rule is applicable when the date of accident is unknown or not available.

REPORT LAG

Code	Report filed—	Code	Report filed—
0	Within 1 week of onset of disability	5	Within 6 weeks
1	Within 2 weeks	6	Within 8 weeks
2	Within 3 weeks	7	Within 3 months
3	Within 4 weeks	8	Within 4 months
4	Within 5 weeks	9	Over 4 months

RULE: To apply this code, count the days of lag, beginning with the first day of disability and ending with the date on which the report was filed. To convert to weeks, divide the total days of lag by 7; to convert to months, divide by 30.

No other explanations are required concerning the report-lag code, except to call attention to the fact that some jurisdictions may wish to alter some of the time intervals shown so as to have them conform to peculiarities of their respective laws. Jurisdictions for which compensation acts require the reporting of disabling injuries within 10 days of the injury, for example, may find it advisable to substitute for "within 1 week of onset of disability" the classification "within 10 days of onset of disability."

Payment Lag

In connection with the payment-lag code, it will be noted that 0 stands for "paid full wages in lieu of compensation," and that 1 stands for the first payment made within 2 weeks. The reason for the 0 classification is that when wages are paid in lieu of compensation, there usually is no payment lag. The reason why there is no classification for a period "within 1 week" is that such speed is uncommon and in most instances impossible because of the intervening waiting period. As in the case of the report lag, the payment-lag period is based on calendar days and therefore includes Sundays and holidays.

X indicates that the injury was not compensable because the resulting disability did not outlast the waiting period. Consequently, there could have been no payment lag.

A problem arises as to what date is to be taken as the date of payment—the date on the check, the date the check was mailed, or the date the check was received by the injured. It is, of course, possible

for a check to bear a given date and yet to be delivered to the injured worker considerably later. Strictly speaking, the date of payment should represent the date on which the injured worker received the check. Unfortunately, however, it is impractical to keep accurate records on the dates on which injured workers receive checks. The date on the first check will therefore be the one to serve as the point from which to calculate the payment lag.

PAYMENT LAG

(I. e., time elapsed between the date of first day of disability and the date of first payment of compensation)

Code		Code	
0	Paid full wages in lieu of compensation	5	Within 6 weeks
1	Within 2 weeks	6	Within 8 weeks
2	Within 3 weeks	7	Within 3 months
3	Within 4 weeks	8	Within 4 months
4	Within 5 weeks	9	Over 4 months
		X	Noncompensable—no payment

RULE: To apply this code, count the days of lag, beginning with the first day of disability and ending with the date on which the check or receipt was dated. To convert to weeks, divide the total days of lag by 7; to convert to months, divide by 30.

Compensation

Extent of Disability

The code provides for every possible type of disability, except for combinations. When an injury involves more than one type of disability, it is suggested that it be coded for the disability for which the greater amount of compensation has been paid, or, in the cases of settlement agreements, the greater amount payable. The amount of compensation payable for each provides an easy solution. If, for instance, permanent partial and temporary total disability exist for the same injury, and the larger amount of compensation is payable for the permanent injury, then the disability should be coded as permanent partial. (If the coding is done on open cases and in the absence of settlement agreements, then it is suggested that an injury with more than one type of disability be coded for the one most severe, giving preference to permanent injuries.)

EXTENT OF DISABILITY

Code	
0	Death
1	Permanent total disability—dismemberment
2	Permanent total disability—no dismemberment
3	Permanent partial disability—dismemberment
4	Permanent partial disability—loss of use
5	Disfigurement
6	Temporary total disability—exceeding waiting period

Code

- 7 Temporary total disability—not exceeding waiting period
- 8 Temporary partial disability
- 9 Extent undetermined
- X Medical only—no time loss

Separate code numbers are given for permanent disabilities involving (a) dismemberment and (b) no dismemberment, loss of use. No attempt has been made to show the latter in terms of percentages, because percentage determinations for the same injury vary widely. It appears to be sufficient to distinguish only between permanent injuries involving dismemberment and those involving curtailment of use but no dismemberment. A separate code number has been assigned to disfigurement to permit a segregation of these cases when not complicated by more severe types of disability.

Temporary total disability has been divided into injuries (a) exceeding the waiting period and (b) not exceeding the waiting period, to permit a classification of disabling injuries even if the resulting disability did not outlast the waiting period. This last type of disability, even though involving no compensation, ordinarily does involve some medical expense and some time and wage loss on the part of the injured worker. Furthermore, such cases are important for accident-cause analysis.

Injuries for which the extent of disability is undetermined are to be coded 9, and cases involving medical attention only, but no disability preventing continuation at work and no temporary partial disability, are to be coded X.

Nature of Injury

The 12 items listed under Nature of Injury are sufficient for most purposes and require only 1 column on a tabulating card. If, however, 2 columns can be spared, and if greater detail is desired, the number of items listed can be increased to 99.

NATURE OF INJURY

Code

- 0 Amputation (traumatic or surgical)—without infection
- 1 Amputation (traumatic or surgical)—with infection
- 2 Burns and scalds
- 3 Cuts, lacerations, punctures, abrasions—without infection
- 4 Cuts, lacerations, punctures, abrasions—with infection
- 5 Strains, sprains, bruises
- 6 Fractures—without infection
- 7 Fractures—with infection
- 8 Hernia
- 9 Industrial (occupational) disease
- X Nature of injury, n. e. c.¹ (heat exhaustion, sunstroke, frostbite, drowning, asphyxiation, shock, etc.)
- Y Nature of injury unknown

¹ Not elsewhere classified.

Some jurisdictions may find it advisable to combine the two fracture items (6 and 7) and add an infection item for burns and scalds. The changed sections of the code then would read: 2 Burns and scalds without infection; 3 Burns and scalds with infection; and 7 Fractures. Code numbers 3, 4, and 5 would change respectively to 4, 5, and 6.

No industrial-disease classification is suggested here. Instead, it is recommended that any analysis of such diseases be based on a tabulation of the substances which gave rise to the various diseases. A list of industrial diseases, if compiled at all comprehensively, might name as many types of poisonings as there are harmful chemicals. The list of such chemicals is constantly expanding as the science of chemistry grows and develops. Many of the chemicals recognized as poisonous today were not in use, and probably not even known, 5 years ago.

Lists of chemicals will be found in the agency classification groups 11, chemicals; 12, highly inflammable and hot substances; and 13, dusts. The suggested classifications can be extended and expanded by the addition or inclusion of more items. To identify the nature of industrial diseases due to benzol and benzol derivatives, for instance, it will be necessary to tabulate the benzol items in the group of chemical agencies. This chemical and its compounds will be found listed as item 11210 when in the physical state of a vapor, gas, or fume, and as item 11349 when in a solid or liquid state. Similarly, silicosis is identified by the segregation of item 13268, silica, in the agency group of dusts.

Additional reasons for this recommended procedure are (1) that for diagnostic purposes a physician must determine the chemical causing the disease; (2) that for preventive purposes the health or labor official must know the identity of the chemical; and (3) that diseases due to chemicals usually contain the name of the chemical in their names—such as lead poisoning, mercury poisoning, benzol poisoning, etc.

Location of Injury

In constructing the following location-of-injury code, two points were observed: (1) The code was so constructed that coding or tabulating by general body groups could be easily handled, while at the same time considerable detail was given for more intensive coding, making possible a more minute and thorough analysis; (2) the great detail found in some codes, such as scapula, sternum, femur, radius, ulna, metacarpals, etc., was omitted, and only such detail given as appeared to have practical value. The numbering permits the insertion of additional items if desired.

It will also be noted that considerably more combinations are possible than are listed in the code. For instance, an injury may involve the loosening of some teeth, a fractured elbow, and some bruised

toes. Where it is clear that one of these body locations is primarily responsible for the disability, such as the fractured elbow in this illustration, then that location should be coded and the others disregarded. Where it is impossible to follow this rule, then the injury location should be coded 99, body n. e. c.

LOCATION OF INJURY

Code	Code
00 Head, face, and neck	52 Both thumbs
00 Brain or skull	53 Thumb, more than first phalange
01 Eye	54 Index finger, more than first phalange
02 Both eyes	55 Middle finger, more than first phalange
03 Internal ear	56 Ring finger, more than first phalange
04 Both internal ears	57 Little finger, more than first phalange
05 Nose	58 Thumb and index finger
06 Mouth (lips, teeth, tongue)	59 Thumb and 2 or more fingers
07 Throat	60 2 fingers
08 Neck	61 3 fingers
19 Head, face, and neck, n. e. c.	62 4 fingers
20 Trunk	63 Thumb, 1 phalange or less
20 Spinal cord	64 Index finger, 1 phalange or less
21 Back, n. e. c.	65 Middle finger, 1 phalange or less
22 Ribs, breastbone, shoulder blades	66 Ring finger, 1 phalange or less
23 Lungs	67 Little finger, 1 phalange or less
24 Thoracic organs, n. e. c.	69 Upper extremities, n. e. c.
25 Thorax, n. e. c.	70 Lower extremities
26 Abdominal organs, internal	70 Both legs
27 Hip or pelvis	71 1 leg and 1 foot
28 Abdomen, n. e. c.	72 Leg, n. e. c.
39 Trunk, n. e. c.	73 Leg, at or above knee
40 Upper extremities	74 Knee
40 Both arms	75 Leg, below knee
41 1 arm and 1 hand	76 Ankle
42 1 arm and 1 leg	77 Both feet
43 1 arm and 1 foot	78 Foot
44 Arm, at or above elbow	79 Great toe
45 Elbow	80 Great toe and 1 or more other toes
46 Lower arm (below elbow)	81 1 or more lesser toes
47 Wrist	89 Lower extremities, n. e. c.
48 Arm, n. e. c.	90 General
49 Both hands	98 Unclassified—insufficient data
50 Hand	99 Body, n. e. c.
51 Hand and thumb or fingers on other hand	

Dependency

The code for dependency is a single-digit code, and is of importance not only for fatal cases, but also for nonfatal injuries, provided the law of a jurisdiction allows for increases for dependents in the compensation-benefit rate. The code substitutes the word "spouse" for husband or wife, widower or widow, because a sorting by sex will indicate very easily whether the person killed or injured was male or female, and consequently whether the surviving spouse was female or male.

For most purposes, however, a break-down according to the sex of the killed or injured worker will not be necessary in tables involving dependency, and the term "spouse" will be found to be sufficient.

DEPENDENCY

(Applies to fatal and nonfatal cases)

Code

- 0 No dependents
- 1 Spouse—no children
- 2 Spouse and 1 dependent child
- 3 Spouse and 2 dependent children
- 4 Spouse and 3 dependent children
- 5 Spouse and 4 or more dependent children
- 6 Spouse and dependents not children
- 7 No spouse—1 or more dependent children
- 8 No spouse—dependent parent or parents
- 9 No spouse—dependents other than children or parents

NOTE.—Spouse includes wife, widow, husband, widower.

Conjugal Condition and Sex

Usually the items of conjugal condition, or marital status, and sex of the injured worker are treated in two separate codes. This, however, unnecessarily uses up a column on the tabulating card. Consequently, the two items have been combined into one single-column code. The numbers from 0 to 4 cover all possible conditions of marital status for male workers, as do the numbers from 5 to 9 for female workers.

CONJUGAL CONDITION AND SEX

Code

- 0 Male, single
- 1 Male, married (including separated but not divorced)
- 2 Male, divorced
- 3 Male, widower
- 4 Male, conjugal condition unknown
- 5 Female, single
- 6 Female, married (including separated but not divorced)
- 7 Female, divorced
- 8 Female, widow
- 9 Female, conjugal condition unknown

Time Employed in Occupation in Which Injured in Employer's Establishment

In the following code, the time periods for less than 5 years of employment in the occupation in which a worker was injured are given in greater detail than those for 5 years or more. The reason for this lies in the fact that studies have indicated that workers with the shorter experience are hurt more frequently and out of proportion to the percentage such workers form of the total working force. The reason for disregarding the job experience with employers other than the one for whom the employee was working at the time of his injury is that it will be difficult to obtain such data accurately. Further, even though an employee worked at the same occupation for various employers, the job hazard would in all probability be found to be different at each place of employment, due to differences in plant lay-out, routing and storing of materials, illumination and ventilation, supervision, and a number of other elements which make up the job hazard.

TIME EMPLOYED

(In occupation in which injured in employer's establishment)

Code

- 0 Less than 3 months
- 1 Less than 6 months
- 2 6 months or more, but less than 1 year
- 3 1 year or more, but less than 2 years
- 4 2 years or more, but less than 3 years
- 5 3 years or more, but less than 4 years
- 6 4 years or more, but less than 5 years
- 7 5 years or more, but less than 10 years
- 8 10 years or more, but less than 20 years
- 9 20 years or more
- X Time unknown

Miscellaneous Codes

Some of the statistical codes which will be required cannot be furnished here. No code can be given for county or city, for each State must necessarily prepare its own code for these items. It is suggested, however, that 99 or 999 (depending on the number of digits necessary) be used to indicate that the accident occurred outside the State. Similarly, it is not advisable to give here a code for insurance carriers, because the number of such carriers may vary widely from State to State, and there may be great differences in the identity of such carriers. It is suggested, however, that self-insured employers be coded 99 or 999 for "insurance," and that noninsured employers be coded XX or XXX. The X coding on tabulating cards will cause these cards to be rejected automatically in the sorting process. They can then be excluded from any tabulation involving insurance carriers, and can be treated separately for any other purpose.

Chapter 8.—Industry and Occupation Classifications

Industry Classification

It is very desirable that in classifying disabling injuries by industry, the various jurisdictions use a common standard of classification. In the absence of such a standard, any comparison of the accident experiences, costs, types of disabilities, etc., of individual industries in the various States is risky and questionable. When, for instance, the experiences of meat-packing establishments are compared for State A and State B, the comparison should be between establishments performing the same function on the same general industry level. For instance, packers and butcher shops should not be combined. The usual difficulty, however, is that the State reports do not define the industries for which statistics are given, and anyone wishing to use such compilations is at sea as to just what is included in each industry shown. If all the States would use a standard classification, and indicate in a footnote that this has been done, much uncertainty would be removed, and the statistics of one State could be compared more safely with those of another using the same standard.

The classification of industry given here is in essence the classification prepared by a committee of experts from various Federal and State organizations, and has been suggested as a standard to both Federal and State agencies compiling statistics involving industry classification.¹ It is elastic in its structure, permitting coding on the basis of two, three, or four digits. As in the other codes given in this Manual, each additional digit encompasses a more detailed breakdown than the one preceding. In manufacturing, for instance, 20 stands for food industries, 21 for industries producing tobacco products, 22 for industries producing textile-mill products, etc. In a three-digit code, each of the two-digit groups is in turn subdivided. Under furniture and finished lumber products, for instance, 251 stands for household furniture, 252 for office furniture, 253 for public-building furniture, 254 for partitions, shelvings, etc. In the four-digit code, the three-digit codes are amplified further. For instance, household furniture, 251, is divided into industries producing furniture of wood, 2511; upholstered, 2512; reed and rattan, 2513; metal, 2514; and mattresses and bedsprings, 2515.

¹ The complete classification, as well as principal product classifications and industry definitions, may be obtained from the Central Statistical Board, Washington, D. C. The classification suggested here has been adapted to accident and workmen's compensation statistics, and omits a considerable amount of detail which is useful in other types of statistical tabulations. Coders will find it extremely useful to have at hand all the material dealing with this industry classification.

The purpose of this structure is to provide a code sufficiently elastic to meet the needs of organizations with varying requirements and facilities. In some States, facilities may not permit coding to greater detail than indicated by the two-digit code. Other States may find it possible and desirable to carry the coding to three digits, and still others to four digits. Where three digits are used, the industries listed in the fourth digit become explanatory of the industries included in the larger three-digit groups. In some instances, also, it will be found desirable to code some industries only as to general groups, and others in greater detail. For instance, some States may have so little mining that the use of a two-digit code may be sufficient for mining industries. But certain types of manufacturing may be so important as to make desirable the application of three- or four-digit coding.

The industry code, as are all other codes given here, is based on the decimal method, to facilitate mechanical sorting of tabulating cards. Some points are worthy of particular mention in this connection:

1. The digit 9 has been reserved to indicate miscellaneous groups in the three- and four-digit codes.

2. A 0 in the third place of a three-digit code indicates that the industry classification has not been broken into any of the third-digit groups from 1 to 9. This may be either by design or because the data are not reported in sufficient detail to permit a more accurate allocation. For instance, major group 22, textile-mill products, is divided into the following three-digit groups: 221, cotton manufactures; 222, silk manufactures; 223, rayon manufactures; 224, woolen and worsted manufactures; 225, knit goods; 226, dyeing and finishing textiles (except woolen and worsted); 227, carpets, rugs, and other floor coverings; 228, hats (except cloth and millinery); 229, miscellaneous textile goods. If it is desirable to use only groups numbered 221, 225, 227, and 228, then all other industries in this major group should be put into 220, which should be termed: Textile-mill products not specified. The arrangement then would be: 220, textile-mill products not specified; 221, cotton manufactures; 225, knit goods; 227, carpets, rugs, and other floor coverings; 228, hats (except cloth and millinery). The same rule applies to fourth-digit industries when the four-digit code is used.

It has been found necessary, for purposes of accident statistics, to deviate at times from the standard code because the classification given will be difficult to apply to reports of industrial injuries. The deviations, however, are in no instance in violation of the basic structure of the standard code. Generally, the deviations have been in the direction of combining several industries on the fourth digit in manu-

facturing, in combining industry groups on the third digit, and in the omission of industry detail in the nonmanufacturing groups.

In its simplest and broadest form, the industry classification may be used as follows:

CLASSIFICATION BY INDUSTRY DIVISIONS

Code

- 1 Agriculture, forestry, fishery
- 2 Mining
- 3 Construction
- 4 Manufacturing
- 5 Wholesale and retail trade
- 6 Finance, insurance, and real estate
- 7 Transportation, communication, and other public utilities
- 8 Services (personal, business, recreational, public, professional, and other)
- 9 Government
- X Unclassified, insufficient information.

A more detailed classification involves the identification of major industry groups within each division, and requires a two-digit code. It should be noted that the first digit of this classification is not identical with the single digit in the preceding classification.

CLASSIFICATION BY MAJOR INDUSTRY GROUPS

Agriculture, forestry, fishery

Code Agriculture

- 00 General farms
- 01 Dairy farms
- 02 Cash grain farms
- 03 Cotton farms
- 04 Fruit and nut farms
- 05 Livestock and poultry farms
- 06 Truck farms, crop specialties, and miscellaneous agriculture
- 07 Services related to agriculture
- 08 Forestry
- 09 Fishery

Mining

- 10 Metal mining
- 11 Anthracite mining
- 12 Bituminous and other soft-coal mining
- 13 Crude-petroleum and natural-gas production
- 14 Nonmetallic mining and quarrying

Construction

- 16 Construction, general contractors
- 17 Construction, special trade contractors

Manufacturing

- 20 Food and kindred products
- 21 Tobacco manufactures
- 22 Textile-mill products

Code **Manufacturing—Continued**

- 23 Apparel and other finished products made from fabrics and similar materials
- 24 Lumber and timber basic products
- 25 Furniture and finished lumber products
- 26 Paper and allied products
- 27 Printing, publishing, and allied industries
- 28 Chemicals and allied products
- 29 Products of petroleum, coal, and natural gas
- 30 Rubber products
- 31 Leather and leather products
- 32 Stone, clay, and glass products
- 33 Iron and steel and their products
- 34 Nonferrous metals and their products
- 35 Electrical machinery
- 36 Machinery (except electrical)
- 37 Transportation equipment (except automobiles)
- 38 Automobiles and automobile equipment
- 39 Miscellaneous manufacturing industries

Wholesale and retail trade**Wholesale**

- 40 Service and limited-function wholesalers (includes the usual wholesaling establishments)
- 42 Manufacturers' sales branches and offices
- 44 Petroleum bulk-tank stations
- 45 Agents and brokers
- 47 Assemblers of farm products
- 48 Chain-store warehouses

Retail

- 49 Food
- 50 General merchandise
- 51 Apparel and accessories
- 52 Furniture, home furnishings, and equipment
- 53 Automobile and automotive equipment
- 54 Filling stations
- 55 Drug stores
- 56 Eating and drinking places
- 57 Hardware
- 58 Lumber and building supplies
- 59 Liquor stores
- 60 Second-hand stores
- 61 Retail trade, n. e. c.

Finance, insurance, and real estate**Finance**

- 62 Banking
- 63 Credit agencies other than banks
- 65 Investment trusts and companies
- 66 Holding companies
- 67 Security and commodity brokers, dealers, and exchanges
- 68 Finance, n. e. c.

Finance, insurance, and real estate—ContinuedCode **Insurance**

- 69 Insurance carriers
- 70 Insurance agents, brokers, and service
- 71 Real estate

Transportation, communication, and other public utilities**Transportation**

- 72 Railroads
- 73 Street, suburban, and interurban railways
- 74 Highway passenger transportation
- 75 Highway freight transportation
- 76 Water transportation
- 77 Air transportation
- 78 Pipe-line transportation
- 79 Warehousing and storage
- 80 Services incidental to transportation

Communication and other public utilities

- 81 Communication
- 82 Heat, light, and power
- 83 Water and sanitary services

Services

- 84 Hotels, rooming houses, and other lodging places
- 85 Personal services
- 86 Domestic service
- 87 Business services, n. e. c.
- 88 Automobile repair services and garages
- 89 Miscellaneous repair services and hand trades
- 90 Motion pictures
- 91 Amusement, recreation, and related services (other than motion pictures)
- 92 Medical and other health services
- 93 Legal services
- 94 Engineering and other professional services, n. e. c.
- 95 Educational services
- 96 Nonprofit membership, charitable, and religious organizations

Government

- 97 Government

Unclassified—Insufficient information

- 99 Nonclassifiable establishments

The detailed classification, permitting coding to four digits, follows. It can be used as a three-digit code classification by disregarding the detailed industry break-down on the fourth digit. When that is done, the industries listed on the fourth digit become indicative of the content of the three-digit classification groups. It will be noted that in a considerable number of industries no fourth-digit industry detail is shown. At times the standard classification, on which the classification here given was modeled, gives no such detail, and at other times the detail given is of no significance in accident statistics and is therefore omitted.

DETAILED INDUSTRY CLASSIFICATION

Division A.—Agriculture, forestry, and fishery

Code	<i>Agriculture</i>
0000	General farms
0100	Dairy farms
0200	Cash grain farms
0210	Corn farms
0220	Wheat farms
0230	Rice farms
0240	Soybean farms
0290	Miscellaneous cash grain farms
0300	Cotton farms
0400	Fruit and nut farms
0410	Citrus fruit farms
0420	Apple, peach, cherry, pear farms
0430	Berry farms
0450	General fruit farms
0460	Farms producing edible nuts
0490	Fruit and nut farms, n. e. c.
0500	Livestock and poultry farms
0510	Cattle farms
0520	Sheep farms
0530	Hog farms
0540	Horse farms
0550	Poultry farms
0560	Fur farms
0590	Miscellaneous livestock farms, n. e. c.
0600	Truck farms, crop specialties, and miscellaneous agriculture
0610	Truck farms
0620	Sugar-beet farms
0630	Sugar-cane farms
0640	Tobacco farms
0650	Potato farms
0660	Nurseries and greenhouses
0670	Peanut farms
0680	Dried-bean farms
0690	Miscellaneous agriculture
0700	Service establishments related to agriculture, and similar services
0710	Agricultural services except animal husbandry and horticultural services
0711	Cotton ginning and compressing
0712	Custom grist mills (including custom flour mills)
0713	Corn shelling, hay baling, and threshing services
0719	Agricultural services, n. e. c.
0720	Animal-husbandry services
0730	Horticultural services
0800	<i>Forestry</i>
0810	Timber tracts
0820	Forest nurseries
0830	Reforestation
0840	Hunting, trapping, game propagation, etc.

Code *Forestry*—Continued

- 0850 Gathering of gums and barks
(Gathering of gums and barks (spruce, chestnut, cherry, etc.) may include distillation if carried on at the same establishment)
- 0890 Forestry services, n. e. c.
- 0900 *Fishery*
- 0990 Fishery services, n. e. c.

Division B.—Mining

- 1000 *Metal mining*
- 1010 Iron-ore mines
- 1011 Iron-ore mines, underground
- 1012 Iron-ore mines, open pit
- 1013 Iron-ore dressing plants not directly connected with the mine and not reported with any mine production
- 1020 Copper-ore mines
- 1021 Copper-ore mines, underground
- 1022 Copper-ore mines, open pit
- 1023 Copper-ore dressing plants not directly connected with the mine and not reported with any mine production
- 1030 Lead- and zinc-ore mines
- 1031 Lead- and zinc-ore mines
- 1032 Lead- and zinc-ore dressing plants
- 1040 Gold- and silver-ore mines (including production of bullion at site of the mine)
- 1041 Gold- and silver-lode mines
- 1042 Gold placer mines
- 1043 Gold- and silver-ore milling and beneficiating (concentrating) plants not directly connected with the mine and not reported with any mine production
- 1050 Aluminum ores (bauxite and other)
- 1060 Metal-mining contract services (including contract stripping)
- 1090 Miscellaneous metal mining, n. e. c.
- 1091 Mercury-ore mines
- 1092 Manganese-ore mines
- 1093 Ferro-alloying ore mines, other than manganese
- 1094 Dressing plants for metal ores, n. e. c., not directly connected with mines and not reported with any mine production
- 1099 Miscellaneous metal mining, n. e. c.
- 1100 *Anthracite mining*
- 1110 Anthracite mining, underground
- 1120 Anthracite mining, open pit
- 1130 Anthracite breakers and preparation plants, operated separately from mines
- 1140 Anthracite dredges
- 1150 Anthracite stripping—contractors
- 1200 *Bituminous and other soft-coal mining*
- 1210 Bituminous-coal mining
- 1211 Bituminous-coal mining, underground mines
- 1212 Bituminous-coal mining, open-pit mines
- 1213 Bituminous-coal preparation plants, operated separately from mines
- 1220 Semianthracite mines
- 1230 Lignite mines
- 1231 Lignite mines (including peat)

- Code
- 1300 *Crude-petroleum and natural-gas production*
- 1310 Crude-petroleum production
- 1311 Crude-petroleum production (including associated natural-gas production)
- 1320 Natural-gas production
- 1321 Natural-gas production (operation of natural-gas wells only)
- 1330 Oil and gas field service operations—contractors
- 1331 Oil- and gas-well drilling—contractors
- 1332 Oil-wells rig building—contractors
- 1339 Miscellaneous oil and gas field service operations, n. e. c. (cleaning, acidizing, shooting wells, etc.)
- 1400 *Nonmetallic mining and quarrying*
- 1410 Dimension-stone quarries
- 1411 Limestone quarries (including dolomite)
- 1412 Granite quarries
- 1413 Slate quarries
- 1414 Marble quarries
- 1419 Miscellaneous dimension-stone quarries, n. e. c. (basalt, sandstone, quartzite, etc.)
- 1420 Crushed-stone quarries, other than limestone
- 1430 Crushed limestone quarries
- 1440 Sand and gravel (quarries, pits, and dredges)
- 1441 Sand and gravel production for structural, paving, road making, and other miscellaneous uses, n. e. c.
- 1442 Special sands production (glass, molding, abrasive sands, etc.)
- 1450 Clays, ceramic and refractory minerals
- 1451 Kaolin and ball clay (including china clay, paper clay, rubber clay, etc.)
- 1452 Bleaching clays
- 1453 Fire clay
- 1454 Bentonite
- 1455 Feldspar
- 1459 Miscellaneous clays and refractory minerals, n. e. c.
- 1460 Gypsum
- 1470 Rock salt
- 1480 Minerals used as chemical raw materials, n. e. c.
- 1481 Phosphate rock
- 1482 Sulphur
- 1489 Miscellaneous minerals used as chemical raw materials, n. e. c. (potash, borates and other salines, pyrites, fluor spar, barite, etc.)
- 1490 Miscellaneous nonmetallic minerals, n. e. c.

Division C.—Construction

- 1600 *Construction—general contractors*
- 1610 Building construction—general contractors
- 1620 Highways and street construction
- 1621 Highway construction—bridges, culverts, tunnels, and sewers when combined with road, street, and sidewalk construction; highway construction and grading (except elevated highways)
- 1630 Heavy construction (except highway and marine construction)
- 1631 Heavy construction (except highway and marine construction)—sewers, water mains, tunnels, dams, subways, etc.

Code	<i>Construction—general contractors—Continued</i>
1640	Marine construction (not shipbuilding)
1641	Marine construction (not shipbuilding)—cofferdams, dredging, dock building, wharf construction, etc.
1650	Water-well drilling
1690	Miscellaneous general contractors
1691	Miscellaneous general contractors—fence construction, tennis courts, swimming pools, golf courses, coal pockets, airport construction, etc.
1700	<i>Construction—special trade contractors (subcontractors)</i>
1710	Plumbing, heating, and air conditioning, with or without sheet-metal work
1711	Heating, plumbing, air conditioning, ventilating work (in combination or separately) with or without sheet-metal work (including installation of heating equipment of all types, pipe covering, steam fitting, installation of sprinkler systems, etc.)
1720	Painting, paperhanging, and decorating
1730	Electrical
1740	Masonry, stonework, tile setting, and plastering
1741	Masonry, stone setting, and other stonework
1742	Plastering and lathing
1743	Terazzo, tile, mantel, marble, and mosaic
1750	Carpentering and wood flooring
1751	Carpentering
1752	Parquet and hardwood flooring (laying, scraping and finishing, and other floor work, n. e. c.)
1760	Roofing and sheet-metal work
1761	Roofing and sheet-metal work contractors
1770	Concreting work
1780	General building maintenance (not including janitor and similar services)
1790	Miscellaneous special trade contractors, n. e. c.
1791	Structural-metal erection
1792	Ornamental iron and steel work (including installation of fire escapes, store, elevator, and building fronts)
1793	Glass and glazing
1794	Excavation and/or foundation work (including concrete work and pile driving)
1795	Wrecking and demolition, other than marine, of buildings or structures
1796	Installation of machinery and equipment, n. e. c.
1799	Miscellaneous special trade contractors, n. e. c.

Division D.—Manufacturing

2000	<i>Food and kindred products</i>
2010	Meat products
2011	Meat packing, wholesale: meat-packing establishments producing dressed meats, fresh, frozen, cured, smoked, cooked, canned, or otherwise preserved (including sausage and other prepared meats, sausage casing, and animal byproducts; includes custom slaughtering for wholesale)
2012	Sausages, prepared meats, and other meat products—not made in meat-packing establishments
2013	Sausage casings—not made in meat-packing establishments
2014	Poultry dressing and packing, wholesale

Code	<i>Food and kindred products</i> —Continued
2020	Dairy products
2021	Creamery butter
2022	Cheese, natural and processed
2023	Condensed and evaporated milk
2024	Ice cream and ices
2025	Special dairy products: processed and ladle butter, milk and cream powders, malted milk, and specially treated milk, etc.
2030	Canning and preserving fruits, vegetables, and sea foods
2031	Canning fish, crustacea, and mollusks
2032	Cured fish: salted, pickled, smoked, dried, etc. (including fish meal)
2033	Canned and dried fruits and vegetables (including canned soups)
2034	Preserves, jams, jellies, fruit butters, fruit juices, glazed and candied fruits, fruit sirups, crushed fruits
2035	Pickled vegetables and vegetable sauces and seasonings
2036	Salad dressings
2037	Quick-frozen foods
2040	Grain-mill products
2041	Flour and other grain-mill products
2042	Prepared feeds for animals and fowl (including mineral)
2043	Cereal preparations: breakfast foods, etc.
2044	Rice cleaning and polishing
2045	Blending flour and manufacturing prepared flour (from purchased flour)
2050	Bakery products
2051	Bread and other bakery products (except biscuits, crackers, and pretzels)
2052	Biscuits, crackers, and pretzels
2053	Macaroni, spaghetti, vermicelli, ravioli, and noodles
2060	Sugar
2061	Cane sugar (not including refineries)
2062	Cane-sugar refining
2063	Beet sugar
2070	Confectionery
2071	Candy and other confectionery products (excluding chocolate bars)
2072	Chocolate and cocoa products
2073	Chewing gum
2080	Beverage industries
2081	Nonalcoholic beverages (including carbonated mineral water)
2082	Malt liquors
2083	Malt
2084	Wines
2085	Distilled, rectified, and blended liquors
2090	Miscellaneous food and kindred products
2091	Baking powder, yeast, and other leavening compounds
2092	Edible and cooking fats and oils, n. e. c.
2093	Oleomargarine—not made in meat-packing establishments
2094	Corn sirup, corn sugar, corn oil, and starch
2095	Flavoring extracts and flavoring sirups, n. e. c.
2096	Vinegar and cider
2097	Ice, manufactured
2099	Food preparations, n. e. c.

Code	
2100	<i>Tobacco manufactures</i>
2110	Cigarettes
2120	Cigars
2130	Tobacco, chewing, smoking, and snuff
2200	<i>Textile-mill products</i>
2210	Cotton manufactures (in the gray)
2211	Cotton broad woven goods (including fish nets)
2212	Cotton narrow fabrics
2213	Cotton yarn
2214	Cotton thread
2220	Silk manufactures
2221	Silk broad woven goods (in the gray)
2222	Silk narrow fabrics (in the gray)
2223	Silk throwing and spinning
2224	Silk yarn and thread
2230	Rayon manufactures
2231	Rayon broad woven goods (in the gray)
2232	Rayon narrow fabrics (in the gray)
2233	Rayon throwing and spinning
2234	Spun and thrown rayon yarn and thread
2240	Woolen and worsted manufactures
2241	Woolen and worsted woven goods (including woven felts and haircloth)
2242	Woolen and worsted yarn
2243	Dyeing and finishing woolen and worsted
2244	Wool scouring
2245	Wool combing
2250	Knit goods
2251	Hosiery
2252	Knitted cloths
2253	Knitted outerwear (except knit gloves)
2254	Knitted underwear
2255	Knitted gloves
2259	Knit goods, n. e. c.
2260	Dyeing and finishing textiles (except woolen and worsted)
2261	Cotton fabrics
2262	Silk and rayon fabrics
2263	Fabrics not specified
2264	Yarn
2265	Sponging and shrinking cloths, waterproofing fabrics
2270	Carpets, rugs, and other floor coverings
2271	Wool carpets and rugs
2272	Woolen and worsted carpet yarn
2273	Carpets, rugs, and mats made from paper fiber, grass, rags, and jute
2279	Linoleum, asphalted-felt-base and hard-surface floor coverings, n. e. c.
2280	Hats (except cloth and millinery)
2281	Hats, fur felt
2282	Hats, wool felt
2283	Straw hats, men's
2290	Miscellaneous textile goods
2291	Felt goods, wool, hair, and jute (except woven felts and hats)
2292	Lace goods
2293	Batting, padding, and wadding; upholstery filling

Textile-mill products—Continued

Code	Miscellaneous textile goods—Continued
2294	Processed waste and recovered wool fibers
2295	Artificial leather
2296	Oilecloths
2297	Linen goods
2298	Cordage and twine; jute goods (except felt)
2299	Miscellaneous textile goods, n. e. c.
2300	<i>Apparel and other finished products made from fabrics and similar materials</i>
2310	Men's and boys' tailored clothing
2311	Suits, coats, and overcoats (not including work clothing)
2320	Men's and boys' furnishings, work and sport garments
2321	Shirts (except work shirts), collars, nightwear, and underwear
2322	Men's neckwear
2323	Hats and caps (except felt and straw)
2324	Hat and cap materials: trimmings, etc.
2325	Trousers, semidress; wash suits; and washable service apparel
2326	Work shirts
2329	Work clothing (not including work shirts); sport garments (except leather); and other apparel, n. e. c.
2330	Women's and misses' outer clothing
2331	Blouses and waists
2332	Dresses (except house dresses)
2333	House dresses, uniforms, and aprons—contract factories
2334	Coats, suits, and skirts (not including fur coats)
2339	Women's clothing, n. e. c. (including lounging garments, beach wear, slacks, shorts, culottes, etc.)
2340	Women's accessories (not including millinery)
2341	Underwear and nightwear, women's, children's, and infants'
2342	Corsets and allied garments
2343	Neckwear and scarfs
2349	Women's miscellaneous accessories: belts, etc., of fabric
2350	Millinery
2351	Millinery
2360	Children's and infants' outerwear
2361	Dresses (including housecoats and sportswear: middies, slacks, beach wear, etc.)
2362	Coats
2363	Infants' and children's headwear, chiefly of cloth
2369	Infants' and children's wear, n. e. c. (including novelties such as bathrobes, buntings, etc.)
2370	Fur goods
2371	Fur coats and other fur garments, accessories, and trimmings
2380	Miscellaneous apparel
2381	Gloves and mittens, cloth and combination of cloth and leather
2382	Handkerchiefs
2383	Suspenders, garters, and other goods made from purchased elastic material
2384	Robes, lounging garments, and dressing gowns
2385	Raincoats and other waterproof garments (except oiled cotton)
2386	Clothing, leather and sheep-lined
2387	Embroidery: bonnaz, hand-made, and schiffli—not made in textile mills

Apparel and other finished products, etc.—Continued

Code	Miscellaneous apparel—Continued
2388	Trimmings, pleating, stitching, stamped art goods, and art needlework—not made in textile mills
2389	Miscellaneous apparel, n. e. c.
2390	Miscellaneous fabricated textile products
2391	Curtains, draperies, and bedspreads
2392	Housefurnishings (except curtains, draperies, and bedspreads)
2393	Textile bags—not made in textile mills
2394	Canvas products
2399	Miscellaneous fabricated textile products, n. e. c.: horse blankets, welts, fly nets, breast aprons, belting, flags, and banners
2400	<i>Lumber and timber basic products</i>
2410	Logging
2411	Logging (logging camps and contractors)
2420	Sawmills and special-product sawmills
2421	Sawmills (include sawmills combined with logging camps or sawmills combined with planing mills, provided the sawmill is the major activity)
2422	Veneer mills
2423	Shingle mills
2424	Cooperage-stock mills
2429	Mills producing special products, n. e. c.
2430	Planing and plywood mills
2431	Planing mills
2432	Plywood mills
2500	<i>Furniture and finished lumber products</i>
2510	Household furniture
2511	Wood
2512	Upholstered (including manufacture of frames)
2513	Reed and rattan
2514	Metal
2515	Mattresses and bedsprings
2519	Household furniture, n. e. c.
2520	Office furniture
2521	Wood
2522	Metal
2530	Public-building furniture (including public seating)
2540	Partitions, shelving, cabinet work, and woodwork
2541	Partitions, shelving, cabinet work, showcases, advertising and display cases, office and store fixtures, store fronts
2550	Wooden containers
2551	Vegetable and fruit baskets
2552	Rattan and willow ware (not including furniture and vegetable and fruit baskets)
2553	Cigar boxes, wooden and part wooden
2554	Wooden boxes (except cigar boxes)
2555	Cooperage
2560	Window and door screens, shades, and blinds
2561	Window and door screens and weather strip
2562	Window shades
2563	Venetian blinds

Code	<i>Furniture and finished lumber products—Continued</i>
2570	Caskets, coffins, burial cases, and other morticians' goods
2590	Miscellaneous wooden goods
2591	Excelsior
2592	Cork products
2593	Matches
2594	Wood preserving
2595	Lasts and related products
2596	Mirror and picture frames
2599	Wooden goods, n. e. c.
2600	<i>Paper and allied products</i>
2610	Pulp mills
2620	Paper mills
2621	Newsprint
2622	Book, writing, and cover paper
2623	Wrapping paper
2624	Tissue and absorbent paper
2625	Building paper
2629	Other papers, n. e. c.
2630	Paperboard mills
2640	Coated and glazed papers
2641	Coated book paper
2642	Waxed paper
2643	Gummed paper (including gummed labels and paper and cloth tape)
2649	Other (including glazed and fancy)
2650	Envelopes
2660	Paper bags
2661	Grocery bags
2662	Heavy-duty paper bags: cement, flour, coal bags, etc.
2669	All other
2570	Paperboard containers and boxes
2671	Folded
2672	Set-up
2673	Corrugated and fiber
2674	Liquid-tight containers
2679	All other
2690	Converted paper products, n. e. c.
2691	Die-cut paper and paperboard: cards, boards, milk-bottle caps, etc.
2692	Stationery, blank: ledger sheets, etc.
2693	Wallpaper
2694	Pulp goods: pressed and molded pulp products
2699	Converted paper products, n. e. c. (including all paper patterns, printed and unprinted)
2700	<i>Printing, publishing, and allied industries</i>
2710	Newspapers
2711	Newspapers, publishing only
2712	Newspapers, publishing and printing
2720	Periodicals
2721	Periodicals, publishing only
2722	Periodicals, publishing and printing

Code	<i>Printing, publishing, and allied industries</i> —Continued
2730	Books and music
2731	Books, publishing only
2732	Books, publishing and printing (including specialized printing of books only)
2733	Music, printing and publishing, or publishing only
2740	Publishing only, n. e. c.
2741	Directories and special services
2749	Other
2750	General commercial (job) printing
2760	Lithographing
2761	Lithographing and photolithographing (including preparation of stones or plates and dry transfers)
2762	Greeting cards (except hand-painted)
2770	Gravure, rotogravure, and rotary photogravure
2780	Bookbinding
2781	Bookbinding (edition, trade, job, library)
2782	Blank-book making and paper ruling
2783	Loose-leaf and library-binder manufacturing
2789	Binding, n. e. c. (including special mounting, finishing, edging, gilding, etc.)
2790	Service industries for the printing trades
2791	Machine and hand typesetting (including advertisement typesetting)
2792	Engraving, steel and copper plate; plate printing; wood engraving
2793	Photoengraving
2794	Electrotyping and stereotyping
2800	<i>Chemicals and allied products</i>
2810	Paints, varnishes, and colors
2811	Paints, varnishes, and lacquers
2812	Colors and pigments
2820	Animal and vegetable oils (not including lubricants or cooking and salad oils)
2821	Cottonseed products—oil, cake, meal, and linters
2822	Linseed products—oil, cake, and meal
2823	Soybean products—oil, cake, and meal
2824	Essential oils
2825	Marine oils
2829	Vegetable oils, n. e. c.: coconut, peanut, etc.
2830	Drugs, medicines, toilet preparations, insecticides, and related products
2831	Drugs and medicines (including drug grinding)
2832	Perfumes, cosmetics, and other toilet preparations
2833	Insecticides, fungicides, and related industrial and household chemical compounds
2840	Soap and crude glycerin
2850	Rayon and allied products
2860	Turpentine, rosin, charcoal, and wood-distillation products
2861	Hardwood distillation and charcoal manufacture: natural methanol, natural acetate of lime, natural acetone, etc.
2862	Softwood distillation: turpentine, rosin, tar
2863	Naval stores: processing but not gathering or warehousing
2870	Fertilizers
2871	Fertilizers (except dry mix)
2872	Fertilizers, dry mix only
2879	Fertilizer materials, n. e. c.: tankage, bone meal, fish scrap, etc.

	<i>Chemicals and allied products—Continued</i>
2880	Industrial chemicals
2881	Tanning materials; natural dyestuffs; mordants and assistants; and sizes
2882	Primary coal-tar products
2883	Plastic materials
2884	Explosives
2885	Salt (excluding the mining of rock salt)
2886	Compressed and liquefied gases—not made in petroleum refineries or in natural-gas gasoline plants
2887	Bone black, carbon black, and lampblack
2888	Electrochemical and electrometallurgical products, n. e. c. (including aluminum)
2889	Industrial chemicals and other organic and inorganic chemicals, n. e. c.
2890	Miscellaneous chemical products
2891	Printing ink
2892	Ammunition (including detonators)
2893	Cleaning and polishing preparations, blacking, stains, dressings
2894	Glue and gelatin
2895	Grease, tallow, and stearic acid (not including lubricating greases)
2896	Lubricating oils and greases—not made in petroleum refineries
2897	Fireworks
2899	Chemical products, n. e. c.: mucilage, paste, and other adhesives (except glue and rubber cement); writing ink; bluing
2900	<i>Products of petroleum, coal, and natural gas</i>
2910	Petroleum refining
2920	Products of natural gas
2921	Products of natural gas (except carbon black)
2930	Coke and coke products
2931	Beehive coke
2932	Oven coke and byproducts
2940	Gas, manufactured, other than coke-oven gas
2941	Gas, manufactured, other than coke-oven gas (excluding distribution of gas)
2950	Paving and roofing materials
2951	Paving blocks: asphalt, creosoted wood, and composition
2952	Roofing, built up and rolled; asphalt shingles; roof coating (except paint)
2990	Products of petroleum and coal, n. e. c.
2991	Fuel briquets
2999	Products of petroleum and coal, n. e. c. (including candles)
3000	<i>Rubber products</i>
3010	Tires and inner tubes
3020	Rubber boots, shoes, soles, and heels
3021	Rubber boots and shoes (including canvas rubber-soled shoes)
3022	Rubber heels, soling strips, and soles (including composition or fiber)
3030	Industrial rubber goods
3031	Mechanical rubber goods and hard-rubber goods: belting, hose, industrial tubing, packing, lining, cord and thread, plumbers' specialties, rubber and friction tape, jar rings, battery jars, boxes, etc.
3032	Rubber flooring
3040	Rubberized fabrics and vulcanized rubber clothing
3050	Rubber sundries

Rubber products—Continued

Code	Industrial rubber goods—Continued
3051	Rubber sundries: bathing caps, suits, and shoes; medical and surgical rubber goods and druggists' sundries (including all rubber gloves); rubber toys, balls, novelties, and sporting goods; stationers' rubber goods.
3090	Miscellaneous rubber industries
3091	Reclaiming rubber—in establishments not manufacturing rubber goods
3092	Retreading rubber tires—in establishments not manufacturing new tires
3093	Tire sundries and repair materials—in establishments not manufacturing new tires and tubes
3100	<i>Leather and leather products</i>
3110	Leather, tanned, curried, and finished
3111	Sole and belting leather
3112	Upper and lining leather
3113	Leather (except sole, belting, upper, and lining)
3114	Leather finishing, embossing, and japanning
3115	Currying shops (except fur)
3120	Industrial belts, belting, packing leather, and washers
3130	Boot and shoe cut stock and findings
3131	Boot and shoe cut stock—not made in boot and shoe factories
3132	Boot and shoe findings—not made in boot and shoe factories
3140	Footwear (except rubber)
3141	Footwear (except house slippers and rubber footwear)
3142	House slippers
3150	Leather gloves and mittens
3160	Luggage
3161	Suitcases, brief cases, bags, trunks, and other luggage
3170	Pocketbooks, handbags, and small leather goods
3171	Women's pocketbooks, handbags, and purses
3172	Small leather goods
3190	Miscellaneous leather goods
3191	Belts, apparel
3192	Saddlery, harness, and whips
3199	Miscellaneous leather products, n. e. c.
3200	<i>Stone, clay, and glass products</i>
3210	Flat glass
3211	Plate glass
3212	Window glass
3219	Other flat glass
3220	Glassware, pressed or blown
3221	Glass containers: bottles, jars, etc.
3222	Tableware
3229	Other pressed or blown glass and glassware: illuminating, scientific technical, industrial, etc.
3230	Mirrors and other glass products made of purchased glass
3231	Mirrors, cut and beveled glass, and engraved glass
3232	Stained, leaded, ornamented, and decorated glass
3233	Glass novelties: glass fruit, trees, flowers, etc.
3239	Glass products, n. e. c.
3240	Cement

Code	<i>Stone, clay, and glass products—Continued</i>
3250	Structural clay products
3251	Bricks: common brick, facebrick, hollow building tile, hollow brick, vitrified brick for paving
3252	Terra cotta
3253	Tile: floor, wall, roofing, ceramic mosaic, enameled, etc.
3254	Sewer pipe, drain tile, and kindred products: flue lining, chimney and top, wall coping, segment blocks
3255	Fire-clay products
3260	Pottery and related products
3261	Vitreous-china plumbing fixtures
3262	Hotel chinaware
3263	White ware
3264	Porcelain electrical supplies
3269	Other clay products, n. e. c.: stove lining, glass-house tank blocks, refractory cement (clay), red earthenware, stoneware (including chemical), art and garden pottery
3270	Concrete, gypsum, and plaster products
3271	Concrete products
3272	Gypsum products
3273	Wallboard and wall plaster (except gypsum), building insulation, and floor composition
3274	Lime
3280	Cut-stone and stone products
3281	Monuments and tombstones
3289	Other cut-stone products
3290	Abrasives, asbestos products, and ground minerals
3291	Abrasive wheels, stones, paper, cloth, and related products
3292	Asbestos products (except steam packing and pipe and boiler covering)
3293	Steam and other packing, pipe and boiler covering, gaskets, etc.
3294	Natural graphites, ground and refined
3295	Minerals and earths, ground or otherwise treated
3296	Sand-lime brick
3297	Nonclay refractories
3300	<i>Iron and steel and their products</i>
3310	Blast furnaces, steel works, and rolling mills
3311	Blast furnaces
3312	Steel works
3313	Rolling mills
3320	Iron- and steel-foundry products
3321	Gray-iron castings
3322	Malleable-iron castings
3323	Steel castings
3324	Cast-iron pipe and fittings
3330	Tin cans and other tinware
3331	Tin cans
3339	Tinware, n. e. c.
3340	Wire products
3341	Wire
3342	Nails, spikes, etc. (including other than wire)
3349	Wirework, n. e. c.
3350	Cutlery, tools, and general hardware
3351	Cutlery (except silver and plated cutlery) and edge tools
3352	Tools (except edge tools, machine tools, files, and saws)

Iron and steel and their products—Continued

	Cutlery, tools, and general hardware—Continued
Code	
3353	Files
3354	Saws
3359	Hardware, n. e. c.
3360	Heating apparatus (except electric) and plumbers' supplies
3361	Enameled-iron sanitary ware and other plumbers' supplies (not including pipe and vitreous and semivitreous china sanitary ware)
3362	Stoves, ranges, and hot-air furnaces (except electric)
3363	Oil burners and stokers, domestic
3364	Power boilers and associated equipment
3365	Steam and hot-water heating apparatus (including hot-water furnaces) and steam fittings, regardless of material
3369	Heating equipment, domestic, n. e. c. (including gas heaters)
3370	Metal stamping, enameling, japanning, and lacquering
3371	Enameled ware (except plumbers' supplies)
3372	Stamped and pressed metal products
3373	Metal stamping and spinning combined
3374	Enameling, japanning, and lacquering
3380	Fabricated structural steel and ornamental metalwork
3381	Fabricated structural steel
3382	Ornamental metalwork
3383	Doors, shutters, window sashes, frames, molding, and trim, made of metal
3390	Miscellaneous iron and steel products
3391	Bolts, nuts, washers, and rivets
3392	Forgings, iron and steel
3393	Wrought pipes, welded and heavy riveted
3394	Springs, steel (except wire)
3395	Screw-machine products and wood screws
3396	Steel barrels, kegs, and drums
3397	Firearms
3398	Safes and vaults
3399	Iron and steel products, n. e. c.
3400	<i>Nonferrous metals and their products</i>
3410	Primary smelting and refining
3411	Copper
3412	Lead
3413	Zinc
3414	Gold
3415	Silver
3419	Nonferrous metals, n. e. c.
3420	Secondary smelting and refining of nonferrous metals and alloys
3421	Copper, brass, and bronze
3422	Lead and lead alloys
3423	Zinc
3424	Aluminum and aluminum alloys
3425	Gold, silver, platinum
3429	Secondary smelting and refining, n. e. c.
3430	Nonferrous metal alloying, rolling, and drawing
3431	Copper, brass, and bronze
3432	Aluminum alloys
3439	Other nonferrous metals and alloys

Code	<i>Nonferrous metals and their products</i> —Continued
3440	Clocks and watches
3441	Clocks, watches, and materials and parts (except watchcases)
3442	Watchcases
3443	Assembling of watches or clocks
3450	Jewelry
3451	Jewelry (not including costume jewelry)
3452	Jewelers' findings and materials
3453	Lapidary work
3460	Silverware and plated ware
3470	Engraving, plating, and polishing
3471	Engraving on nonferrous metals (except for printing purposes)
3472	Electroplating, plating, and polishing
3480	Lighting fixtures
3481	Electric-light fixtures
3489	Lighting fixtures (except electric)
3490	Nonferrous metal products, n. e. c.
3491	Nonferrous metal foundries
3492	Aluminum products
3493	Nonferrous metalware: kitchen, household, and hospital utensils (except foundry products and aluminum ware)
3494	Metal novelties and specialties (except foundry products)
3495	Collapsible tubes
3496	Gold leaf and foil
3497	Tin and other foils (not including gold foil)
3498	Sheet-metal work not specifically classified
3499	Nonferrous metal products, n. e. c.
3500	<i>Electrical machinery</i>
3510	Electrical equipment for electric public utility, manufacturing, mining, transportation (except automotive), and construction use, and for incorporation in manufactured products
3520	Electrical appliances
3530	Wire and cable
3540	Automotive electrical equipment
3550	Electrical lamps
3560	Communication equipment
3570	All other electrical products
3600	<i>Machinery (except electrical)</i>
3610	Engines and turbines
3611	Steam engines and steam turbines
3612	Diesel and semi-Diesel engines
3613	Aircraft engines
3619	Other internal-combustion engines
3620	Agricultural machinery and tractors
3621	Tractors
3629	Agricultural machinery (except tractors)
3630	Construction, mining, and related machinery
3631	Construction and heavy lifting equipment: cranes, dredges, excava- tors, hoists, derricks, road-building machinery
3632	Heavy crushing and mixing machinery for stone, ore, etc.
3633	Oil-field machinery and tools (including well-drilling machines, except for oil wells)
3634	Mining machinery and equipment

Code	<i>Machinery (except electrical)—Continued</i>
3640	Metalworking machinery
3641	Machine tools: lathes, screw machines, bending machines, etc.
3642	Machine-tool accessories, dies, and machinists' precision tools
3649	Other metalworking machinery, equipment, and accessories (including presses, forging machines, die-casting machinery, etc.)
3650	Special industrial machinery (not including metalworking machinery)
3651	Food-products machinery
3652	Textile machinery
3653	Woodworking machinery
3654	Paper and pulp-mill machinery
3655	Printing-trades machinery
3656	Oil-refining machinery
3657	Smelting and refining machinery and equipment
3659	Special industrial machinery, n. e. c. (including foundry equipment)
3660	General industrial machinery
3661	Pumps, compressors, and pumping equipment
3662	Conveyor systems
3663	Elevators, escalators, and elevator equipment
3664	Industrial and mining cars and trucks
3665	Blowers and exhaust and ventilating fans
3666	Measuring, recording, and control instruments (except electric meters, watches, and clocks)
3667	Mechanical power-transmission equipment and supplies: bearings, gears, shafts, etc.
3669	General industrial machinery, n. e. c.
3670	Office and store machines, equipment, and supplies
3671	Adding, calculating, tabulating, and bookkeeping machines, cash registers, fare-recording devices, etc.
3672	Typewriters and parts
3673	Office duplicating devices and supplies: addressing, mailing, check-writing machines; mimeographs, multigraphs, etc.; carbon paper, paper stencils, and inked ribbons
3674	Vending, amusement, and other coin-operated machines
3675	Scales and balances (including coin-operated scales)
3679	Office and store machines, n. e. c.
3680	Household and service-industry machines
3681	Domestic laundry equipment: washing machines, wringers, driers, ironers, etc.
3682	Commercial laundry, dry-cleaning, and pressing machines
3683	Sewing machines, domestic and industrial
3689	Household and service-industry machines, n. e. c.
3690	Machine shops, n. e. c.
3699	Machine shops, n. e. c.
3700	<i>Transportation equipment (except automobiles)</i>
3710	Railroad equipment
3711	Locomotives (including frames) and parts: steam, electric, Diesel, and Diesel-electric
3712	Railroad, street, and rapid-transit cars, and car equipment
3719	Railroad equipment, n. e. c.
3720	Aircraft and parts
3730	Ship and boat building
3731	Shipbuilding (including ship repairs when combined with shipbuilding)
3732	Boat building (including repairs when combined with building)

Code	<i>Transportation equipment (except automobiles)</i> —Continued
3740	Motorcycles, bicycles, and parts
3790	Transportation equipment, n. e. c.
3799	Transportation equipment, n. e. c.: carriages, wagons, sleighs, and sleds (except children's vehicles)
3800	<i>Automobiles and automobile equipment</i>
3810	Motor vehicles
3820	Motor-vehicle bodies and body parts
3821	Passenger-car bodies and passenger-car body parts
3822	Truck bodies and truck body parts
3830	Motor-vehicle parts and accessories
3840	Automobile trailers (for attachment to passenger vehicles)
3900	<i>Miscellaneous manufacturing industries</i>
3910	Professional and scientific instruments: photographic apparatus and optical goods
3911	Professional and scientific instruments (except surgical and dental)
3912	Photographic apparatus and materials and projection apparatus (except lenses)
3913	Lenses and other optical goods
3920	Surgical and dental instruments, equipment, and supplies
3921	Surgical and medical instruments
3922	Surgical supplies and equipment, n. e. c., and orthopedic appliances
3923	Dentists' equipment and supplies
3930	Musical instruments
3931	Pianos
3932	Organs
3933	Piano and organ parts and materials
3939	Musical instruments and parts and materials, n. e. c.
3940	Toys and sporting and athletic goods
3941	Games and toys (except dolls and children's vehicles)
3942	Dolls (except rubber)
3943	Baby carriages, children's sleds, wagons, and other vehicles for children
3949	Sporting and athletic goods, n. e. c.
3950	Pens, fountain and stylographic, pencils, stencils, and artists' materials
3951	Pens, mechanical pencils, and pen points
3952	Pencils (except mechanical) and crayons
3953	Hand stamps, stencils, and brands
3954	Artists' materials
3960	Buttons and buckles
3961	Buttons
3962	Buckles
3970	Costume jewelry and miscellaneous novelties
3971	Costume jewelry
3972	Novelties (except metal)
3973	Jewelry cases and instrument cases
3974	Lamp shades
3975	Artificial flowers, feathers, and plumes
3980	Brooms and brushes
3981	Brooms
3982	Brushes

	<i>Miscellaneous manufacturing industries</i> —Continued
3990	Miscellaneous industries
3991	Beauty-shop and barber-shop equipment and supplies
3992	Fur, dressed and dyed
3993	Signs and advertising displays
3994	Fabricated plastic products, n. e. c.
3995	Umbrellas, parasols, and canes
3996	Tobacco pipes and cigarette holders
3997	Handbag and luggage frames
3998	Models and patterns (not including paper patterns)
3999	Manufacturing establishments, n. e. c.

Division E.—Wholesale and retail trade

Wholesale

4000	Service and limited-function wholesalers (includes the usual wholesaling establishments)
4010	Automotive
4011	Automobiles and other motor vehicles
4012	Automotive equipment
4013	Tires and tubes
4020	Chemicals, drugs, and allied products
4021	Drugs (full line)
4022	Drug proprietaries and toiletries
4023	Drug sundries
4024	Dyestuffs
4025	Explosives
4026	Industrial chemicals
4027	Naval stores
4028	Paints and varnishes
4029	Chemicals, drugs, and allied products, n. e. c.
4030	Dry goods and apparel
4031	Dry goods (full line)
4032	Piece goods
4033	Hosiery and underwear
4034	Notions and other dry goods
4035	Clothing and furnishings (full line)
4036	Men's and boys' clothing and furnishings
4037	Women's and children's clothing and furnishings
4038	Millinery and millinery supplies
4039	Shoes and other footwear
4040	Petroleum and its products
4050	Groceries and food specialties
4051	Groceries (full line)
4052	Canned goods
4053	Coffee, tea, and spices
4054	Confectionery
4055	Fish and sea foods
4056	Flour
4057	Meats and provisions
4058	Sugar
4059	Groceries and food specialties, n. e. c.

Wholesale—Continued

Code	Service and limited-function wholesalers—Continued
4060	Farm products—consumer goods
4061	Dairy products
4062	Poultry and poultry products
4063	Dairy and poultry products
4064	Fruits and vegetables (fresh)
4069	Farm products—consumer goods, n. e. c.
4070	Farm products—raw materials
4071	Cotton
4072	Grain
4073	Hides, skins, and furs (raw)
4074	Horses and mules
4075	Livestock
4076	Silk (raw)
4077	Tobacco (leaf)
4078	Wool and mohair
4079	Farm products—raw materials, n. e. c.
4080	Tobacco and its products (except leaf)
4090	Beer, wines, and liquors
4091	Beer and other fermented malt liquors
4092	Wines and liquors
4100	Electrical goods
4101	Electrical merchandise (full line)
4102	Apparatus and equipment
4103	Wiring supplies and construction materials
4104	Radios, refrigerators, and appliances
4110	Furniture and housefurnishings
4111	China, glassware, and crockery
4112	Floor coverings
4113	Furniture (household and office)
4114	Housefurnishings (except as specified)
4115	Musical instruments and sheet music
4120	Hardware
4121	Hardware (full line)
4122	Hardware (specialty lines)
4130	Lumber and construction materials
4131	Builders' supplies (full line)
4132	Lumber and millwork
4133	Brick, tile, and terra cotta
4134	Cement, lime, and plaster
4135	Glass
4136	Sand, gravel, and crushed stone
4139	Lumber and construction materials, n. e. c.
4140	Machinery, equipment, and supplies
4141	Commercial machinery and equipment
4142	Farm and dairy machinery and equipment
4143	Industrial equipment and supplies
4144	Oil-well and oil-refining machinery and equipment
4145	Other industrial machinery
4146	Professional equipment and supplies
4147	Service equipment and supplies
4148	Transportation equipment and supplies
4149	Machinery, equipment, and supplies, n. e. c.

Wholesale—Continued

Code	Service and limited-function wholesalers—Continued
4150	Metals and minerals (except petroleum and scrap)
4151	Coal and coke
4152	Iron and steel (except structural)
4153	Structural iron and steel
4154	Wire, wire fence, and wire rope
4155	Copper
4156	Sheet-metal products
4159	Metals and minerals (except petroleum and scrap), n. e. c.
4160	Paper and its products
4161	Wrapping or coarse paper and products
4162	Fine or printing and writing paper
4163	Stationery and stationery supplies
4164	Wallpaper
4170	Plumbing and heating equipment and supplies
4171	Plumbing and heating (full line)
4172	Heating (including stoves and ranges)
4173	Plumbing fixtures, equipment, and supplies
4179	Plumbing and heating equipment and supplies, n. e. c.
4180	Waste materials
4181	Iron and steel scrap
4182	Junk and scrap (full line)
4183	Waste paper, rags, and rubber
4184	Nonferrous metals, scrap
4190	Service and limited-function wholesalers, n. e. c.
4191	Amusement and sporting goods
4192	Farm supplies
4193	Jewelry
4194	Optical goods
4195	General merchandise
4196	Flowers and nursery stock
4197	Forest products (except lumber)
4198	Leather and leather goods
4199	Miscellaneous kinds of business
4200	Manufacturers' sales branches and offices
4210	Automotive
4211	Automobiles and other motor vehicles
4212	Automotive equipment
4213	Tires and tubes
4220	Chemicals, drugs, and allied products
4222	Drug proprietaries and toiletries
4223	Drug sundries
4224	Dyestuffs
4225	Explosives
4226	Industrial chemicals
4228	Paints and varnishes
4229	Chemicals, drugs, and allied products, n. e. c.
4230	Dry goods and apparel
4232	Piece goods
4233	Hosiery and underwear
4234	Notions and other dry goods
4235	Clothing and furnishings (full line)

Wholesale—Continued

Manufacturers' sales branches and offices—Continued

	Dry goods and apparel—Continued
4236	Men's and boys' clothing and furnishings
4237	Women's and children's clothing and furnishings
4238	Millinery and millinery supplies
4239	Shoes and other footwear
4240	Petroleum and its products
4250	Groceries and food specialties
4251	Breakfast cereals
4252	Canned goods
4254	Confectionery
4256	Flour
4257	Meats and provisions
4258	Sugar
4259	Groceries and food specialties, n. e. c.
4260	Farm products—consumer goods
4261	Dairy products
4262	Poultry and poultry products
4263	Dairy and poultry products
4269	Farm products—consumer goods, n. e. c.
4280	Tobacco and its products (except leaf)
4290	Beer, wines, and liquor
4291	Beer and other fermented malt liquors
4292	Wines and liquors
4300	Electrical goods
4301	Electrical merchandise (full line)
4302	Apparatus and equipment
4303	Wiring supplies and construction materials
4304	Radios, refrigerators, and appliances
4310	Furniture and housefurnishings
4311	China, glassware, and crockery
4312	Floor coverings
4313	Furniture (household and office)
4314	Housefurnishings (except as specified)
4315	Musical instruments and sheet music
4320	Hardware
4330	Lumber and construction materials
4331	Builders' supplies (full line)
4332	Lumber and millwork
4333	Brick, tile, and terra cotta
4334	Cement, lime, and plaster
4335	Glass
4339	Lumber and construction materials, n. e. c.
4340	Machinery, equipment, and supplies
4341	Commercial machinery and equipment
4342	Farm and dairy machinery and equipment
4343	Industrial equipment and supplies
4344	Oil-well and oil-refining machinery and equipment
4345	Other industrial machinery
4346	Professional equipment and supplies
4347	Service equipment and supplies
4348	Transportation equipment and supplies
4349	Machinery equipment and supplies, n. e. c.

Wholesale—Continued

Code	Manufacturers' sales branches and offices—Continued
4350	Metals and minerals (except petroleum and scrap)
4351	Coke
4352	Iron and steel (except structural steel)
4353	Structural iron and steel
4354	Wire, wire fence, and wire rope
4355	Copper
4356	Sheet-metal products
4359	Metals and minerals (except petroleum and scrap), n. e. c.
4360	Paper and its products
4361	Wrapping or coarse paper and products
4362	Fine or printing and writing papers
4363	Stationery and stationery supplies
4364	Wallpaper
4370	Plumbing and heating equipment and supplies
4371	Plumbing and heating (full line)
4372	Heating (including stoves and ranges)
4373	Plumbing fixtures, equipment, and supplies
4379	Plumbing and heating equipment and supplies, n. e. c.
4390	Manufacturers' sales branches and offices, n. e. c.
4391	Amusement and sporting goods
4392	Farm supplies
4393	Jewelry
4394	Optical goods
4397	Forest products (except lumber)
4398	Leather and leather goods
4399	Miscellaneous kinds of business
4400	Petroleum, bulk-tank stations
4500	Agents and brokers
4510	Automotive
4511	Automobiles and other motor vehicles
4512	Automotive equipment
4513	Tires and tubes
4520	Chemicals, drugs, and allied products
4521	Drugs (full line)
4522	Drug proprietaries and toiletries
4523	Drug sundries
4524	Dyestuffs
4525	Explosives
4526	Industrial chemicals
4527	Naval stores
4528	Paints and varnishes
4529	Chemicals, drugs, and allied products, n. e. c.
4530	Dry goods and apparel
4531	Dry goods (full line)
4532	Piece goods
4533	Hosiery and underwear
4534	Notions and other dry goods
4535	Clothing and furnishings (full line)
4536	Men's and boys' clothing and furnishings
4537	Women's and children's clothing and furnishings
4538	Millinery and millinery supplies
4539	Shoes and other footwear

Wholesale—Continued

	Agents and brokers—Continued
Code	
4540	Petroleum and its products
4550	Groceries and food specialties
4551	Groceries (full line)
4552	Canned goods
4553	Coffee, tea, and spices
4554	Confectionery
4555	Fish and sea foods
4556	Flour
4557	Meats and provisions
4558	Sugar
4559	Groceries and food specialties, n. e. c.
4560	Farm products—consumer goods
4561	Dairy products
4562	Poultry and poultry products
4563	Dairy and poultry products
4564	Fruits and vegetables (fresh)
4569	Farm products—consumer goods, n. e. c.
4570	Farm products—raw materials
4571	Cotton
4572	Grain
4573	Hides, skins, and furs (raw)
4574	Horses and mules
4575	Livestock
4576	Silk (raw)
4577	Tobacco (leaf)
4578	Wool and mohair
4579	Farm products—raw materials, n. e. c.
4580	Tobacco and its products
4590	Beer, wines, and liquor
4591	Beer and fermented malt liquors
4592	Wines and liquors
4600	Electrical goods
4601	Electrical merchandise (full line)
4602	Apparatus and equipment
4603	Wiring supplies and construction materials
4604	Radios, refrigerators, and appliances
4610	Furniture and housefurnishings
4611	China, glassware, and crockery
4612	Floor coverings
4613	Furniture (household and office)
4614	Housefurnishings (except as specified)
4615	Musical instruments and sheet music
4620	Hardware
4621	Hardware (full line)
4622	Hardware (specialty lines)
4630	Lumber and construction materials
4631	Builders' supplies (full line)
4632	Lumber and millwork
4633	Brick, tile, and terra cotta
4634	Cement, lime, and plaster
4635	Glass

Wholesale—Continued

Agents and brokers—Continued

Code	Lumber and construction materials—Continued
4636	Sand, gravel, and crushed stone
4639	Lumber and construction materials, n. e. c.
4640	Machinery, equipment, and supplies
4641	Commercial machinery and equipment
4642	Farm and dairy machinery and equipment
4643	Industrial equipment and supplies
4644	Oil-well and oil-refining machinery and equipment
4645	Other industrial machinery
4646	Professional equipment and supplies
4647	Service equipment and supplies
4648	Transportation equipment and supplies
4649	Machinery equipment and supplies, n. e. c.
4650	Metals and minerals (except petroleum and scrap)
4651	Coal and coke
4652	Iron and steel (except structural)
4653	Structural iron and steel
4654	Wire, wire fence, and wire rope
4655	Copper
4656	Sheet-metal products
4659	Metals and minerals (except petroleum and scrap), n. e. c.
4660	Paper and its products
4661	Wrapping or coarse paper and products
4662	Fine or printing and writing paper
4663	Stationery and stationery supplies
4664	Wallpaper
4670	Plumbing and heating equipment and supplies
4671	Plumbing and heating (full line)
4672	Heating (including stoves and ranges)
4673	Plumbing fixtures, equipment, and supplies
4679	Plumbing and heating equipment and supplies, n. e. c.
4680	Waste materials
4681	Iron and steel scrap
4682	Junk and scrap (full line)
4683	Waste paper, rags, and rubber
4684	Nonferrous-metals scrap
4690	Agents and brokers, n. e. c.
4691	Amusement and sporting goods
4692	Farm supplies
4693	Jewelry
4694	Optical goods
4695	General merchandise
4696	Flowers and nursery stock
4697	Forest products (except lumber)
4698	Leather and leather goods
4699	Miscellaneous kinds of business
4700	Assemblers of farm products
4750	Groceries and food specialties
4760	Farm products—consumer goods
4761	Dairy products
4762	Poultry and poultry products

Wholesale—Continued

Assemblers of farm products—Continued

Code	Farm products—consumer goods—Continued
4763	Dairy and poultry products
4764	Fruits and vegetables (fresh)
4769	Farm products—consumer goods, n. e. c.
4770	Farm products—raw materials
4771	Cotton
4772	Grain
4773	Hides, skins, and furs (raw)
4774	Horses and mules
4775	Livestock
4776	Silk (raw)
4777	Tobacco (leaf)
4778	Wool and mohair
4779	Farm products—raw materials, n. e. c.
4790	Assemblers, n. e. c.
4792	Farm supplies
4796	Flowers and nursery stock
4797	Forest products (except lumber)
4799	Miscellaneous kinds of business
4800	Chain-store warehouses
4810	Grocery chain-store warehouses
4820	General merchandise chain stores
4830	Shoe chain-store warehouses
4840	Furniture chain-store warehouses
4850	Drug chain-store warehouses
4860	Liquor chain-store warehouses
4890	Chain-store warehouses, n. e. c.

Retail

Code	Food
4900	Food
4910	Grocery stores
4920	Meat and fish markets (including sea food)
4921	Meat and fish markets
4922	Meat markets
4923	Fish markets
4930	Fruit stores and vegetable markets
4940	Candy, confectionery, and nut stores
4950	Dairy-products stores and milk dealers
4951	Dairy-products stores
4952	Milk dealers
4990	Food stores (excluding restaurants and lunch rooms), n. e. c.
4991	Egg and poultry dealers
4992	Delicatessen stores
4993	Bakeries and caterers, with retail stores
4999	Food stores, n. e. c.
5000	General merchandise
5010	Department stores
5020	Mail-order houses, general merchandise
5030	Limited-price variety stores
5040	Dry-goods stores

Retail—Continued

Code	General merchandise—Continued
5050	General merchandise stores
5051	General merchandise
5053	Army and Navy goods stores
5054	Industrial stores
5060	General stores
5100	Apparel and accessories
5110	Men's and boys' clothing and furnishing stores
5120	Women's ready-to-wear stores
5130	Women's accessory and specialty stores
5131	Millinery specialty shops
5132	Corset and lingerie specialty shops
5133	Hosiery specialty shops
5134	Apparel accessory stores
5139	Women's apparel n. e. c.
5140	Children's specialty and infants' wear shops
5150	Family-clothing stores
5160	Shoe stores
5170	Custom tailors
5190	Miscellaneous apparel and accessories, n. e. c.
5191	Furriers and fur shops
5192	Umbrella shops (including parasols and canes)
5199	Other apparel, n. e. c.
5200	Furniture, home furnishings, and equipment
5210	Furniture stores (other than office furniture)
5211	Furniture stores (other than office furniture)
5212	Interior decorators, with new furniture
5220	Specialized home furnishings and equipment stores
5221	Floor-covering stores
5222	Drapery, curtain, and upholstery stores
5223	Lamp and shade shops
5224	China, glassware, crockery, tinware, and enamel stores
5225	Picture and framing stores
5226	Awning, flag, banner, window-shade, and tent shops
5229	Other home furnishings and equipment stores, n. e. c.
5230	Electrical and gas household-appliance stores, including radio dealers
5231	Electrical and gas household-appliance stores
5232	Radio stores
5300	Automobile and automotive equipment
5310	Motor-vehicle dealers—new and used cars
5311	Retail only
5312	Retail and wholesale combined
5320	Motor-vehicle dealers—used cars only
5330	Accessory, tire, and battery dealers
5390	Automotive dealers, n. e. c. (includes parts dealers, aircraft and motorboat dealers, dealers of motorcycles, but not of bicycles)
5400	Filling stations
5410	Filling stations
5411	Filling stations only
5412	Filling stations with repair shops or unrelated merchandise
5500	Drug stores

Code	<i>Retail—Continued</i>
5600	Eating and drinking places
5610	Restaurants, cafeterias, and lunchrooms
5620	Lunch counters and refreshment stands
5630	Drinking places
5700	Hardware
5710	Hardware stores
5720	Farm-implement dealers, with or without hardware
5800	Lumber and building supplies
5810	Lumber and building material dealers
5820	Heating and plumbing equipment dealers
5830	Paint, glass, and wallpaper stores
5840	Electrical-supply stores
5890	Building-equipment stores, n. e. c.
5900	Liquor stores
6000	Second-hand stores
6010	Second-hand clothing and shoe stores
6020	Second-hand furniture stores
6030	Second-hand book stores
6040	Second-hand tires, accessories, and automotive-part dealers
6090	Second-hand stores, n. e. c.
6100	Retail trade, n. e. c.
6110	Book and stationery stores
6120	Sporting-goods stores, including bicycle shops
6130	Farm and garden supply stores
6140	Florists
6150	Cigar stores
6160	News dealers and newsstands
6170	Jewelry stores
6180	Fuel and ice dealers
6181	Coal and wood dealers
6182	Fuel-oil dealers
6183	Ice dealers
6190	Retail stores, n. e. c.
6191	Music stores (other than radio)
6192	Photographic supply stores
6193	Artist supply and material stores
6194	Luggage and leather-goods stores
6195	Antique stores
6196	Gift, novelty, and souvenir shops
6197	Opticians' or optometrists' stores
6199	Retail stores, n. e. c.

Division F.—Finance, insurance, and real estate

Finance

6200	Banking
6300	Credit agencies other than banks
6500	Investment trusts and investment companies
6600	Holding companies
6700	Security and commodity brokers, dealers, and exchanges
6800	Finance, n. e. c.

Insurance

6900	Insurance carriers
6910	Life insurance
6920	Fire and marine insurance
6930	Casualty, fidelity, surety, etc.
6940	Accident and health insurance
6950	Title insurance
6960	Financial obligation insurance
7000	Insurance agents, brokers, and service
7010	Insurance agents
7020	Insurance brokers
7030	Organizations servicing insurance companies
7040	Policyholders consulting service

Real estate

7100	Real estate
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Division G.—Transportation, communication, and other public utilities*Transportation*

7200	Railroads
7210	Freight or freight and passenger railroads
7220	Switching and terminal companies
7230	Sleeping-car and other passenger-car service
7240	Railway express service
7300	Street, suburban, and interurban railways
7310	Street and suburban railways
7320	Interurban railways
7400	Highway passenger transportation
7410	Local bus lines
7420	Bus lines other than local
7430	Taxicabs
7440	Fixed facilities
7490	Miscellaneous highway passenger transportation, n. e. c.
7500	Highway freight transportation
7510	Local trucking
7520	Trucking other than local
7530	Fixed facilities for handling freight
7600	Water transportation
7610	Ocean-borne foreign trade
7620	Coastwise and intercoastal trade
7630	Great Lakes trade
7640	Trade on rivers and canals
7650	Local service
7651	Ferries
7652	Lighterage
7660	Auxiliary services
7661	Towing and tugboats
7662	Piers and docks, including buildings and facilities
7663	Loading, unloading, stevedoring, etc.
7664	Canal operation
7700	Air transportation
7710	Common carriers
7720	Other flying
7730	Airports and flying fields

Code	<i>Transportation—Continued</i>
7800	Pipe-line transportation
7810	Petroleum
7820	Gasoline
7900	Warehousing and storage
8000	Services incidental to transportation
8010	Forwarding
8020	Packaging, crating, etc.
8030	Arrangement of transportation
8040	Stockyards
8050	Renting of railroad cars
8090	Other services incidental to transportation
	<i>Communication and other public utilities</i>
8100	Communication
8110	Telephone (wire and radio)
8120	Telegraph (wire and radio) and cable
8130	Radio broadcasting and television
8190	Other communication
8200	Heat, light, and power
8210	Electric light and power
8220	Gas (including manufacturing)
8230	Steam heat and power
8300	Water and sanitary services
8310	Water
8320	Sanitary service

Division H.—Services (personal, business, recreational, public, professional, and other)

8400	<i>Hotels, rooming houses, and other lodging places</i>
8410	Hotels
8420	Rooming and boarding houses
8430	Camps
8500	<i>Personal services</i>
8510	Laundries and laundry services
8511	Power laundries
8512	Laundries other than power
8513	Linen supply (including diaper service)
8520	Cleaning and dyeing plants
8521	Cleaning and dyeing plants (other than rug cleaning)
8522	Rug cleaning and repairing plants
8530	Photographic studios (including commercial photography)
8531	Photographic studios (except commercial photography)
8532	Commercial photography
8540	Barber and beauty shops
8550	Shoe-repair shops and shoeshine parlors (including hat cleaning)
8560	Funeral service (including crematorium)
8570	Cleaning, pressing, alteration, and garment-repair shops
8571	Cleaning, pressing, alteration, and clothing repair
8572	Fur repair and storage
8590	Miscellaneous personal services
8591	Turkish baths and massage parlors
8599	Miscellaneous personal services, n. e. c.
8600	<i>Domestic service</i>

Code	
8700	<i>Business services, n. e. c.</i>
8710	Advertising
8720	Adjustment and credit bureaus and collecting agencies
8730	Duplicating, addressing, blueprinting, photostating, mailing, and mailing-list services
8740	Private employment agencies
8750	Services to dwellings and other buildings
8751	Window washing
8752	Disinfecting and exterminating services
8759	Other services to dwellings and other buildings
8760	News syndicates
8790	Other business services
8800	<i>Automobile repair services and garages</i>
8810	Automobile rentals
8820	Storage garages
8830	Parking lots
8840	Automobile tops and body repair
8850	Battery and ignition service
8860	General automobile repair shops
8890	Other automobile repairs and services
8891	Radiator repair shops
8892	Tire repair shops
8893	Automobile paint shops
8894	Automobile laundries
8899	Automobile specialized repair shops and services, n. e. c.
8900	<i>Miscellaneous repair services and hand trades</i>
8910	Blacksmith shops
8920	Electrical repair shops
8930	Watch, clock, and jewelry repair
8940	Upholstery and furniture repair
8950	Musical instrument, piano, and organ repair (including piano and organ tuning)
8990	Repair shops and miscellaneous hand trades, n. e. c.
8991	Bicycle repair shops
8992	Harness and leather goods repair shops
8993	Locksmith and gunsmith shops
8994	Armature rewinding shops
8999	Other repair shops and miscellaneous hand trades, n. e. c.
9000	<i>Motion pictures</i>
9010	Motion-picture production and distribution
9011	Motion-picture production (including distribution if from same establishment)
9012	Motion-picture distribution (exclusive of production)
9020	Motion-picture service industries
9030	Motion-picture theaters (including vaudeville)
9100	<i>Amusement, recreation, and related services (other than motion pictures)</i>
9110	Dance halls, studios, and schools
9120	Theaters and theatrical producers (plays, concerts, operas, etc.)
9130	Bowling, billiards, and pool

Code	<i>Amusements, recreation, etc.—Continued</i>
9140	Sports (baseball, football, golf clubs, skating rinks, swimming pools, riding academies, etc.)
9141	Baseball and football clubs, sports and athletic fields, and sports promoters
9142	Golf clubs
9143	Bathing beaches
9144	Swimming pools
9145	Skating rinks
9146	Riding academies
9149	Other sports
9150	Bands, orchestras, and entertainers
9160	Race-track operation (horse, dog, etc.)
9190	Miscellaneous
9200	<i>Medical and other health services</i>
9210	Offices of physicians and surgeons
9220	Offices of dentists and dental surgeons
9230	Offices of osteopathic physicians
9240	Offices of chiropractors
9250	Nursing
9260	Hospitals
9270	Medical and dental laboratories
9280	Veterinary services (including animal hospitals)
9290	Miscellaneous health and allied services
9300	<i>Legal services</i>
9400	<i>Engineering and other professional services, n. e. c.</i>
9410	Professional engineering and architectural services
9420	Accounting, auditing, and bookkeeping services
9490	Professional services, n. e. c.
9500	<i>Educational services</i>
9510	Elementary, secondary, and preparatory schools
9511	Public schools
9512	Parochial schools (Roman Catholic)
9513	Denominational and sectarian schools (other than Roman Catholic)
9514	Other
9520	Junior colleges, colleges, universities, and professional schools
9530	Vocational schools
9531	Public vocational schools
9532	Private vocational schools
9540	Correspondence schools
9550	Nonprofit educational and scientific research agencies
9560	Libraries, museums, botanical and zoological gardens
9561	Libraries
9562	Museums
9563	Botanical and zoological gardens
9590	Other schools and related educational services
9600	<i>Nonprofit membership, charitable, and religious organizations</i>
9610	Trade associations, chambers of commerce, boards of trade, and general business associations
9620	Professional organizations
9630	Labor organizations
9640	Civic, social, recreational, and fraternal associations
9650	Political organizations

- Code *Nonprofit membership, etc.*—Continued
 9660 Religious organizations
 9670 Charitable organizations
 9690 Miscellaneous nonprofit membership organizations

Division I.—Government ²

9700 *Government*

This group includes only regular governmental activities. Business establishments owned by government are to be classified like other business establishments, but may be identified as governmental by means of a supplementary code.

The classification given here identifies the type of activity of governmental units. The units themselves must be identified by an individual "employer number," as is true of any other employer.

Each of the groups listed may be amplified to meet local needs.

- 9700 Legislative bodies
 9730 Judicial bodies (including quasi judicial bodies whose function is not primarily administrative)
 9750 Administrative bodies
 9750 Police departments
 9760 Fire departments
 9770 Health departments
 9780 Sanitation departments
 9790 Regulatory bodies
 9800 Taxing bodies
 9810 Advisory bodies
 9899 Administrative bodies, n. e. c.

Division J.—Unclassified—Insufficient information

- 9900 Nonclassifiable establishments

Code for Occupation of Injured Workers

At present there is no standard code for occupations, although a committee sponsored jointly by the Central Statistical Board (Federal Government) and the American Statistical Association is now engaged in drafting such a code. The U. S. Employment Service has completed an extensive survey of occupations by industries and is now preparing a Dictionary of Occupational Titles. Other governmental agencies, such as the Bureau of the Census, have, from time to time, developed occupational codes for their own uses. This is the first time, however, that a concerted and cooperative attempt is being made to establish a standard classification and code.

The following classification is suggested for use until superseded by the standard. The occupations are listed alphabetically, and code number intervals are provided for additional occupations if such additions are found necessary.

² The classification detail given here is not part of the standard classification.

CLASSIFICATION OF OCCUPATIONS

Code

A

- 003 Accountants and auditors
- 006 Actors and actresses
- 009 Advertising agents
- 012 Agents, n. e. c.³
- Apprentices to building and hand trades
- 015 Carpenters
- 018 Electricians
- 021 Machinists
- 024 Plumbers
- 027 Building and hand trades, n. e. c.
- 030 Apprentices to printing trades
- 033 Apprentices to specified trades, n. e. c.
- 036 Apprentices to trades not specified
- 039 Architects
- 042 Artists, sculptors, and teachers of art
- 045 Athletes, and sports instructors and officials
- 048 Attendants, filling station, parking lot, garage, and airport
- 051 Attendants, hospital and other institutional
- 054 Attendants, professional and personal service, n. e. c.
- 057 Auctioneers
- 060 Authors, editors, and reporters
- 063 Aviators

B

- 066 Baggage men, transportation
- 069 Bakers
- 072 Barbers, beauticians, and manicurists
- 075 Bartenders
- 078 Blacksmiths, forgemen, and hammermen
- 081 Blasters and powdermen
- 084 Boarding-house and lodging-house keepers
- 087 Boatmen, canalmen, and lockkeepers
- 090 Boilermakers
- 093 Bookkeepers and cashiers (except bank cashiers)
- 096 Bootblacks
- 099 Brakemen, railroad
- 102 Brickmasons, stonemasons, and tile setters
- 105 Brokers and commission men
- 108 Buyers and department heads, store

C

- 111 Cabinetmakers
- 114 Canvassers and solicitors
- 117 Carpenters
- 120 Cement or concrete finishers
- 123 Chainmen, rodmen, and axmen, surveying
- 126 Charwomen and cleaners

³ Not elsewhere classified.

Code

- 129 Chauffeurs and drivers, bus, taxi, truck, and tractor ⁴
- 132 Chemists, assayers, and metallurgists
- 135 Chiropractors
- 138 Clergymen
- 141 Clerks and clerical workers, n. e. c.
- 144 Collectors, bill and account
- 147 College presidents, professors, and instructors
- 150 Commercial travelers and sales agents
- 153 Compositors and typesetters
- 156 Conductors, bus and street railway
- 159 Conductors, railroad
- 162 Cooks, except private family
- 165 Country buyers and shoppers of livestock and other farm products
- 168 County agents, farm demonstrators, etc.
- 171 Cranemen: derrickmen, hoistmen, etc.
- 174 Credit men
- 177 Crossing watchmen, railroad

D

- 180 Dancers and chorus girls
- 183 Decorators and window dressers
- 186 Delivery men and drivers, bakery, laundry, dry-cleaning establishment, and store ⁵
- 189 Demonstrators
- 192 Dentists
- 195 Designers
- 198 Draftsmen
- 201 Draymen, teamsters, and carriage drivers
- 204 Dressmakers and seamstresses (not in factory)
- 207 Dyers

E

- 210 Electricians
- 213 Electrotypers and stereotypers
- 216 Elevator operators
- 219 Engineers, stationary
- 220 Engravers (except photoengravers)
- 223 Express messengers and railway-mail clerks

F

- 226 Farmers
- 229 Farm laborers
- 232 Farm managers and foremen
- 235 Filers, grinders, buffers, and polishers, metal
- 238 Firemen, fire department
- 241 Firemen, except locomotive and fire department
- 244 Fishermen and oystermen
- 247 Floormen and floor managers, store
- 250 Foremen

⁴ Except for bakeries, laundries, dry-cleaning establishments, and stores.

⁵ Includes truck drivers for bakeries, laundries, dry-cleaning establishments, and stores.

Code

- 253 Foresters, forest rangers, and timber cruisers
- 256 Fruit and vegetable graders and packers, except in cannery
- 259 Furnace men, smelter men, and pourers
- 262 Furriers

G

- 265 Garage laborers, car washers, and greasers
- 268 Glaziers
- 271 Grounds keepers of parks, cemeteries, etc.

H

- 274 Healers and medical-service occupations, n. e. c.
- 277 Heaters, metal
- 280 Heat treaters, annealers, and temperers
- 283 Housekeepers, private family
- 286 Housekeepers, stewards, and hostesses, except private family
- 289 Hucksters and peddlers

I

- 292 Inspectors
- 295 Insurance agents and brokers

J

- 298 Janitors and sextons
- 301 Jewelers, watchmakers, goldsmiths, and silversmiths

*K**L*

- 304 Laborers
- 307 Laundry operatives and laundresses
- 310 Lawyers and judges
- 313 Librarians
- 316 Library assistants and attendants
- 319 Linemen and servicemen, telegraph, telephone, and power
- 322 Locomotive engineers
- 325 Locomotive firemen
- 328 Longshoremen and stevedores
- 331 Loom fixers
- 334 Lumbermen, raftsmen, and wood choppers

M

- 337 Machinists
- 340 Mail carriers
- 343 Managers and superintendents, building
- 346 Marshals and constables
- 349 Meat cutters, except slaughter and packing house
- 352 Mechanics and repairmen, airplane
- 355 Mechanics and repairmen, automobile
- 358 Mechanics and repairmen, railroad and car shop

Code

- 361 Mechanics and repairmen, n. e. c.
- 364 Messengers, errand, and office boys and girls
- 367 Midwives and practical nurses
- 370 Millers, grain, flour, feed, etc.
- 373 Milliners and millinery dealers
- 376 Millwrights
- 379 Miners and operatives, extraction of minerals
- 382 Molders, metal
- 385 Motion-picture projectionists
- 388 Motormen, street, subway, and elevated
- 391 Motormen, vehicle (except railroad, railway, and bus)
- 394 Musicians and teachers of music

N

- 397 Newsboys

O

- 400 Office-machine operators
- 403 Officials of lodges, societies, unions, etc.
- 406 Oilers of machinery
- 409 Operatives, n. e. c.
- 412 Opticians and optometrists
- 415 Osteopaths

P

- 418 Painters, construction and maintenance ⁶
- 421 Painters, except construction and maintenance ⁷
- 424 Paperhangers
- 427 Pattern and model makers, except paper
- 430 Pharmacists
- 433 Photoengravers and lithographers
- 436 Photographers
- 439 Photographic reproduction occupations
- 442 Physicians' and dentists' assistants and attendants
- 445 Physicians and surgeons
- 448 Plasterers
- 451 Plumbers and gas and steam fitters
- 454 Policemen and detectives, public service
- 457 Policemen and detectives, except public service
- Porters
 - 460 Baggage
 - 463 Pullman
 - 466 Porters, n. e. c.
- 469 Postmasters
- 472 Power-station operators
- 475 Pressmen and plate printers, printing
- 478 Professional occupations, n. e. c.
- 481 Proprietors, managers, and officials

⁶ Includes painters, varnishers, lacquerers, and enamellers, building, bridge, shipyard, railroad, etc.

⁷ Includes painters, varnishers, lacquerers, and enamellers of factory products and those in shops.

Code

- 484 Public officials, n. e. c.
 487 Purchasing agents and buyers, n. e. c.⁸

*Q**R*

- 490 Radio and wireless operators
 493 Real-estate agents and brokers
 496 Religious workers
 499 Retail dealers and managers
 502 Rollers and roll hands, metal
 505 Roofers and slaters

S

- 508 Sailors and deck hands
 511 Sales clerks and salespersons
 514 Sawyers
 517 Semiprofessional and recreational occupations, n. e. c.
 520 Servants, except private family
 523 Servants, private family
 526 Sheriffs and bailiffs
 529 Ship officers, pilots, pursers, and engineers
 532 Shipping and receiving clerks
 535 Shoemakers and repairers (not in factory)
 538 Showmen
 541 Skilled occupations, n. e. c.
 544 Social and welfare workers
 547 Soldiers, sailors, and marines, U. S.
 550 Stenographers and typists
 553 Stonecutters and stone carvers
 556 Structural- and ornamental-metal workers
 559 Surveyors
 562 Switchmen, railroad

T

- 565 Tailors and tailoresses
 568 Teachers, school
 571 Teachers, trade school, business school, etc.
 Technical engineers
 574 Chemical
 577 Civil (excluding surveyors)
 580 Electrical
 583 Industrial
 586 Mechanical
 589 Mining and metallurgical
 592 Technicians and assistants, laboratory
 595 Technicians, except laboratory
 598 Telegraph messengers
 601 Telegraph operators

⁸Includes most buyers of commodities except commission brokers; buyers for stores; and country buyers and shippers of livestock and other farm products.

Code

- 604 Telephone operators
- 607 Ticket, station, and express agents, transportation
- 610 Tin smiths, coppersmiths, and sheet-metal workers
- 613 Tool makers and die makers and setters
- 616 Trained nurses

U

- 619 Undertakers
- 622 Upholsterers
- 625 Ushers, amusement place or assembly

V

- 628 Veterinary surgeons

W

- 631 Waiters and waitresses
- 634 Weighers
- 637 Welders and burners
- 640 Wholesale dealers and managers

X-Y-Z

Chapter 9.—Accident Cause Factor Classification and Codes

A poster published by the National Safety Council defines "accident" as "a word used to excuse neglect; to hide our weakness; ease our conscience and cover our failure." The point has already been made that accidents "don't just happen," that they are caused and that they can be prevented if the causes are known. (See chapter 1.)

The comprehensive classification and codes for accident-cause analysis given here are based on a revision of the "Proposed American Recommended Practice for Compiling Industrial Injury Causes," more popularly known as the "Heinrich Cause Code."¹ This classification was designed to supersede the provisions relating to causes in Bulletin No. 276, Standardization of Industrial Accident Statistics, published by the U. S. Bureau of Labor Statistics in 1920. Under the auspices of the American Standards Association a sectional committee was set up, sponsored jointly by the International Association of Industrial Accident Boards and Commissions, the National Safety Council, and the National Council on Compensation Insurance. A subcommittee of this sectional committee, under the chairmanship of Mr. H. W. Heinrich, a well-known safety engineer, prepared the accident-cause code.

The subcommittee recognized the need for accident data of more value for purposes of accident prevention than those now available. It also recognized that an entirely new approach was necessary, and that existing codes, generally, were faulty in not bringing out the necessary facts in such a fashion as to be easily handled statistically and in such a form as to be practically useful for accident prevention. The basic philosophy of the proposed code is that accidents happen because of an unsafe act or a condition, or both, which, if eliminated, should prevent a recurrence of such accidents.

To make the unsafe act and unsafe condition intelligible and meaningful, however, they must be related to the framework or setting in which the accident occurred. Knowing that the unsafe act was the removal of a guard is not sufficient. It must be clear that the guard was removed from the gears of a machine, say a lathe, and that as a

¹ 1937 edition, American Standards Association. The version presented here is patterned after a preliminary draft of the subcommittee of the Sectional Committee on Standardization of Methods of Recording and Compiling Accident Statistics, 1939.

consequence the worker's hand was caught between the gears. Changing somewhat the order of the items named, we must know: (1) the defective object most closely connected with the accident, which may be a machine, a tool, a device, a vehicle, an animal, a substance, etc., and which in this code is called the "agency"; (2) *the part of the agency*; (3) *the unsafe mechanical or physical condition*; (4) *the type of accident*, i. e., whether a fall, a slip, being struck by an object, an industrial disease, etc.; (5) *the unsafe act*; and (6) *the unsafe personal factor*.

This method of analysis breaks an accident into its component parts, which may then be combined in whatever way will best serve the purpose of accident prevention. The application of the classification will be made clearer by tracing a given accident through the various stages of analysis. The accident selected is one occurring on a lathe and resulting in an injury to the worker's hand because it was caught between the unguarded inrunning end gears. The guards were removed by the worker, contrary to instructions, to facilitate cleaning. The coding for this accident is as follows:

- (1) Agency: *Lathe*.
- (2) Part of agency: *Gears*.
- (3) Unsafe mechanical or physical condition: *Unguarded*.
- (4) Accident type: *Caught in, on, or between*.
- (5) Unsafe act: *Removing safety devices*.
- (6) Unsafe personal factor: *Willful disregard of instructions*.

From these coded facts the accident can be reconstructed as follows: A worker was injured because he was caught between the gears of a lathe which was unguarded because he had removed the safety devices (i. e. the guard) in willful disregard of instructions.

If this accident were coded in keeping with the prevailing practice, the cause of the accident would be coded as a lathe—with probably no further information. Nothing would be reflected in the coding to show that the lathe was unguarded, that the worker had removed the guard, and that he had done so in violation of instructions. The contrast between the analysis under the proposed code and the bare indication under the prevailing practice that the accident involved a lathe amply illustrates the differences between the two methods of approach. It should be equally clear that the coding method proposed here furnishes important information for the direction of safety efforts, whereas present coding methods most decidedly fail to do so.

All the refinement of coding, however, is useless if the coder does not have the necessary insight into accident hazards to permit a clear recognition of the unsafe practices and unsafe conditions involved in

the accidents reported. In the absence of such insight, which can come only from practical experience, the coding is wasted, the resulting statistics most likely will be wrong, and the data submitted to guide factory inspectors and safety engineers may be faulty. With faulty coding, statistics based on the accident-cause analysis proposed here are not worth the paper they are printed on, let alone the time, effort, and expense involved. Experience has shown that the person best fitted for this part of the coding is a safety engineer or an experienced factory inspector who through years in the work has absorbed the facts pertinent to analysis of accident hazards. To repeat, and the point cannot be emphasized too strongly or too often, *if accurate coding of accident causes is desired along the lines proposed here, the coder should be an experienced safety engineer or factory inspector who has learned the coding procedure, or a statistician who has had adequate safety experience.*

Purpose of Classification

The purpose of this classification is to provide a statistical method of analysis of accident factors, from which information essential for accident prevention can be compiled.

This classification is predicated on the proved theory that nearly all industrial accidents are preventable. The accident-cause factors are recognized as an unsafe condition, an unsafe act, or a combination of both. The analysis proposed here is aimed at bringing out those unsafe factors which are most closely related to the injury and which lend themselves to correction. The classification is not intended to deal with obscure causative factors, or factors too far removed in the accident sequence to be definitely ascertainable.

Definition of Accident

An accident is an event involving the contact of a person with an object, or a substance, or another person, or the exposure of the person to objects or conditions, or the movement of a person, which results in a personal injury.

NOTE.—Certain single occurrences, such as explosions, may result in injuries to a number of persons. *This code requires that an accident be coded and tabulated for each injury.* The term "accident," as here defined, includes industrial (occupational) diseases.

The Accident and Its Causal Factors

The analysis outlined here matches the method followed by a safety engineer when investigating an accident. He begins with the injury and determines that a certain machine, tool or other object,

substance or exposure was most closely associated with the injury, and that a particular part of the machine or object was closely associated with the injury. His interest centers chiefly about those agencies and agency parts which are unguarded or unsafe. As a next step, he identifies the particular accident type which occurred, this being a fall, struck by, caught in, on, or between, etc. He then seeks for an unsafe act of a person which brought about the accident resulting in the injury and determines also the unsafe personal factor which brought about the unsafe act.

The accident factors, therefore, are:

1. The agency.
2. The agency part.
3. The unsafe mechanical or physical condition.
4. The accident type.
5. The unsafe act.
6. The unsafe personal factor.

The rules for selection pertaining to each of those factors will be found with the appropriate classification for each factor.

Definitions of Accident Factors

The Agency.

The agency is the object, substance, or exposure which is most closely associated with the injury and which could have been properly guarded or corrected.

The Agency Part.

The agency part is the particular part of the selected agency which, chiefly because it could have been guarded or corrected, is most closely associated with the injury.

The Unsafe Mechanical or Physical Condition.

The unsafe mechanical or physical condition is the condition of the selected agency which could and should have been guarded or corrected.

The Accident Type.

The accident type is the manner of contact of the injured person with an object, substance, or exposure, or the movement of the injured person, which resulted in the injury.

The Unsafe Act.

The unsafe act is that violation of a commonly accepted safe procedure which resulted in the selected accident type.

The Unsafe Personal Factor.

The unsafe personal factor is the mental or bodily characteristic which permitted or occasioned the selected unsafe act.

Examples Illustrating Accident Cause Analysis

1. A painter fell from a ladder having a split rung. The ladder was used contrary to instructions. The rung broke and the painter fell to the floor, breaking his leg.

The defective agency most closely related to the injury is the ladder. No agency parts are given for ladders in this classification, and therefore none is to be named. The unsafe mechanical or physical condition is the defective condition of the ladder. The accident type which resulted in the injury is a fall to a different level. The unsafe act is using defective equipment. The unsafe personal factor is the willful disregard of instructions. The selected accident factors, therefore, are as follows:

Agency: *Ladder.*

Agency part: *None.*

Unsafe mechanical or physical condition: *Defective agency.*

Accident type: *Fall to a different level.*

Unsafe act: *Using unsafe equipment.*

Unsafe personal factor: *Willful disregard of instructions.*

2. A painter fell as in example 1, and in falling struck against an inexperienced oiler who was oiling the unguarded gears of a moving lathe. The man falling from the ladder was not injured, but the oiler's fingers were caught between the gears.

There are two defective agencies in this example, the ladder and the unguarded lathe. The rules require that the lathe is to be named because it is most closely associated with the injury in point of time and place. The agency part is the gears. The unsafe mechanical or physical condition is the absence of a guard. The injury resulted because the oiler's fingers were caught between the gears, and the accident type therefore is "caught in, on, or between." The unsafe act resulting in this accident type is oiling equipment in motion. The unsafe personal factor resulting in the unsafe act is the inexperience of the oiler.

The selected accident factors therefore are as follows:

Agency: *Lathe.*

Agency part: *Gears.*

Unsafe mechanical or physical condition: *Unguarded.*

Accident type: *Caught in, on, or between.*

Unsafe act: *Oiling moving equipment.*

Unsafe personal factor: *Inexperience.*

If the man who fell from the ladder had also been injured, two accidents would have to be tabulated—the accident to the oiler and the accident to the painter.

Agency and Agency Part

Rules for selection.—1. Select the unsafe object, substance, or exposure which resulted in the injury, and which could have been guarded or corrected.

2. In the absence of an agency as described in rule 1, select as the agency that object, substance, or exposure which was most closely associated with the injury.

NOTE.—The term “closely associated” requires consideration of both location and time as well as cause. If more than one agency is related to the injury, select the one on, in, or about which the person was injured (closely related by location). If two or more agencies are remotely located from the place of injury, select the one nearest the injury in point of time.

3. A person is to be selected as an agency *only* when there is no other.

4. No object or substance shall be named as the agency when it is structurally and physically a part of some other object or substance at the time of injury, or when it flies or breaks off the parent object or substance immediately prior to the injury. For example:

(a) A flywheel is properly part of an engine. It may be named as the agency itself, however, if it was not an integral part of the engine immediately prior to the injury.

(b) A fragment of a burred chisel flies off and causes injury. The chisel is to be named as the agency.

5. The rules for selecting the agency parts are the same as rules 1 and 2 for the selection of agency.

Classification of agency and agency part.—There are 16 major agency groups, each of which is developed in considerable detail. If so desired, classifications or tabulations may be made on the basis of these major groups. These groups are:

Code	AGENCY CLASSIFICATION BY MAJOR GROUPS
00	Machines
01	Pumps and prime movers
02	Elevators
03	Hoisting apparatus
04	Conveyors
05	Boilers and pressure vessels
06	Vehicles
07	Animals
08	Mechanical power transmission apparatus
09	Electric apparatus
10	Hand tools

Code

- 11 Chemicals
- 12 Highly inflammable and hot substances
- 13 Dusts
- 14 Radiations and radiating substances
- 15 Working surfaces, n. e. c.²
- 19 Agencies, n. e. c.
- XX Unclassified—insufficient data

The agency parts for each of these groups will be found with the detailed classifications of the respective group.

Each of these major groups in turn is developed in further detail. A secondary and more detailed classification than the one above, and which may be used to bring out more detail, but not as much as is given in the most detailed classification, is as follows:

AGENCY CLASSIFICATION BY MAJOR AND SECONDARY GROUPS

Code

- 0000 **Machines**
- 0000 Agitators, mixers, tumblers, etc.
- 0004 Buffers, polishers, sanders, grinders
- 0008 Casting, forging, and welding machines
- 0013 Crushing, pulverizing, etc., machines
- 0017 Drilling, boring, and turning machines
- 0021 Packaging and wrapping machines
- 0024 Picking, carding, and combing machines
- 0026 Planers, shapers, molders
- 0029 Presses
- 0038 Rolls
- 0042 Saws
- 0046 Screening and separating machines
- 0048 Shears, slitters, slicers
- 0055 Stitching and sewing machines
- 0056 Weaving, knitting, spinning machines
- 0060 Miscellaneous machines, n. e. c.
- 0100 **Pumps and prime movers**
- 0110 Engines and prime movers
- 0120 Pumps
- 0200 **Elevators**
- 0210 Passenger
- 0220 Freight
- 0300 **Hoisting apparatus (except elevators)**
- 0310 Cranes
- 0320 Shovels, derricks, dredges
- 0330 Other hoisting apparatus
- 0400 **Conveyors**
(No group detail)

² N. e. c. = not elsewhere classified.

Code	
0500	Boilers and pressure vessels
0510	Boilers
0520	Pressure vessels
0600	Vehicles
0610	Motor
0620	Animal drawn
0630	Railway
0640	Water
0650	Aircraft
0690	Vehicles, n. e. c.
0700	Animals
0710	Domestic
0720	Insects
0730	Snakes and reptiles
0740	Wild animals
0750	Fish
0790	Animals, n. e. c.
0800	Mechanical power transmission apparatus (No group detail)
0900	Electric apparatus
0900	Motors and generators
0910	Transformers and converters
0920	Conductors
0930	Switchboard, switches, breakers, fuses, etc.
0950	Rheostats, starters, rectifiers, etc.
0960	Magnetic and electrolytic apparatus
0970	Heating appliances, lamps, and tubes
0990	Electric apparatus, n. e. c.
1000	Hand tools
1010	Hand motive power
1050	Mechanical motive power
1080	Electrical motive power
1100	Chemicals
1100	Explosives
1110	Explosive gases or vapors
1120	Noxious vapors, gases, fumes
1130	Noxious or corrosive chemicals
1140	Poisonous vegetation
1199	Chemicals, n. e. c.
1200	Highly inflammable and hot substances (No group detail)
1300	Dusts
1300	Explosive dusts
1310	Organic dusts
1320	Inorganic dusts
1399	Dusts, n. e. c.

Code

1400 Radiations and radiating substances

(No group detail)

1500 Working surfaces, n. e. c.

(No group detail)

1900 Miscellaneous agencies

(No group detail)

xx00 Agency unclassified—insufficient data

The agency parts for the respective major groups will be found with the detailed classifications.

If desired, the analysis can be made in all the detail provided in the following classification. It is suggested that, where possible, this be done, even though the tabulations to be developed are to be shown by major and secondary groups rather than in all the detail given here. The advantage of this procedure is that it makes available when wanted the detail data along any particular line of investigation. The complete detailed classification and code follow.

DETAILED AGENCY AND AGENCY PART CLASSIFICATION

Machines ³		Machines—Continued	
Code		Code	
00000	<i>Agitators, mixers, tumblers, etc.</i>	Code	<i>Agitators, mixers, etc.—Con.</i>
00000	Agitator	00020	
00001		00021	
00002		00022	Emulsifier
00003	Beaters (including rag washer), paper products	00023	
		00024	
00004	Blender	00025	Mill—pug
00005	Blower (felt manufacturing)	00026	Mixer—concrete
00006		00027	Mixer—dough
00007		00028	Mixer—felt manufacturing
00008			(the devil)
00009	Churn	00029	Mixer, n. e. c.
00010	Churn, n. m. (butter, etc.)	00030	Mixer—pony or paint
00011	Compounder	00031	Mixer—sand
00012	Compounding mill—rubber	00032	
00013		00033	Reducer
00014		00034	
00015		00035	Saponifier
00016	Dissolver	00036	Sulphonators
00017	Drum—tanning, beating	00037	
00017	Dust drum	00018	Tumbler, n. e. c. (barrel, etc.)
00018	Dye mixer and blender (dry)	00038	
	(horizontal type)	00017	Washer—drum (leather)
00019		00039	

³ The notation "n. m." stands for "not mechanical," and therefore hand operated.

Machines—Continued		Machines—Continued	
Code		Code	
00040	<i>Buffers, polishers, sanders, grinders—with abrasive wheels, discs, or belts</i>	00076	<i>Trimmer or buffer—shoe</i>
00040	Buffer	00077	
00041		00078	Valve-grinding machines, n. m.
00042		00079	
00043	Emery-wheel dresser, n. m.	00080	<i>Casting, forging, and welding machines</i>
00044	Emery-wheel stand (automatic or power fed)	00080	Bender, n. m.
00045	Emery-wheel stand (hand fed)	00081	Bender and straightener
00046	Emery-wheel stand, n. m.	00082	Blower—glass
00047		00083	Bolt, nut, and rivet header, pointer, and maker, n. e. c.
00048		00084	Brazer
00049		00085	
00050	Floor polisher—scraper, scrubber, cleaner, finisher, etc.	00086	Casting machine—die
00051		00087	Casting machine—pig
00052		00088	Casting machine—type
00053	Glazer—leather	00089	Chain maker, n. e. c.
00044	Grinder (abrasive wheels) (automatic or power fed)	00090	Charger—open-hearth furnace, cupola, etc.
00045	Grinder (abrasive wheels) (hand fed)	00091	Coke pusher
00054	Grinder and polisher—plate glass	00092	Core maker
00055	Grindstone	00093	
00056	Grindstone, n. m.	00094	
00057	Gummer (saw)	00095	
00061		00096	Expander
00058		00097	Extruder (not hydraulic)
00054	Polisher and grinder—plate glass	00098	
00059		00099	Former—hat manufacturing
00060		00100	Flanger and expander (pipe, etc.)
00062	Polishers and buffers, n. e. c.	00092	Foundry machines, n. e. c.
00063	Pouncing machine (hat manufacturing)	00101	Forge (hammers, trip hammers, etc.)
00064		00102	
00065	Rubbing bed	00103	
00066		00101	Hammer—helve, trip, or Bradley
00067		00104	Hammer—drop
00068	Sander—belt	00105	Header
00069	Sander—disc	00106	
00070	Sander, n. e. c.	00107	Leaf spring machine
00044	Sharpener (abrasive)	00108	Linotype
00071		00109	
00072	Stone-products machines, n. e. c.—stone rubbing bed	00110	
00073	Stropper, metalworker, n. e. c.	00111	Monotype
00074	Surfacer—woodwork, n. e. c.	00092	Molder—crucible (foundry, n. e. c.)
00075		00092	Molder—foundry
		00112	

Machines—Continued		Machines—Continued	
Code	<i>Casting, forging, etc.—Con.</i>	Code	<i>Crushers, pulverizers, etc.—Con.</i>
00113	Nail maker (cut)—tack maker (wire)	00155	Mill (cottonseed and linseed grinder)
00114		00156	Mill—emery grinder
00115	Press—forge (hydraulic)	00157	Mill—fruit grinder or presser
00116		00153	Mill—pebble
00117	Riveter—hydraulic or pneumatic	00158	Mill—roller (flour, cereal, sugar, etc.)
00118	Riveter, n. e. c. (not punch-press type)	00159	Miller and grinder combined
00119		00160	
00120	Spring maker—coiled	00161	
00107	Spring maker—leaf	00162	
00121		00163	Tobacco stem crusher
00122	Stereotype	00164	
00123	Straightener	00165	
00124	Swaging machine	00166	
00113	Tack maker	00167	
00125		00168	
00126	Tube caster	00169	
00105	Upsetter (hot metal)	00170	<i>Drilling, boring, and turning machines</i>
00127	Welder, n. e. c.	00170	(a) Metalworking
00128	Welder, n. m. (oxyacetylene)	00170	Borer or drill (n. e. c.) (metal)
00129		00171	Boring bar, n. m.
00130	<i>Crushers, pulverizers, etc.</i>	00172	Breast drill, n. m.
00130	Breaker—candy	00173	
00131		00174	Drill—multiple spindle
00132		00175	Drill—radial
00133	Chopper, n. m.—ice	00176	Drill and tapper combined
00134	Coal crushers and screws	00177	
00135	Cracker, n. e. c.	00178	Lathe—automatic, metal, multispindle
00136	Crusher—ball	00179	Lathe—metalwork, n. e. c.
00137	Crusher—gyratory	00180	Lathe, n. e. c.
00138	Crusher, ice	00179	Lathe—ring—jewelers
00139	Crusher—jaw	00181	Lathe—roll turner, engine, hollow spindle
00140	Crusher—roll	00179	Lathe—screw cutter, n. e. c.
00141		00182	Lathe—spinner—metal
00142		00183	Lathe—turret (hand and semiautomatic)
00143	Disintegrator	00184	
00144		00185	Press—drill, n. m.
00145	Grinder—bark	00186	
00146	Grinder—coffee, n. m.	00187	Tapper and threader—tapper, n. e. c.
00147	Grinder—meat	00188	Taps and dies, n. m.
00148	Grinder—meat, n. m.	00189	
00149	Grinder, n. e. c. (soap, etc.)	00190	(b) All others
00150		00190	Borer or drill, n. e. c. (wood)
00151			
00152	Masticator		
00153	Mill—ball		
00154	Mill—burrstone		
00154	Mill—clay grinder		

Machines—Continued		Machines—Continued	
	<i>Drilling, boring, etc.—Con.</i>	Code	<i>Packaging, wrapping, etc.—Con.</i>
Code	All others—Continued	00229	
00191	Boring bar, n. m.	00230	Labeler
00192		00231	Labeler, n. m.
00193		00232	
00194	Drill—well	00233	Sealer—carton
00195	Driller or borer—stone or rock	00234	Stuffer—food
		00235	
00196		00236	Tire wrapper
00197		00220	Weigher
00198	Lathe—automatic, n. e. c. (wood)	00237	Wrapper, n. e. c.
00199	Lathe—back knife, wood	00238	Wrapper—tube and hose
00200	Lathe—hat cleaning and blocking	00239	
00200	Lathe—hat finisher	00240	<i>Picking, carding, and combing machines</i>
00201	Lathe—stone	00240	Breaker—bale
00201	Lathe—stone turner and polisher	00241	
00202	Lathe—veneer	00242	
		00243	Card breaker, intermediate, etc.
00203		00244	Comber
00204	Miller and driller combined	00240	Duster (willower type)
		00245	
00205	Mortiser—chain	00246	
00206	Mortiser—chisel	00247	
00207	Mortiser, n. e. c.	00248	Gin—cotton
00208		00249	Garnett
00209		00240	Lapper—textile (intermediate, etc.)
00210	<i>Packaging and wrapping machines</i>	00250	
00210	Bottle capper, n. m.	00251	
00211		00252	Napper
00212		00240	Opener or cleaner—textile
00213	Canning machine, n. e. c. (canner and food packer)	00240	Picker—textile, cotton intermediate, shoddy burr
00214	Capper and closer—cans	00253	
00215	Capper, corker, and crowner (not filling bottle)	00254	
00216	Coverer, box	00255	Shredder—carpet or rag
00217	Coverer, n. e. c.	00256	Shredder, n. e. c. (cotton waste, etc.)
00218		00257	
00219		00258	
00220	Filler, barrel, automatic bag	00240	Willower
00221	Filler—bottle (combination filling and capping)	00259	
00222	Filler—can	00260	<i>Planers, shapers, molders</i>
00223	Filler—collapsible tubes	00260	(a) Woodworking only
00224	Filler, n. e. c.	00260	Barker—disc
00225		00261	Crozer
00226		00268	Cooperage stock maker
00227	Gelatin and dynamite packer	00262	Dovetailer
00228		00263	Fluter—wood
		00264	Gainer—not saw—wood

Machines—Continued		Machines—Continued	
	<i>Planers, shapers, molders—Con.</i>		<i>Presses—Continued</i>
Code	Woodworking only—Con.	Code	Metal—Con.
00265	Heel turner—wood	00303	Eyelet affixer
00266		00304	Eyelet maker
00267	Jointer, n. e. c.	00305	
00268	Jointer—stave	00306	Folders and brakes
00269		00307	
00270	Leveler or molder	00308	Hydraulic noser, bender, metal work
00270	Matcher		
00270	Matcher—boxboard	00309	
00271		00310	Plate punch and shear
00272	Matchmaker	00311	Press—foot kick or pedal
00267	Planer—buzz	00312	Punch and shear
00273	Planer—wood (pony)	00291	Punch press
00274		00313	
00275	Router	00314	Sprue cutter
00270	Sash sticker	00291	Stamping and forming
00276	Shaper—wood	00315	Stencil cutter
00270	Sticker	00316	
00277		00317	
00278	Tenoner, automatic	00318	
00270	Tongue and groover	00319	
00265	Wood-heel turner	00320	(b) Plastic molding
00279		00320	Brick molder
00280	(b) All other	00321	Brick press
00280	Cutter—gear (not milling)	00322	Briquet press—also tile and concrete block
00281			
00282	Planer—metal	00323	
00283		00324	
00284		00325	Candy molder
00285	Shaper—metal	00326	
00286	Slotter	00327	
00287	Stone planers	00328	Hydrating press
00288		00329	Hydraulic—clay, glass, stone products, food products, cider, oil, grease, extruding, etc.
00289			
00290	<i>Presses</i>		
00290	(a) Metal	00330	
00290	Arbor press	00331	
00291	Assembling press	00332	Molder—celluloid, bake- lite, condensite, shellac, and synthetic resins
00292	Axle straightener		
00293		00333	
00294		00334	
00295	Banding and nosing	00335	Soap press
00291	Blanking press	00335	Soap stamper
00296	Bulldozer	00336	
00297		00337	
00298		00338	
00299	Corrugator (not rolls)	00339	
00300			
00301	Drawing press		
00302			

Machines—Continued		Machines—Continued	
Code	<i>Presses—Continued</i>	Code	<i>Rolls—Continued</i>
00340	(c) Leather, composition, fabric, paper	00382	Crimper—sheet metal
00340	Baling press	00386	
00341	Baling press, n. m.	00387	
00342	Bookbinder and backer	00388	Cylinder press—flat bed
00343	Box-ending machines	00389	
00344	Button press	00390	Dough brake
00345		00391	
00346	Cloth stamper and printer—head type	00392	Embosser—roll or calender
00347	Clothing or garment press	00393	
00348	Cork press	00394	
00349	Corner stayer	00385	Finisher—roll (paper)
00350		00395	Glass rolls
00351	Crating press	00396	Grinder, washer, miller, and cracker, n. e. c. (rubber and composition products)
00352		00397	
00353	Die cutter—not dinker or clicker	00398	
00354	Doming press	00399	Ironer (body type), collars, etc.
00355		00400	Ironer (flat type), collar
00356	Felt press	00400	Ironer—flatwork—mangling (sheets, etc.)
00357	Folder—box maker	00401	Ironer, n. e. c. (neckbands, etc.)
00358		00402	
00359	Molding press	00403	
00360		00404	Kneader—dough
00361	Perforator	00405	Kneader—rolls—rubber
00362	Platen press, printing	00400	Mangle
00347	Press, cloth type	00406	Moire—textiles
00363		00407	
00364	Press, platen type—creaser, scorer, folder, or embosser	00408	Molder—dough
00365	Press—upholstery (textile)	00409	
00366		00410	
00367	Sole molder and leveler	00411	
00368		00380	Rolls—beading, knurling, and flanging
00369		00405	Rolls—kneading (rubber)
00370	(d) Wood products	00412	Rolling mill (cold)—lead, brass, and copper plate, rail, rod, sheet, foil
00370	Veneer press	00413	Rolling mills (hot)
00370	Wagon-wheel press	00414	
00371	Wood bender and former	00415	
00372		00416	
00373		00385	Supercalender (paper)
00374		00417	Wringer
00375		00418	
00380	<i>Rolls</i>	00419	
00385	Calender		
00380	Corrugating rolls		
00381			

Machines—Continued	
Code	
00420	<i>Saws</i>
00420	(a) Woodworking
00420	Grader—heel
00421	Log carriage
00422	
00423	
00424	
00425	Saw—band—resaw
00426	Saw—band—wood
00427	Saw—bolter (crosscut)
00430	Saw—bolter (manual feed)
00427	Saw—brier—block grader (crosscut)
00427	Saw—butting (crosscut)
00428	
00429	
00427	Saw—circular—cut-off
00432	Saw—circular—mill (mechanical feed)
00434	Saw—circular—wood, cut-off, swing
00430	Saw—circular—wood, rip (manual feed)
00430	Saw—circular—wood, variety (manual feed)
00431	
00432	Saw—circular, rip or crosscut (mechanical feed)
00427	Saw—dado
00427	Saw—dovetailer
00434	Saw—drag
00427	Saw—drawside
00432	Saw—edger—self-feed (mechanical feed)
00427	Saw—end matcher
00427	Saw—equalizer
00427	Saw—gainer
00432	Saw—gang ripper (mechanical feed)
00427	Saw—groover
00427	Saw—head rounder or turner
00432	Saw—hog mill (mechanical feed)
00427	Saw—jump or inverted
00432	Saw—lath (mechanical feed)
00433	
00427	Saw—mitre
00435	Saw, n. e. c. (wood)
00427	Saw—overhead trimmer

Machines—Continued	
Code	
	<i>Saws—Continued</i>
	Woodworking—Continued
00427	Saw—rabbet
00435	Saw—scroll and jig
00430	Saw—slab (manual feed) shook ripper, shingle, knit, knee bolter, log, edger, stave, variety, veneer, barrel stave
00427	Saw—slasher
00427	Saw—spline
00436	Saw—stave
00434	Saw—wood, swing, cut-off
00437	
00438	
00439	
00440	(b) Metal
00440	Saw—band (metal)
00441	Saw—circular—cold metal
00442	Saw—circular—hot metal
00443	Saw—friction
00444	Saw—hack
00445	Saw—trimmed (metal) n. e. c.
00446	
00447	
00448	
00449	
00450	(c) All other
00450	Saw—button and comb
00451	Saw—diamond—circular
00452	Saw, n. e. c.
00453	Scorer—ice
00454	
00455	
00456	
00457	
00458	
00459	
00460	<i>Screening and separating</i>
00460	Absorber
00461	
00462	
00463	Barker—mill
00464	Bolting machine—flour, cornmeal, etc.
00465	
00466	Centrifugal (extractor)
00466	Centrifuge
00468	Cleaner—grain
00470	Cutter and screener—sand

Machines—Continued		Machines—Continued	
Code	<i>Screening and separating—Con.</i>	Code	<i>Shears, slitters, and slicers—Con.</i>
00466	Dryer—centrifugal, extractor, or whizzer	00505	Alligator, etc., type—Con.
00466	Extractors, whizzer, or centrifugals	00506	
00467		00507	
00471	Filter	00508	
00472	Huller	00509	
00473	Husker—corn	00510	(b) Circular, rotary, or disc type
00474	Precipitator	00510	Cake cutter
00475		00511	Channeler—leather
00466	Separator—centrifugal, etc. (cream, oil, etc.)	00512	Circular knife—cork or cloth
00476	Separator—magnetic or mechanical—not centrifugal	00513	Clipper—hair (fur picking)
00477	Separator, n. m. (cream, etc.)	00514	Cutter or threader—pipe
00478	Screen, n. e. c. (not bolting)	00515	Cutter—bias
00478	Sifter, n. e. c. (not bolting)	00516	Cutter—bone
00468	Sheller—corn	00517	Cutter—candy and nougat
00466	Whizzer	00518	Cutter—disc type
00479		00519	Cutter—ensilage
00480	<i>Shears, slitters, and slicers</i>	00520	Cutter—kraut
00480	(a) Alligator, guillotine, or head type	00521	Cutter—pipe, n. m.
00480	Clipper—hair	00522	Cutter or shear—pile
00481	Clipper or mower—grain	00523	Cutter—shoe welt
00482	Clipper, n. m. (corner)	00524	Cutter—tail
00483	Clipper, n. m. (hair)	00525	Cutting machine, n. e. c.
00484	Clipper, n. e. c.	00518	Cutter—tube paper slitter
00485	Clipper—veneer, corners	00526	
00486		00527	
00487		00528	Flesher—hide
00488	Cutter—cigar	00529	
00489	Cutter—corner	00530	Mower—lawn, n. m.
00490	Cutter—corner, n. m.	00531	Mower—n. m., n. e. c.
00491	Cutter—die, dinker, clicker	00532	
00492	Cutter—excelsior	00518	Perforator (disc type)
00493	Cutter, n. e. c.	00533	Pinker
00494	Cutter—paper, n. m.	00534	
00495	Cutter—sole (not dinker type)	00518	Scorer or creaser—disc type
00496	Cutter—tobacco, n. e. c.	00535	Shaver
00497	Cutter and trimmer—paper—guillotine	00536	
00498	Cutter—veneer, n. e. c.	00537	Shear—circular
00499		00522	Shear—cloth
00500		00538	
00501		00539	Skiver—splitter—stationary leather knife
00502		00540	Slicer and carver—meat
00503		00541	Slitter—caramel
00504		00542	
		00518	Slitter—cardboard
		00518	Slitter and rotary cutter—paper

Machines—Continued		Machines—Continued	
	<i>Shears, slitters, and slicers—Con.</i>	Code	<i>Weaving, knitting, etc.—Con.</i>
Code	Circular, etc., type—Con.	00588	
00522	Trimmer—cloth	00589	
00543	Unhairer	00590	Slubber
00544		00591	Spooler
00545		00592	
00546		00593	Twine maker, n. e. c.
00547		00594	Twister
00548		00595	
00549		00596	Winder, n. e. c.
00550	<i>Stitching and sewing</i>	00597	
00550	Seamer, n. e. c. (double, etc.)	00598	
00551	Sewing machine	00599	
00552	Sewing machine, n. m.	00600	<i>Miscellaneous, n. e. c.</i>
00551	Stitcher	00600	Acidifier
00553		00601	Assorter—cards (Hollerith, Powers)
00554		00602	Autoclave
00555		00603	
00556		00604	
00557		00605	
00558		00606	
00559		00607	Bag and envelope maker
00560	<i>Weaving, knitting, and spinning</i>	00608	Basket maker
00560	Braider and knitter	00609	Blancher—blender (flour)
00561		00610	Blaster, n. m.
00562	Crocheter	00611	Bleacher and blancher
00563		00612	Block and falls, n. m.
00564	Draw frames	00613	Blue-print maker
00565	Drum winder	00614	
00566		00615	Box maker, n. e. c.
00567	Embroidery	00616	Breaker—scrap
00568		00617	Broacher
00569	Fringe maker	00618	Broom maker, n. e. c.
00570		00618	Brush maker, n. e. c.
00571	Jacks and mules—textiles	00619	Brushing machine (felt mfg.)
00572		00620	Button coverer
00573		00621	Button maker, n. e. c.
00574	Knitter—body	00622	
00575	Knitter—hose—seamless hose— full-fashioned	00623	
00576	Knitter, n. e. c.	00624	
00577		00625	
00578	Loom—carpet and rug	00626	
00579	Loom—jacquard	00627	
00580	Loom, n. e. c.	00628	
00581		00629	
00582		00630	Cable maker, n. e. c.
00583	Net maker	00631	Candy maker, n. e. c.
00584		00632	
00585	Reel	00633	Capsule maker
00586	Rewinders	00634	Causticizer
00587	Rope maker	00635	Cementer

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Machines—Continued		Machines—Continued	
Code	Miscellaneous—Continued	Code	Miscellaneous—Continued
00636	Channeler, n. e. c.	00675	Cutter—type, n. m.
00637	Channeler—stone	00676	
00638	Chaser (cotton and linseed grinding)	00677	
00639	Chemical-products machines, n. e. c.	00678	
00640	Chipper—log, etc.	00680	
00641	Chopper—food products, meat	00681	
00640	Choppers—logs, etc.	00682	
00642	Chopper, n. e. c.	00683	
00643	Cigar maker, n. e. c.	00684	
00644	Cigarette maker	00685	
00645	Clamp, n. m.	00686	
00646	Clay, glass, and stone products machines, n. e. c.	00687	
00647	Clean and block—hat	00688	
00648	Cleaner—barrel	00689	
00649	Cleaner—boiler	00690	
00650	Cleaner—carpet	00691	
00651	Cleaner—hat	00692	
00652	Cleaner, n. e. c. (vacuum, etc.)	00693	
00653	Cloth doubler	00694	
00654	Cloth worker, n. e. c.	00695	
00655	Clothes maker, n. e. c.	00696	
00656	Clothespin maker	00697	
00657	Coating and inlaying machine	00698	Dampener
00631	Coating machine—candy	00699	Depositor
00658	Comb maker, n. e. c.	00700	Digester—paper and pulp
00659	Compressor	00701	Digger—ditch or trench
00639	Concentrator (chemical products, n. e. c.)	00702	Divider
00660	Continuous treater	00703	Doctor
00661	Contracting and engineering machines, n. e. c.	00704	Doughnut maker
00662	Contractor	00705	Dowel
00663	Cooperage—stock maker, n. e. c.	00706	Dredge
00664	Corer—fruit	00707	Drill—button
00665	Cork (band knife) slicer	00708	Druggists and pharmacutists machine, n. e. c.
00666	Cork worker, n. e. c.	00709	Dryer, n. e. c.
00667	Coverer—cable (hydraulic press)	00710	Dryer, rotary
00616	Cracker (skull)	00711	Dryer, steam jacketed
00668	Cracker and sheller—nuts	00712	Dryer, vacuum
00669	Crackers, n. m., nut	00713	Dust collector
00665	Cutter—band knife or saw (cloth, cork, meat, wood)	00714	Dryer and finisher, n. e. c.
00670	Cutter—brick	00715	
00671	Cutter—coal	00716	
00672	Cutter—gear (milling)	00717	
00673	Cutter—rag, hurl	00718	
00674	Cutter—stave	00719	
		00720	
		00721	
		00722	
		00723	Edge setter
		00724	Edge trimmer

Machines—Continued

Code	<i>Miscellaneous—Continued</i>
00725	Electrical generator
00726	Electroplater
00727	Engraver
00728	Enrober (chocolate)
00729	Envelope maker
00730	Etcher
00731	Evaporator
00732	
00733	
00734	
00735	
00736	Fans
00737	Farm machinery, n. e. c.
00738	Fastener—button
00739	Fishing reel
00740	Flexible-shaft maker
00741	Fluter—metal
00704	Food-products machines, n. e. c.
00742	Fumigator
00743	Fur worker, n. e. c.
00744	Furnace (mechanical feed)
00745	Furnace, n. e. c.
00746	
00747	
00748	
00749	
00750	
00751	
00752	Gainer—mine
00753	Galvanizer—sherardizer, etc.
00754	Gas inductor
00755	Gatherer (bookbinding)
00756	Gig mill
00646	Glassmaker, n. e. c.
00757	Glove maker
00758	Grader (road)
00759	
00760	Groover, n. e. c.
00761	Grouter
00762	
00763	
00764	
00765	
00766	
00767	
00768	Hair curler, n. m.
00769	Hairdresser
00770	Harvester
00771	Hat maker, n. e. c.
00772	Hatchet, n. m.

Machines—Continued

Code	<i>Miscellaneous—Continued</i>
00773	Header—barrel, keg, etc.
00774	Heat exchanger
00775	Heat treating and tempering machine
00776	Heeler—leather manufactur- ing
00640	Hog—paper and pulp
00777	Hoist—chain, n. m.
00663	Hoop maker
00778	Hose maker (rubber)
00639	Humidifier (chemical prod- ucts, n. e. c.)
00779	Hydrator
00780	
00781	
00782	
00783	
00784	
00785	
00786	
00787	Ice breaker and harvester
00788	Ice-cream freezer, n. m.—agi- tated
00789	Ice-cream maker
00657	Inlayer—textile
00790	Ironer (hat manufacturing) (brim or crown)
00791	Ironer (manual or pedal), n. m.
00792	
00793	
00794	
00795	
00796	Jack—mitre
00797	Jack, n. m.
00798	Jack—tannery
00663	
00799	Jordan
00800	
00801	
00802	
00803	
00804	Key—seater
00805	Kiln—rotary
00665	Knife—band
00806	
00807	
00808	
00809	Last maker
00810	Laundry machines, n. e. c.

Machines—Continued		Machines—Continued	
Code	Miscellaneous—Continued	Code	Miscellaneous—Continued
00811	Leather-products machines, n. e. c.	00853	
00812	Lehr—glass manufacturing.	00854	
00813	Loader	00855	Paper-cup maker
00814	Loader, n. m.	00856	Paper maker and paper-prod- ucts machine, n. e. c.
00815	Logger, n. e. c.—logging ma- chines	00857	Parer and peeler
00816	Loom—wire weaving	00858	Pearl-composition machines, n. e. c.
00817		00859	Pie maker
00818		00860	Pile driver
00819		00861	Pill and tablet maker
00820		00862	Pipe threader, n. m.
00821		00863	Pitter—fruit
00822	Macaroni and noodle maker	00864	Pliers and pincers, n. m.
00823	Marker, n. e. c.	00865	Plows, harrows, etc.—power driven
00654	Measurer—cloth	00866	Pneumatic tools and appli- ances
00824	Mechanically-driven ma- chines, n. e. c.	00867	
00825	Metal worker, n. e. c.	00868	Portable machines, n. e. c.
00826	Milker—all types	00869	Potter's wheel or lathe
00827	Mill (sugar), n. e. c.	00667	Press (hydraulic), cable coverer
00828	Miller, n. e. c.	00870	Press—printing—flat bed, cyl- inder
00829	Mills, n. e. c.	00871	Press—printing—wood
00830	Miscellaneous, n. e. c.	00872	Press—printing, n. e. c. (wall paper, etc.)
00673	Mixer—picker	00873	Printing and bookbinding ma- chine, n. e. c.
00831	Motion-picture projectors and cameras	00874	Profiler
00832	Molder—chalk	00875	Proofer
00833	Molder, n. e. c.	00876	Puller
00834		00877	
00835		00878	
00836		00879	
00837		00880	
00838		00881	
00839		00882	
00840		00883	
00841	Nail puller, n. m.	00884	
00842	Nailer and tacker	00885	
00843	Nitrifier	00886	
00844	Nonmechanically driven tools or machines, n. e. c.	00887	
00845		00888	Reel—dough
00846		00889	Rendering machine
00847		00890	Ribbon finisher (textile), n. e. c.
00848		00891	Road roller
00849	Office machines, n. e. c.	00704	Roaster—food products, n. e. c.
00850	Oven—mechanical feed (auto- matic) (enamel, etc.)	00892	Roaster—nuts
00851	Ovens, revolving	00893	Rosser
00852			

Machines—Continued		Machines—Continued	
Code	Miscellaneous—Continued	Code	Miscellaneous—Continued
00858	Rubber, celluloid, composition, pearl, bone, and tortoise shell, n. e. c.	00842	Tacker and nailer
00894	Rucher	00937	Tamp
00895	Ruler	00938	Taperer—cork
00896		00939	Teasels, textile
00897		00940	Tester, n. e. c.
00898		00890	Textile finisher—textile machines, n. e. c.
00899		00941	Thrasher
00900		00942	Thrashing bag (for paper mills)
00901		00943	Thread roller
00902	Sand blast	00944	Threader and cutter—bolt, nut, rivet, pipe (threader, n. e. c.)
00903		00945	Tire builder and tube maker
00656	Scraper (woodworking), n. e. c.	00946	Tire pump, n. m.
00904		00947	Tobacco machine, n. e. c.
00905	Setter and filer—saws, etc.	00948	Treadmill, n. m.
00906	Sheeter	00949	Treater
00668	Sheller or cracker—nuts	00950	Trimmer—carpet
00907	Sheller, n. e. c.	00951	Trimmer, n. e. c.
00908	Shoe-heel nailer	00952	Tube drawing
00908	Shoe maker, n. e. c.	00953	Tube-making machine—paper
00909	Soldering machine	00954	Turn buckle, n. m.
00910	Spinner—metal, n. e. c.	00955	
00911	Spinner—musical string	00956	
00912	Splitter—band, knife (leather) belt knife	00957	
00913	Sprayer, n. e. c. (paint, etc.)	00958	
00914	Spreader—cotton waste	00959	
00915	Stapler	00960	
00916	Starcher	00961	
00917	Still	00962	
00918	Stock and die, n. m.	00963	
00744	Stoker	00964	
00919	Stoker—tannery	00965	Universal woodworker
00920	Straightener, n. m.	00966	Upholsterer, n. e. c.
00921	Stranding machine—cable	00967	
00922	Stripper—leather	00968	
00923	Stump puller, n. m.	00969	
00924		00908	Vamper
00925		00970	Vender
00926		00971	Vibrator—massager, etc.
00927		00972	Vise, n. m.
00928		00973	
00929		00974	
00930		00975	
00931		00976	
00932		00977	
00933		00978	Washer—clothes
00934		00979	Washer—dishes
00935		00980	Washer—grain
00936			

Machines—Continued		Machines—Continued	
Code	<i>Miscellaneous—Continued</i>	ALPHABETICAL LIST OF MACHINES—CON.	
00981	Washer or scourer—barrel and keg	Code	
00982	Washer—soaking and rinsing bottles, cans, etc.	00601	Assorter—cards (Hollerith, Powers)
00983	Washer or wringer—clothes, n. m.	00602	Autoclave
00984	Washers, n. e. c. (metal parts, etc.)	00292	Axle straightener
00985	Wet or dry pan	00607	Bag and envelope maker
00986	Winder—armature	00340	Baling press
00952	Wire and tube drawing	00341	Baling press, n. m.
00987	Wireworking and wire-products manufacturing, n. e. c. (not wire-drawing)	00295	Banding and nosing
00656	Woodworker, n. e. c.	00260	Barker—disc
00988		00463	Barker—mill
00989		00608	Basket maker
00990		00003	Beaters (incl. rag washer), paper products
00991		00081	Bender and straightener
00992		00080	Bender, n. m.
00993		00609	Blancher—blender (flour)
00994		00291	Blanking press
00995		00610	Blaster, n. m.
00996		00611	Bleacher and blancher
00997		00004	Blender
00998		00612	Block and falls, n. m.
00999		00005	Blower (felt manufacturing)
	PARTS OF MACHINES	00082	Blower—glass
0	Belts, pulleys, shafts, chains and sprockets, cables and sheaves, or gears	00613	Blue-print maker
1	Chucks, vises, carriages, tool parts, indicators, gages, and other attachments	00083	Bolt, nut, and rivet header, pointer, and maker, n. e. c.
2	Ignition, heating, or cooling system parts	00464	Bolting machine—flour, corn-meal, etc.
3	Frame, bed, etc.	00342	Bookbinder and backer
4	Point of operation	00170	Borer or drill, n. e. c. (metal)
5		00190	Borer or drill, n. e. c. (wood)
6	Safety devices	00171	Boring bar, n. m.—metalworking
7		00191	Boring bar, other than metalworking
8		00210	Bottle capper, n. m.
9	Machine parts, n. e. c.	00343	Box-ending machines
	ALPHABETICAL LIST OF MACHINES	00615	Box maker, n. e. c.
00460	Absorber	00560	Braider and knitter
00600	Acidifier	00084	Brazer
00000	Agitator	00240	Breaker—ball
00290	Arbor press	00130	Breaker—candy
00291	Assembling press	00616	Breaker—scrap
		00172	Breast drill, n. m.
		00320	Brick molder
		00321	Brick press
		00322	Briquet press—also tile and concrete block
		00617	Broacher

Machines—Continued	Machines—Continued
ALPHABETICAL LIST OF MACHINES—CON.	ALPHABETICAL LIST OF MACHINES—CON.
Code	Code
00618 Broom maker, n. e. c.	00646 Clay, glass, and stone products machines, n. e. c.
00618 Brush maker, n. e. c.	00647 Clean and block—hat
00619 Brushing machine (felt manu- facturing)	00648 Cleaner—barrel
00040 Buffer	00649 Cleaner—boiler
00296 Bulldozer	00650 Cleaner—carpet
00620 Button coverer	00468 Cleaner—grain
00621 Button maker, n. e. c.	00651 Cleaner—hat
00344 Button press	00652 Cleaner—n. e. c. (vacuum, etc.)
00630 Cable maker, n. e. c.	00480 Clipper—hair
00510 Cake cutter	00513 Clipper—hair (fur picking)
00385 Calender	00482 Clipper, n. m. (corner)
00631 Candy maker, n. e. c.	00483 Clipper, n. m. (hair)
00325 Candy molder	00484 Clipper, n. e. c.
00213 Canning machine, n. e. c. (can- ner and food packer)	00481 Clipper or mower—grain
00214 Capper and closer—cans	00485 Clipper—veneer, corners
00215 Capper, corker, and crowner (not filling bottle)	00653 Cloth doubler
00633 Capsule maker	00346 Cloth stamper and printer— head type
00243 Card breaker, intermediate, etc.	00654 Cloth worker, n. e. c.
00086 Casting machine—die	00655 Clothes maker, n. e. c.
00087 Casting machine—pig	00656 Clothespin maker
00088 Casting machine—type	00347 Clothing or garment press
00634 Causticizer	00134 Coal crushers and screws
00635 Cementer	00657 Coating and inlaying machine
00466 Centrifugal (extractor)	00631 Coating machine
00466 Centrifuge	00091 Coke pusher
00089 Chain maker, n. e. c.	00658 Comb maker, n. e. c.
00511 Channeler—leather	00244 Comber
00636 Channeler, n. e. c.	00011 Compounder
00637 Channeler—stone	00012 Compounding mill—rubber
00090 Charger—open-hearth furnace, cupola, etc.	00659 Compressor
00638 Chaser (cotton and linseed grinding)	00639 Concentrator (chemical prod- ucts, n. e. c.)
00639 Chemical-products machines, n. e. c.	00660 Continuous treater
00640 Chipper—log, etc.	00661 Contracting and engineering machines, n. e. c.
00641 Chopper—food products, meat	00662 Contractor
00640 Choppers, logs, etc.	00663 Cooperage-stock maker, n. e. c.
00133 Chopper, n. m.—ice	00092 Core maker
00642 Chopper, n. e. c.	00664 Corer—fruit
00009 Churn	00665 Cork (band knife) slicer
00010 Churn, n. m. (butter, etc.)	00348 Cork press
00643 Cigar maker, n. e. c.	00666 Cork worker, n. e. c.
00644 Cigarette maker	00349 Corner stayer
00512 Circular knife—cork or cloth	00380 Corrugating rolls
00645 Clamp, n. m.	00299 Corrugator (not rolls)
	00216 Coverer, box
	00667 Coverer—cable (hydraulic press)

Machines—Continued	Machines—Continued
ALPHABETICAL LIST OF MACHINES—CON.	ALPHABETICAL LIST OF MACHINES—CON.
Code	Code
00217 Coverer, n. e. c.	00698 Dampener
00668 Cracker and sheller—nuts	00699 Depositor
00669 Crackers, n. m.—nut	00353 Die cutter—not dinker or clicker
00135 Cracker, n. e. c.	00700 Digester—paper and pulp
00616 Cracker (skull)	00701 Digger—ditch or trench
00351 Crating press	00143 Disintegrator
00382 Crimper—sheet metal	00016 Dissolver
00562 Crocheter	00702 Divider
00261 Crozer	00703 Doctor
00136 Crusher—ball	00354 Doming press
00137 Crusher—gyratory	00390 Dough brake
00138 Crusher, ice	00704 Doughnut maker
00139 Crusher—jaw	00262 Dovetailer
00140 Crusher—roll	00705 Dowel
00470 Cutter and screener—sand	00564 Draw frames
00497 Cutter and trimmer—paper— guillotine	00301 Drawing press
00665 Cutter—band knife or saw (cloth, cork, meat, wood)	00706 Dredge
00515 Cutter—bias	00176 Drill and taper combined
00516 Cutter—bone	00707 Drill—button
00670 Cutter—brick	00174 Drill—multiple spindle
00517 Cutter—candy and nougat	00175 Drill—radical
00488 Cutter—cigar	00194 Drill—well
00671 Cutter—coal	00195 Driller or borer—stone or rock
00489 Cutter—corner	00708 Druggists and pharmacutists machine, n. e. c.
00490 Cutter—corner, n. m.	00017 Drum—tanning, beating
00491 Cutter—die, dinker, clicker	00565 Drum winder
00518 Cutter—disc type	00466 Dryer—centrifugal, extractor, or whizzer
00519 Cutter—ensilage	00709 Dryer, n. e. c.
00492 Cutter—excelsior	00710 Dryer—rotary
00672 Cutter—gear (milling)	00711 Dryer—steam jacketed
00280 Cutter—gear (not milling)	00712 Dryer—vacuum
00520 Cutter—kraut	00713 Dust collector
00493 Cutter, n. e. c.	00017 Dust drum
00522 Cutter or shear—pile	00240 Duster (willow type)
00514 Cutter or threader—pipe	00018 Dye mixer and blender (dry) (horizontal type)
00494 Cutter—paper, n. m.	00714 Dyer and finisher, n. e. c.
00521 Cutter—pipe, n. m.	00723 Edge setter
00673 Cutter—rag, hurl	00724 Edge trimmer
00523 Cutter—shoe welt	00725 Electrical generator
00495 Cutter—sole (not dinker type)	00726 Electroplater
00674 Cutter—stave	00392 Embosser—roll or calender
00524 Cutter—tail	00567 Embroidery
00496 Cutter—tobacco, n. e. c.	00043 Emery-wheel dresser, n. m.
00518 Cutter—tube paper slitter	00044 Emery-wheel stand (automatic or power fed)
00675 Cutter—type, n. m.	
00498 Cutter—veneer, n. e. c.	
00525 Cutting machine, n. e. c.	
00388 Cylinder press—flat bed	

Machines—Continued

ALPHABETICAL LIST OF MACHINES—CON.
Code

00045	Emery-wheel stand (hand fed)
00046	Emery-wheel stand, n. m.
00022	Emulsifier
00727	Engraver
00728	Enrober (chocolate)
00729	Envelope maker
00730	Etcher
00731	Evaporator
00096	Expander
00466	Extractors, whizzer, or centrifugals
00097	Extruder (not hydraulic)
00303	Eyelet affixer
00304	Eyelet maker
00736	Fans
00737	Farm machinery, n. e. c.
00738	Fastener—button
00356	Felt press
00220	Filler, barrel, automatic bag
00221	Filler—bottle (combination filling and capping)
00222	Filler—can
00223	Filler—collapsible tubes
00224	Filler, n. e. c.
00471	Filter
00385	Finisher—roll (paper)
00739	Fishing reel, n. m.
00100	Flanger and expander (pipe, etc.)
00528	Flesher—hide
00740	Flexible-shaft maker
00050	Floor polisher—scraper, scrubber, cleaner, finisher, etc.
00741	Fluter—metal
00263	Fluter—wood
00306	Folders and brakes
00357	Folder—box maker
00704	Food-products machines, n. e. c.
00101	Forge (hammers, trip hammers, etc.)
00099	Former—hat manufacturing
00092	Foundry machines, n. e. c.
00569	Fringe maker
00742	Fumigator
00743	Fur worker, n. e. c.
00744	Furnace (mechanical feed)
00745	Furnace, n. e. c.
00752	Gainer—mine
00264	Gainer—not saw—wood

Machines—Continued

ALPHABETICAL LIST OF MACHINES—CON.
Code

00753	Galvanizer—sherardizer, etc.
00249	Garnett
00754	Gas inductor
00755	Gatherer (bookbinding)
00227	Gelatin and dynamite packer
00756	Gig mill
00248	Gin—cotton
00646	Glassmaker, n. e. c.
00395	Glass rolls
00053	Glazer—leather
00757	Glove maker
00420	Grader—heel
00758	Grader (road)
00044	Grinder (abrasive wheels) (automatic or power fed)
00045	Grinder (abrasive wheels) (hand fed)
00054	Grinder and polisher—plate glass
00145	Grinder—bark
00146	Grinder—coffee, n. m.
00147	Grinder—meat
00148	Grinder—meat, n. m.
00149	Grinder, n. e. c. (soap, etc.)
00396	Grinder, washer, miller, and cracker, n. e. c. (rubber and composition products)
00055	Grindstone
00056	Grindstone, n. m.
00760	Groover, n. e. c.
00761	Grouter
00057	Gummer (saw)
00768	Hair curler, n. m.
00769	Hairdresser
00104	Hammer—drop
00101	Hammer—helve, trip, or Bradley
00770	Harvester
00771	Hat maker, n. e. c.
00772	Hatchet, n. m.
00105	Header
00773	Header—barrel, keg, etc.
00774	Heat exchanger
00775	Heat treating and tempering machines
00265	Heel turner—wood
00776	Heeler—leather manufacturing
00640	Hog—paper and pulp
00777	Hoist—chain, n. m.
00663	Hoop maker

Machines—Continued	Machines—Continued
ALPHABETICAL LIST OF MACHINES—CON.	ALPHABETICAL LIST OF MACHINES—CON.
Code	Code
00778 Hose maker (rubber)	00199 Lathe—back knife, wood
00472 Huller	00200 Lathe—hat cleaning and block- ing
00639 Humidifier (chemical products, n. e. c.)	00200 Lathe—hat finisher
00473 Husker—corn	00179 Lathe—metalwork, n. e. c.
00328 Hydrating press	00180 Lathe, n. e. c.
00779 Hydrator	00179 Lathe—ring—jeweler's
00329 Hydraulic—clay, glass, stone products, food products, cider, oil, grease, extruding, etc.	00181 Lathe—roll turner, engine, hol- low spindle
00308 Hydraulic noser, bender, metal- work	00179 Lathe—screw cutter, n. e. c.
00787 Ice breaker and harvester	00182 Lathe—spinner—metal
00788 Ice-cream freezer, n. m., agitated	00201 Lathe—stone
00789 Ice-cream maker	00201 Lathe—stone turner and pol- isher
00657 Inlayer—textile	00183 Lathe—turret (hand and semi- automatic)
00399 Ironer (body type), collars, etc.	00202 Lathe—veneer
00400 Ironer (flat type), collar	00810 Laundry machines, n. e. c.
00400 Ironer—flatwork—mangling (sheets, etc.)	00107 Leaf spring machine
00790 Ironer (hat manufacturing) (brim or crown)	00811 Leather-products machines, n. e. c.
00791 Ironer (manual or pedal), n. m.	00812 Lehr—glass manufacturing
00401 Ironer, n. e. c. (neckbands, etc.)	00270 Leveler or molder
00571 Jacks and mules—textile	00108 Linotype
00796 Jack—mitre	00813 Loader
00797 Jack, n. m.	00814 Loader, n. m.
00798 Jack—tannery	00421 Log carriage
00267 Jointer, n. e. c.	00815 Logger, n. e. c., logging ma- chines
00268 Jointer—stave	00578 Loom—carpet and rug
00799 Jordan	00579 Loom—jacquard
00804 Key—seater	00580 Loom, n. e. c.
00805 Kiln—rotary	00816 Loom—wire weaving
00404 Kneader—dough	00822 Macaroni and noodle maker
00405 Kneader—rolls—rubber	00400 Mangle
00665 Knife—band	00823 Marker, n. e. c.
00574 Knitter—body	00152 Masticator
00575 Knitter—hose—seamless hose— full-fashioned	00270 Matcher
00576 Knitter, n. e. c.	00270 Matcher—boxboard
00230 Labeler	00272 Matchmaker
00231 Labeler, n. m.	00654 Measurer—cloth
00240 Lapper—textile (intermediate, etc.)	00824 Mechanically-driven machines, n. e. c.
00809 Last maker	00825 Metalworker, n. e. c.
00178 Lathe—automatic, metal, mul- tispindle	00826 Milker—all types
00198 Lathe—automatic, n. e. c., wood	00153 Mill—ball
	00154 Mill—burrstone
	00154 Mill—clay grinder
	00155 Mill (cottonseed and linseed grinder)

Machines—Continued

ALPHABETICAL LIST OF MACHINES—CON.

Code	
00156	Mill—emery grinder
00157	Mill—fruit grinder or presser
00153	Mill—pebble
00025	Mill—pug
00158	Mill—roller (flour, cereal, sugar, etc.)
00827	Mill—sugar, n. e. c.
00829	Mills, n. e. c.
00204	Miller and driller—combined
00159	Miller and grinder—combined
00828	Miller, n. e. c.
00830	Miscellaneous, n. e. c.
00026	Mixer—concrete
00027	Mixer—dough
00028	Mixer—felt manufacturing (the devil)
00029	Mixer, n. e. c.
00673	Mixer—picker
00030	Mixer—pony or paint
00031	Mixer—sand
00406	Moire—textiles
00332	Molder — celluloid, bakelite, condensite, shellac, and synthetic resins
00832	Molder—chalk
00092	Molder—crucible (foundry, n. e. c.)
00408	Molder—dough
00092	Molder—foundry
00833	Molder, n. e. c.
00359	Molding press
00111	Monotype
00205	Mortiser—chain
00206	Mortiser—chisel
00207	Mortiser, n. e. c.
00831	Motion-picture projectors and cameras
00530	Mower—lawn, n. m.
00531	Mower—n. m., n. e. c.
00113	Nail maker (cut) tack maker (wire)
00841	Nail puller, n. m.
00842	Nailer and tacker
00252	Napper
00583	Net maker
00843	Nitrifier
00844	Nonmechanically driven tools or machines, n. e. c.
00849	Office machines, n. e. c.

Machines—Continued

ALPHABETICAL LIST OF MACHINES—CON.

Code	
00240	Opener or cleaner—textile
00850	Oven—mechanical feed (automatic) (enamel, etc.)
00851	Ovens, revolving
00855	Paper-cup maker
00856	Paper maker and paper-products machine, n. e. c.
00857	Parer and peeler
00858	Pearl-composition machines, n. e. c.
00361	Perforator
00518	Perforator (disc type)
00240	Picker—textile, cotton intermediate, shoddy burr
00859	Pie maker
00860	Pile driver
00861	Pill and tablet maker
00533	Pinker
00862	Pipe threader, n. m.
00863	Pitter—fruit
00267	Planer—buzz
00282	Planer—metal
00237	Planer—stone
00273	Planer—wood (pony)
00310	Plate punch and shear
00362	Platen press—printing
00864	Pliers and pincers, n. m.
00865	Plows, harrows, etc.—power driven
00866	Pneumatic tools and appliances
00062	Polishers and buffers, n. e. c.
00054	Polisher and grinder—plate glass
00868	Portable machines, n. e. c.
00869	Potter's wheel or lathe
00063	Pouncing machine (hat manufacturing)
00474	Precipitator
00347	Press—cloth type
00185	Press—drill, n. m.
00311	Press—foot kick or pedal
00115	Press—forge (hydraulic)
00667	Press (hydraulic), cable coverer
00364	Press—platen type—creaser, scorer, folder, or embosser
00870	Press—printing, flat bed, cylinder
00872	Press—printing, n. e. c. (wall-paper, etc.)
00871	Press—printing, wood

Machines—Continued	Machines—Continued
ALPHABETICAL LIST OF MACHINES—CON. Code	ALPHABETICAL LIST OF MACHINES—CON. Code
00365 Press—upholstery (textile)	00427 Saw — brier — block grader (crosscut)
00873 Printing and bookbinding machine, n. e. c.	00427 Saw—butting (crosscut)
00874 Profiler	00450 Saw—button and comb
00875 Proofer	00441 Saw—circular—cold metal
00876 Puller	00427 Saw—circular—cut-off
00312 Punch and shear	00442 Saw—circular—hot metal
00291 Punch press	00432 Saw—circular—mill (mechanical feed)
00033 Reducing	00432 Saw—circular, rip or crosscut (mechanical feed)
00585 Reel	00434 Saw—circular—wood, cut-off, swing
00888 Reel—dough	00430 Saw—circular—wood, rip (manual feed)
00889 Rendering machine	00430 Saw—circular—wood, variety (manual feed)
00586 Rewinders	00427 Saw—dado
00890 Ribbon finisher (textile), n. e. c.	00451 Saw—diamond—circular
00117 Riveter—hydraulic or pneumatic	00427 Saw—dovetailer
00118 Riveter, n. e. c. (not punch-press type)	00434 Saw—drag
00891 Road roller	00427 Saw—drawside
00704 Roaster—food products, n. e. c.	00432 Saw—edger—self-feed (mechanical feed)
00892 Roaster—nuts	00427 Saw—end matcher
00380 Rolls—beading, knurling, and flanging	00427 Saw—equalizer
00405 Rolls—kneading (rubber)	00443 Saw—friction
00412 Rolling mill (cold)—lead, brass, and copper plate, rail, rod, sheet, foil	00427 Saw—gainer
00413 Rolling mills (hot)	00432 Saw—gang ripper (mechanical feed)
00587 Rope maker	00427 Saw—groover
00893 Rosser	00444 Saw—hack
00275 Router	00427 Saw—head rounder or turner
00858 Rubber, celluloid, composition, pearl, bone, and tortoise shell, n. e. c.	00432 Saw—hog mill (mechanical feed)
00065 Rubbing bed	00427 Saw—jump or inverted
00894 Rucher	00432 Saw—lath (mechanical feed)
00895 Ruler	00427 Saw—mitre
00902 Sand blast	00452 Saw, n. e. c.
00068 Sander—belt	00435 Saw, n. e. c. (wood)
00069 Sander—disc	00427 Saw—overhead trimmer
00070 Sander, n. e. c.	00427 Saw—rabbet
00035 Saponifer	00435 Saw—scroll and jig
00270 Sash sticker	00430 Saw—slab—manual feed—shook ripper, shingle, knit, knee bolter, log, edger, stave, variety, veneer, barrel stave
00440 Saw—band (metal)	00427 Saw—slasher
00425 Saw—band—resaw	00427 Saw—spline
00426 Saw—band (wood)	00436 Saw—stave
00427 Saw—bolter (crosscut)	00445 Saw—trimmed (metal), n. e. c.
00430 Saw—bolter (manual feed)	

Machines—Continued

ALPHABETICAL LIST OF MACHINES—con.
Code

00434	Saw—wood, swing, cut-off
00453	Scorer—ice
00518	Scorer or creaser—disc type
00656	Scraper (woodworking), n. e. c.
00478	Screen, n. e. c. (not bolting)
00233	Sealer—carton
00550	Seamer, n. e. c. (double, etc.)
00466	Separator—centrifugal, etc. (cream, oil, etc.)
00476	Separator—magnetic or me- chanical—not centrifugal
00477	Separator, n. m. (cream, etc.)
00905	Setter and filer—saws, etc.
00551	Sewing machine
00552	Sewing machine, n. m.
00285	Shaper—metal
00276	Shaper—wood
00044	Sharpener (abrasive)
00535	Shaver
00537	Shear—circular
00522	Shear—cloth
00906	Sheeter
00468	Sheller—corn
00907	Sheller, n. e. c.
00668	Sheller or cracker—nuts
00908	Shoe-heel nailer
00908	Shoe maker, n. e. c.
00255	Shredder—carpet or rag
00256	Shredder, n. e. c. (cotton waste, etc.)
00478	Sifter, n. e. c. (not bolting)
00539	Skiver — splitter — stationary leather knife
00540	Slicer and carver—meat
00518	Slitter and rotary cutter— paper
00541	Slitter—caramel
00518	Slitter—cardboard
00286	Slotter
00590	Slubber
00335	Soap press
00335	Soap stamper
00909	Soldering machine
00367	Sole molder and leveler
00910	Spinner—metal, n. e. c.
00911	Spinner—musical string
00912	Splitter—band knife (leather), belt knife
00591	Spooler
00913	Sprayer, n. e. c. (paint, etc.)

Machines—Continued

ALPHABETICAL LIST OF MACHINES—con.
Code

00914	Spreader—cotton waste
00120	Spring maker—coiled
00107	Spring maker—leaf
00314	Sprue cutter
00291	Stamping and forming
00915	Stapler
00916	Starcher
00315	Stencil cutter
00122	Stereotype
00270	Sticker
00917	Still
00551	Stitcher
00918	Stock and die, n. m.
00744	Stoker
00919	Stoker—tannery
00287	Stone planers
00072	Stone-products m a c h i n e s , n. e. c.—stone rubbing bed
00123	Straightener
00920	Straightener, n. m.
00921	Stranding machine—cable
00922	Stripper—leather
00073	Stropper, metalworker, n. e. c.
00234	Stuffer—food
00923	Stump puller, n. m.
00036	Sulphonators
00385	Supercalender (paper)
00074	Surfacer—woodwork, n. e. c.
00124	Swaging machine
00113	Tack maker
00842	Tacker and nailer
00937	Tamp
00938	Taperer—cork
00188	Taps and dies, n. m.
00187	Tapper and threader—tapper, n. e. c.
00939	Teasels, textile
00278	Tenoner, automatic
00940	Tester, n. e. c.
00890	Textile finisher—textile ma- chines, n. e. c.
00941	Thrasher
00942	Thrashing bag (for paper mills)
00943	Thread roller
00944	Threader and cutter—bolt, nut, rivet, pipe (threader, n. e. c.)
00945	Tire builder and tube maker
00946	Tire pump, n. m.
00236	Tire wrapper
00947	Tobacco machine, n. e. c.

Machines—Continued

ALPHABETICAL LIST OF MACHINES—CON.
Code

00163	Tobacco-stem crusher
00270	Tongue and groover
00948	Treadmill, n. m.
00949	Treater
00950	Trimmer—carpet
00522	Trimmer—cloth
00951	Trimmer, n. e. c.
00076	Trimmer or buffer—shoe
00126	Tube caster
00952	Tube drawing
00953	Tube-making machine—paper
00018	Tumbler, n. e. c. (barrel, etc.)
00954	Turn buckle, n. m.
00593	Twine maker, n. e. c.
00594	Twister
00543	Unhairer
00965	Universal woodworker
00966	Upholsterer, n. e. c.
00105	Upsetter (hot metal)
00078	Valve-grinding machines, n. m.
00908	Vamper
00970	Vender
00370	Veneer press
00971	Vibrator—massager, etc.
00972	Vise, n. m.
00370	Wagon-wheel press
00978	Washer—clothes
00979	Washer—dishes
00017	Washer—drum (leather)
00980	Washer—grain
00984	Washers, n. e. c. (metal parts, etc.)
00981	Washer or scourer—barrel and keg
00983	Washer or wringer—clothes, n. m.
00982	Washer—soaking and rinsing bottles, cans, etc.
00220	Weigher and bagger, etc.
00128	Welder, n. m.—(oxyacetylene)
00127	Welder, n. e. c.
00985	Wet or dry pan
00466	Whizzer
00240	Willower
00986	Winder—armature
00596	Winder, n. e. c.
00952	Wire and tube drawing

Machines—Continued

ALPHABETICAL LIST OF MACHINES—CON.
Code

00987	Wireworking and wire products manufacturing, n. e. c. (not wire-drawing)
00371	Wood bender and former
00265	Wood heel turner
00656	Woodworker, n. e. c.
00237	Wrapper, n. e. c.
00238	Wrapper—tube and hose
00417	Wringer
01000	Pumps and prime movers
01100	<i>Engines and prime movers</i>
01101	Steam engine
01102	Internal-combustion engine
01103	Steam turbine
01104	Air-driven motor
01105	Water motor, turbine, and waterwheels
01200	<i>Pumps</i>
01201	Reciprocating pump
01202	Centrifugal pump
01203	Air compressors
01204	Fans and blowers
01999	<i>Pumps and prime movers, n. e. c.</i>

PARTS OF PUMPS AND PRIME MOVERS

0	Belts, pulleys, chains and sprockets, cables, and sheaves or gears
1	Moving parts, n. e. c.
2	Ignition, heating, or cooling system parts
3	Frame, bed, etc.
4	Valves
5	Gaskets, packing, etc.
6	Safety devices
7	Flywheel
8	
9	Parts of pumps and prime movers, n. e. c.
02000	Elevators
02100	<i>Passenger elevators</i>
02101	Electric—not push button
02102	Electric—push button
02103	Belt driven
02104	Steam
02105	Hydraulic—not plunger
02106	Hydraulic—plunger

Elevators—Continued

ALPHABETICAL LIST OF MACHINES—CON.

Code *Passenger elevators—Continued*

- 02107 Double compartment
- 02108 Hand power
- 02109 Mine or quarry cage
- 02110 Escalator
- 02111 Man lift
- 02200 *Freight elevators*
- 02201 Electric—not push button
- 02202 Electric—push button
- 02203 Belt driven
- 02204 Steam
- 02205 Hydraulic—not plunger
- 02206 Hydraulic—plunger
- 02207 Dumb waiter
- 02208 Hand power
- 02209 Mine or quarry cage
- 02210 Material hoist
- 02211 Sidewalk elevator
- 02999 *Elevators, n. e. c.*

PARTS OF ELEVATORS

- 0 Belts, pulleys, chains and sprockets, sheaves or gears
- 1 Cables and cable fastenings
- 2 Car
- 3 Car gates
- 4 Hoistway
- 5 Hoistway gates
- 6 Safety devices
- 7 Operating machinery
- 8 Platform or steps
- 9 Parts of elevator, n. e. c.
- 03000 **Hoisting apparatus (not including elevators)**
- 03100 *Cranes*
- 03101 Locomotive tractor or truck crane
- 03102 Jib and pillar crane
- 03103 Traveling crane (overhead and gantry)
- 03200 *Shovels, derricks, dredges*
- 03201 Power shovel
- 03202 Derricks
- 03203 Dredge
- 03300 *Other hoisting apparatus*
- 03301 Chain hoist or chain blocks
- 03302 Air hoist
- 03303 Hydraulic jacks
- 03304 Gin poles

Hoisting apparatus—Continued

ALPHABETICAL LIST OF MACHINES—CON.

Code *Other hoisting apparatus—Con.*

- 03305 Jammer (logging)
- 03306 Mine buckets
- 03307 Electric hoist
- 03999 *Hoisting apparatus, n. e. c.*

PARTS OF HOISTING APPARATUS

- 0 Belts, pulleys, chains and sprockets, cables, and sheaves or gears
- 1 Moving parts, n. e. c.
- 2 Cab
- 3 Frame, bed, etc.
- 4 Hooks or slings
- 5
- 6 Safety devices
- 7 Boom or mast or legs
- 8 Magnet or bucket
- 9 Parts of hoisting apparatus, n. e. c.

04000 **Conveyors**

- 04001 Belt type
- 04002 Sprocket type
- 04003 Monorail type
- 04004 Overhead trolley
- 04005 Screen type
- 04006 Screw type
- 04007 Pneumatic type
- 04008 Apron type
- 04010 Drag line, car puller, windlass, sweep, etc.
- 04011 Chain type
- 04012 Car loader and unloader
- 04013 Tiering or piling machine
- 04014 Log jack
- 04015 Line rolls, smooth or spiked
- 04999 *Conveyors, n. e. c.*

PARTS OF CONVEYORS

- 0 Belts, pulleys, chains and sprockets, cables, and sheaves or gears
- 1 Moving parts, n. e. c.
- 2
- 3 Frame, bed, etc.
- 4
- 5
- 6 Safety devices
- 7
- 8
- 9 Conveyor parts, n. e. c.

Code	
07000	Animals
07100	<i>Domestic animals</i>
07101	Draft animals (horse, mule, ox, camel, etc.)
07102	Cow, sheep, goat, and other grazing animals (not draft)
07103	Dogs
07104	Cats
07105	Birds and fowl
07199	Domestic animals, n. e. c.
07200	<i>Insects</i>
07300	<i>Snakes and reptiles</i>
07400	<i>Wild animals</i>
07401	In captivity, n. e. c.
07402	Not in captivity, n. e. c.
07500	<i>Fish</i>
07999	<i>Animals, n. e. c.</i>

PARTS OF ANIMALS

0	Feet or hoofs, claws, talons, etc.
1	Mouth, stinger, teeth, etc.
2	Horns
3	Tail
4	
5	
6	
7	
8	
9	Parts of animal, n. e. c.

08000 **Mechanical power transmission apparatus**

NOTE.—Transmission equipment shall include all mechanical means of transmitting power from a prime mover up to but not including a shaft (and the pulleys and gears on the shaft), the bearings of which form an integral part of a machine. Directly connected prime movers are defined as having no transmission apparatus.

08010	Main shaft
08020	Countershaft
08030	Friction clutches
08040	Collars and couplings
08050	Bearings
08060	Hangers

Transmission apparatus—Continued

Code	
08070	Gears
08080	Sheaves
08090	Pulleys
08100	Drums
08110	Ropes and cables
08120	Chains
08130	Sprockets
08140	Belts
08150	Lacing and fastenings
08160	Belt shifters
08170	Safety devices
08180	Counterweights
08200	Set screws, set bolts, and keys
08999	<i>Transmission apparatus, n. e. c.</i>

PARTS OF TRANSMISSION APPARATUS

None

09000 **Electric apparatus**

(Use rated capacities for identifying voltages. The limits provided here are outside the customary operating voltages.)

09000	<i>Motors and generators</i> (not of hand tools)
09010	Motors
09011	Less than 150 volts
09012	150 to 300 volts
09013	300 to 750 volts
09014	750 to 7,500 volts
09015	Over 7,500 volts
09020	Generators
09021	Less than 150 volts
09022	150 to 300 volts
09023	300 to 750 volts
09024	750 to 7,500 volts
09025	Over 7,500 volts
09100	<i>Transformers and converters</i>
09110	Transformers
09111	Less than 150 volts
09112	150 to 300 volts
09113	300 to 750 volts
09114	750 to 7,500 volts
09115	Over 7,500 volts
09120	Converters (rotary)
09121	Less than 150 volts
09122	150 to 300 volts
09123	300 to 750 volts

Electric apparatus—Continued		Electric apparatus—Continued	
	<i>Transformers and converters—</i>		<i>Rheostats, etc.—Con.</i>
Code	Continued	Code	
	Converters (<i>rotary</i>)—Con.	09420	Capacitators
09124	750 to 7,500 volts	09421	Less than 150 volts
09125	Over 7,500 volts	09422	150 to 300 volts
09200	<i>Conductors</i>	09423	300 to 750 volts
09210	Conductors—overhead	09424	750 to 7,500 volts
09211	Less than 150 volts	09425	Over 7,500 volts
09212	150 to 300 volts	09430	Rectifiers
09213	300 to 750 volts	09431	Less than 150 volts
09214	750 to 7,500 volts	09432	150 to 300 volts
09215	Over 7,500 volts	09433	300 to 750 volts
09220	Conductors—underground	09434	750 to 7,500 volts
09221	Less than 150 volts	09435	Over 7,500 volts
09222	150 to 300 volts	09440	Batteries (storage)
09223	300 to 750 volts	09441	Less than 150 volts
09224	750 to 7,500 volts	09442	150 to 300 volts
09225	Over 7,500 volts	09443	300 to 750 volts
09230	Conductors—in buildings	09444	Over 750 volts
09231	Less than 150 volts	09500	<i>Magnetic and electrolytic ap-</i>
09232	150 to 300 volts		<i>paratus</i>
09233	300 to 750 volts	09510	Magnetic apparatus
09234	750 to 7,500 volts	09511	Less than 150 volts
09235	Over 7,500 volts	09512	150 to 300 volts
09300	<i>Switchboard and bus structures;</i>	09513	300 to 750 volts
	<i>switches, circuit breakers, and</i>	09514	Over 750 volts
	<i>fuses</i>	09520	Electrolytic apparatus
09310	Switchboard and bus struc-	09521	Less than 150 volts
	tures	09522	150 to 300 volts
09311	Less than 150 volts	09523	300 to 750 volts
09312	150 to 300 volts	09524	Over 750 volts
09313	300 to 750 volts	09600	<i>Heating appliances, lamps, and</i>
09314	750 to 7,500 volts		<i>tubes</i>
09315	Over 7,500 volts	09610	Heating appliances
09320	Switches, circuit breakers,	09611	Less than 150 volts
	fuses, and other safety	09612	150 to 300 volts
	devices	09613	300 to 750 volts
09321	Less than 150 volts	09614	Over 750 volts
09322	150 to 300 volts	09620	Lamps
09323	300 to 750 volts	09621	Less than 150 volts
09324	750 to 7,500 volts	09622	150 to 300 volts
09325	Over 7,500 volts	09623	300 to 750 volts
09400	<i>Rheostats, starters, and control</i>	09624	750 to 7,500 volts
	<i>apparatus; capacitors, recti-</i>	09625	Over 7,500 volts
	<i>fiers, batteries (storage)</i>	09630	Tubes
09410	Rheostats, starters, and con-	09631	Less than 150 volts
	trol apparatus	09632	150 to 300 volts
09411	Less than 150 volts	09633	300 to 750 volts
09412	150 to 300 volts	09634	750 to 7,500 volts
09413	300 to 750 volts	09635	Over 7,500 volts
09414	750 to 7,500 volts		
09415	Over 7,500 volts		

Electric apparatus—Continued		Hand tools—Continued	
Code		Code	<i>H</i>
09900	<i>Electric apparatus, n. e. c.</i>	10181	Hammer
09910	Less than 150 volts	10182	Hatchet
09920	150 to 300 volts	10183	Hoe
09930	300 to 750 volts	10184	Hook, n. e. c.
09940	750 to 7,500 volts	10185	Household tools, n. e. c.
09950	Over 7,500 volts		<i>I</i>
PARTS OF ELECTRIC APPARATUS		10191	Iron—pressing
	None		<i>J</i>
10000	Hand tools	10201	
10100	<i>Hand motive power—when in use, carried by a person</i>		<i>K</i>
	<i>A</i>	10211	Knife
10101	Abrasive shave		<i>L</i>
10102	Adz	10221	Ladle
10103	Anvil	10222	Lantern
10104	Auger	10223	Level
10105	Awl	10224	Lever
10106	Axe		<i>M</i>
	<i>B</i>	10231	Mallet
10111	Bale hook	10232	Maul
10112	Belt shifter	10233	Metalworker's tools, n. e. c.
10113	Blowtorch	10234	Mop
10114	Boiler-tube expander		<i>N</i>
10115	Brake club	10241	Nail and tack puller
10116	Broom and brush	10242	Needle
10117	Bucket		<i>O</i>
	<i>C</i>	10251	Oil can
10131	Can opener		<i>P</i>
10132	Cleaver	10261	Pen or pencil
10133	Climbing spur	10262	Paving tool
10134	Chisel	10263	Pick and pickaxe
10135	Crowbar	10264	Pile
	<i>D</i>	10265	Pinch bar
10141	Dies and taps	10267	Pin
10142	Drawknife	10268	Pitchfork
10143	Drift pin and nail set	10269	Plane
10144	Drill	10270	Plier, pincer, tong
	<i>E</i>	10271	Poker
10151		10272	Pump
	<i>F</i>	10273	Punch
10161	File		<i>Q</i>
10162	Fire extinguisher	10281	
10163	Fork, n. e. c.		<i>R</i>
	<i>G</i>	10291	Rake
10171	Gage	10292	Razor
10172	Glass cutter	10293	Rope, chain
		10294	Rule, ruler

Code	Hand tools—Continued
	<i>S</i>
10301	Sandpaper
10302	Saw
10303	Scale
10304	Scissors and shears
10305	Scoop
10306	Scraper
10307	Screw driver
10308	Scythe
10309	Shovel and spade
10310	Sickle
10311	Sledge
10312	Slice bar
	<i>T</i>
10321	Tamper
10322	Tire iron
10323	Trowel
	<i>U</i>
10331	
	<i>V</i>
10341	
	<i>W</i>
10351	Wedge
10352	Woodworker's tools, n. e. c.
10353	Wrench
10499	Hand tools, n. e. c.
10500	<i>Mechanical motive power</i> —not electrical—when in use, carried and held by a person.
10510	Abrasive stone or wheel
10520	Chisel
10530	Drill
10540	File
10550	Fire extinguisher
10560	Hammer
10570	Hydraulic tool, n. e. c.
10580	Knife, n. e. c.
10590	Nozzle and hose
10600	Pneumatic tools, n. e. c.
10610	Press
10620	Pump
10630	Punch
10640	Riveter
10650	Sandblaster
10660	Saw
10670	Scoop
10680	Scraper
10690	Screw driver
10700	Torch
10799	Hand tools, n. e. c.—mechanically driven

Code	Hand tools—Continued
10800	<i>Electrical motive power</i> —when in use, carried and held by a person.
10810	Abrasive stone or wheel
10820	Buffer
10825	Channeler
10830	Chisel
10835	Circular knife
10840	Curling iron
10845	Drill
10850	Dryer
10855	File
10860	Floor polisher, waxer, or scraper
10865	Hair clipper
10870	Hammer
10875	Heater
10880	Ironer
10885	Knife, n. e. c.
10890	Loader
10895	Milker
10900	Pipe cutter or threader
10905	Press
10910	Pump
10915	Punch
10920	Riveter
10925	Sand blaster
10930	Saw
10935	Scoop
10940	Scraper
10945	Screw driver
10950	Soldering iron
10955	Toaster
10960	Vibrator, massager
10965	Welding tools
10999	Electrically driven hand tools, n. e. c.

PARTS OF HAND TOOLS

The motors and generators connected with these hand tools are considered a part of the tool and are not listed under electrical apparatus.

11000	Chemicals
11000	<i>Explosives</i> (use only for explosions)
11005	Ammonium explosives
11010	Ammunition—large
11015	Ammunition—for small arms

Chemicals— Continued		Chemicals—Continued	
Code	<i>Explosives—Continued</i>	Code	<i>Noxious vapors, etc.—Continued</i>
11020	Chlorate and perchlorate mixtures	11290	Noxious vapors, gases, fumes, n. e. c.
11025	Dynamite, n. e. c.	11300	<i>Noxious or corrosive chemicals</i>
11030	Fireworks and pyrotechnics		Acids
11035	Firing caps and cap ingredients (fulminates, n. e. c.)	11303	Formic
11040	Fuses	11305	Hydrochloric (muriatic)
11045	Guncotton (nitrocellulose)	11307	Hydrocyanic
11050	Gunpowder (incl. black powder)	11309	Hydrofluoric
11055	Liquid oxygen explosives	11312	Nitric
11060	Nitroglycerine	11315	Sulphuric
11065	Picric acid and picrates	11319	Acids, n. e. c.
11070	Toluene compounds (trinitrotoluene, etc.)		Alkalies (caustics)
11090	Explosives, n. e. c.	11323	Ammonia
11100	<i>Explosive gases or vapors</i> (use only for explosions)	11325	Lime (calcium oxide)
11105	Acetates (methyl, ethyl, propyl, etc.)	11327	Caustic potash (potassium hydroxide)
11110	Acetylene	11330	Caustic soda (sodium hydroxide)
11115	Alcohols (methyl, ethyl, propyl, etc.)	11339	Alkalies, n. e. c.
11120	Ammonia		Miscellaneous noxious and corrosive chemicals (solids and liquids, but not dust)
11125	Carbon disulphide	11343	Alcohol
11130	Gas, manufactured (for light or heat)	11346	Benzine
11135	Gas, natural (for light or heat)	11349	Benzol, its compounds and derivatives
11140	Hydrogen	11352	Cyanogen and its compounds
11145	Methane	11355	Carbon tetrachloride
11150	Mine gas	11358	Creosote
11155	Sewer gas	11361	Other
11190	Explosive gases and vapors, n. e. c.	11365	Gasoline
11200	<i>Noxious vapors, gases, fumes</i>	11368	Grease
11205	Acid	11371	Kerosene
11210	Benzol and its compounds and derivatives (aniline, etc.)	11374	Naphtha
11215	Carbon bisulphide	11377	Oils
11220	Carbon dioxide	11380	Paraffin
11225	Carbon monoxide	11383	Phosphorus
11230	Carbon tetrachloride	11386	Potassium
11235	Chlorine	11388	Sodium
11240	Cyanogen and its compounds	11399	Miscellaneous noxious and corrosive chemicals, n. e. c.
11245	Ether	11400	<i>Poisonous vegetation</i>
11250	Hydrogen sulphide	11405	Hemlock
11253	Lead	11410	Ivy
11255	Methanol	11415	Oak
11260	Mercury	11420	Sumac
11265	Nitrogen oxides	11425	Tamarack
11270	Refrigerants	11499	Poisonous vegetation, n. e. c.
		11999	<i>Chemicals, n. e. c.</i>

Code		Code	Dusts—Continued
12000	Highly inflammable and hot substances (Use only for injuries resulting from fire and flame)	13200	<i>Inorganic dusts</i> (for injuries not resulting from explosions)
12100	Alcohol	13204	Arsenic compounds
12150	Artificial leather	13208	Asbestos
12200	Film (photographic)	13212	Barium and its compounds
12250	Fire and flame	13216	Cadmium compounds
12300	Lacquers	13220	Corundum (carborundum)
12350	Paints, varnishes, shellacs	13224	Cement
12400	Petroleum and its products	13228	Chalk
12405	Petroleum	13232	Chromium compounds
12410	Benzine	13236	Clay
12415	Fuel oil	13240	Coal
12420	Gasoline	13244	Emery
12425	Kerosene	13248	Enameling powder
12430	Naphtha	13252	Granite
12499	Petroleum products, n. e. c.	13256	Iron
12500	Pyroxylin products (celluloid)	13260	Lead
12550	Steam	13264	Manganese
12999	Highly inflammable and hot substances, n. e. c.	13268	Silica (quartz, sand, sandstone, etc.)
13000	Dusts	13272	Silicates
13000	<i>Explosive dusts</i> (use only for explosions)	13276	Stone, n. e. c.
13005	Coal	13299	Inorganic dusts, n. e. c.
13010	Cocoa	13999	<i>Dusts, n. e. c.</i>
13015	Flour	14000	Radiations and radiating substances
13020	Grain	14100	Radium and radioactive substances
13025	Leather	14200	Ultraviolet rays
13030	Metal (aluminum, magnesium, etc.)	14300	X-rays, fluoroscope, etc.
13035	Spices	14999	Radiations and radiating substances, n. e. c.
13040	Starches	15000	Working surfaces, n. e. c.
13045	Sugars	A	
13050	Textile (wool, cotton, flax, hemp, etc.)	15101	
13055	Wood	B	
13060	Explosive dusts, n. e. c.	15141	
13100	<i>Organic dusts</i> (for injuries not resulting from explosions)	C	
13105	Flour	15181	Coal—roof
13110	Fur	15182	Coal—sides
13115	Grain	15183	Coal—floor
13120	Hair	D	
13125	Leather	15221	
13130	Rubber	E	
13135	Straw	15261	
13140	Tobacco		
13145	Wood		
13199	Organic dusts, n. e. c.		

Working surfaces, n. e. c.— Continued		Working surfaces, n. e. c.— Continued	
Code	<i>F</i>	Code	<i>S</i>
15301	Floors—temporary or unfinished	15805	Shelves
15302	Floors—wood	15810	Staging or scaffold
15303	Floors—linoleum covered	15820	Stairs or steps—wood
15304	Floors—carpet covered	15821	Stairs or steps—metal
15305	Floors—concrete	15822	Stairs or steps—concrete
15306	Floors—steel	15829	Stairs or steps—n. e. c.
15307	Floors—stone	15830	Sidewalks
15309	Floors—n. e. c.		<i>T</i>
	<i>G</i>	15841	
15341			<i>U</i>
	<i>H</i>	15881	
15381			<i>V</i>
	<i>I</i>	15921	
15421	Ice (when not part of another surface)		<i>W</i>
	<i>J</i>	15941	
15461			<i>X, Y, Z</i>
	<i>K</i>	15981	
15501		15999	Working surfaces, n. e. c.
	<i>L</i>		
15541			PARTS OF WORKING SURFACES
	<i>M</i>		None
15581		19000	Miscellaneous agencies
	<i>N</i>		NOTE.—Name only when not used as <i>part</i> of some other agency.
15621			<i>A</i>
	<i>O</i>	19101	Air—compressed as in caisson or tunnel work
15661		19102	Athletic equipment, n. e. c.
	<i>P</i>		<i>B</i>
15681		19141	Balconies and platforms
	<i>Q</i>	19142	Barrels, kegs, etc.
15721		19143	Baseball equipment
	<i>R</i>	19144	Basketball equipment
15761	Ramps	19145	Bins, pockets, pits, etc.
15762	Roofs	19146	Bottles
15763	Runways or platforms	19147	Boxes, benches, chairs, tables, etc.
15780	Roads—concrete	19148	Buildings or structures—in course of construction or demolition, n. e. c.
15781	Roads—macadam	19149	Bricks, rocks, stones, etc.
15782	Roads—gravel		
15783	Roads—dirt		
15784	Roads—wood block		
15785	Roads—granite block		
15786	Roads—brick		
15789	Roads—n. e. c.		

Miscellaneous agencies—Continued

Code	
<i>C</i>	
19181	Cans
19182	Cellars—outside openings
19183	Cement—not hardened
19184	Chimneys
19185	Chutes
19186	Clothing, n. e. c.
<i>D</i>	
19221	Dams and docks
19222	Doors, windows, and gates— trap doors
19223	Ditches and trenches
19224	Dusts and particles, n. e. c. (eye injuries from dust particles or rock particles)
<i>E</i>	
19261	Excavations, n. e. c.
19262	Elevations, n. e. c.
<i>F</i>	
19301	Fire escapes
19302	Firearms (not cartridges)
19303	Floor openings
19304	Football equipment
19305	Fungus, n. e. c.
<i>G</i>	
19341	Gangplanks
19342	Glass, n. e. c.
19343	Golf equipment
19344	Goggles
<i>H</i>	
19381	Hockey equipment
19382	Hides
<i>I</i>	
19421	
<i>J</i>	
19441	
<i>K</i>	
19461	Kilns—drying
<i>L</i>	
19501	Ladders
19502	Loading platforms
19503	Lumber or woodworking material, n. e. c.
<i>M</i>	
19541	Manholes, ropes, cables, etc. (not as part of hoisting apparatus)
19542	Metal—sheet
19543	Metal—rod
19544	Metal—stock, n. e. c.

Miscellaneous agencies—Continued

Code	
<i>N</i>	
19581	Nails, spikes, tacks, etc.
<i>O</i>	
19621	Objects—fixed
19622	Objects—moving, n. e. c.
<i>P</i>	
19661	Persons—other than injured
19662	Person—injured
19663	Poles and ties—railroad
19664	Piles of materials, n. e. c.— dumps
<i>Q</i>	
19701	
<i>R</i>	
19741	Racks, shelves, and hooks
19742	Runways
19743	Roofs
19744	Rails and switches
19745	Radiators
19746	Reservoirs, tanks, vats
<i>S</i>	
19781	Scaffolds and stagings
19782	Skylights
19783	Stairways
19784	Safety appliances — safety belts, goggles, etc.
19785	Stoves
<i>T</i>	
19821	Towers
19822	Tramways
19823	Trees, branches, etc.
19824	Trestles, bridges, etc.
19825	Tunnels, shafts, n. e. c.
19826	Tires—pneumatic—when not on vehicle
19746	Tanks, vats, reservoirs
<i>U</i>	
19841	
<i>V</i>	
19881	
19746	Vats, tanks, reservoirs
<i>W</i>	
19921	Wires, not electrical
19922	Workbenches
19923	Water
<i>X, Y, Z</i>	
19961	
19999	Miscellaneous materials or objects, n. e. c.
xx000	Agency unclassified—insufficient data

The Unsafe Mechanical or Physical Conditions

Rules for selection.—1. Select the unsafe mechanical or physical condition of the agency or agency part which is chiefly responsible for the injury, and which could have been guarded or corrected.

2. Name the unsafe mechanical or physical condition, if one existed, regardless of whether or not an unsafe act was committed.

As in the case of the agency, unsafe mechanical or physical conditions may be classified and coded in general categories or in detail. The general categories are as follows:

CLASSIFICATION BY MAJOR GROUPS

Code

- 0 Improperly guarded agencies
- 1 Defects of agencies
- 2 Hazardous arrangement, procedure, etc., in, on, or around the selected agency
- 3 Improper illumination
- 4 Improper ventilation
- 5 Unsafe dress or apparel
- 9 Unsafe mechanical or physical condition, n. e. c.
- x Unclassified—insufficient data
- y No defective agency

As is apparent from the following, each of these items can be classified in greater detail.

DETAILED CLASSIFICATION

Code

- 00 **Improperly guarded agencies**
- 00 Unguarded
- 01 Inadequately guarded
- 02 Lack of, or improper, shoring in mining, construction, excavating, etc.
- 09 N. e. c.
- 10 **Defects of agencies**
- 10 Rough
- 11 Slippery
- 12 Sharp-edged
- 13 Poorly designed
- 14 Low material strength
- 15 Poorly constructed
- 16 Inferior composition
- 17 Decayed, aged, worn, frayed, cracked, etc.
- 19 N. e. c. (including hidden defects)
- 20 **Hazardous arrangement, procedure, etc., in, on, or around the selected agency**
- 20 Unsafely stored or piled tools, materials, etc.
- 21 Congestion of working spaces
- 22 Inadequate aisle space, exits, etc.
- 23 Unsafe planning and/or layout of traffic or process operations
- 24 Unsafe processes
- 25 Overloading
- 26 Misaligning
- 29 N. e. c.

Code

- 30 **Improper illumination**
- 30 Insufficient light
- 31 Glare
- 32 Unsuitable location or arrangement (producing shadows or contrasts)
- 39 N. e. c.
- 40 **Improper ventilation**
- 40 Insufficient air changes
- 41 Unsuitable capacity, location, or arrangement of system
- 42 Impure air source
- 49 N. e. c.
- 50 **Unsafe dress or apparel**
- 50 No goggles
- 51 Goggles defective, unsafe, or unsuited for work
- 52 No gloves
- 53 Gloves defective, unsafe, or unsuited for work
- 54 No apron
- 55 Apron defective, unsafe, or unsuited for work
- 56 No shoes
- 57 Shoes defective, unsafe, or unsuited for work
- 58 No respirator
- 60 Respirator defective, unsafe, or unsuited for work
- 61 High heels
- 62 Loose hair
- 63 Loose clothing
- 64 Inadequately clothed, n. e. c.
- 79 N. e. c.
- 99 **Unsafe mechanical or physical condition, n. e. c.**
- xx **Unclassified—insufficient data**
- yy **No unsafe mechanical or physical condition**

Accident Type

Rule for selection.—Select the accident type that is most immediately associated with the selected agency.

Code

CLASSIFICATION OF ACCIDENT TYPE

- 0 **Striking against**
(refers generally to contacts with sharp or rough objects, resulting in cuts, slivers, punctures, etc., due to striking against, kneeling on or slipping on objects)
- 1 **Struck by**
(falling, flying, sliding or moving objects)
- 2 **Caught in, on, or between**
- 3 **Fall on same level**
- 4 **Fall to different level**
- 5 **Slip (not fall) or overexertion**
(resulting in strain, hernia, etc.)
- 6 **Contact with temperature extremes**
(resulting in burning, scalding, freezing, heat exhaustion, sunstroke, frostbite, etc.)
- 7 **Inhalation, absorption, ingestion**
(asphyxiation, poisoning, drowning, etc., but excluding contact with temperature extremes)

Code

- 8 Contact with electric current
(such as results in electrocution, shock, etc.)
- 9 Accident type, n. e. c.
- x Unclassified—insufficient data

The Unsafe Act

Rules for selection.—1. Select that violation of a commonly accepted safe procedure which resulted in the selected accident type.

NOTE.—The unsafe act may have been committed by the person injured, a fellow worker, or some other person.

2. If more than one unsafe act was committed, select the one most closely associated with the selected accident type.

3. Name the unsafe act, if one existed, whether or not an unsafe mechanical or physical condition existed.

As in the case of the unsafe mechanical or physical condition, the classification of unsafe acts may be used in general groups or to all the detail given here.

The general classification is as follows:

CLASSIFICATION BY MAJOR GROUPS

Code

- 0 Operating without authority, failure to secure or warn
- 1 Operating or working at unsafe speed
- 2 Making safety devices inoperative
- 3 Using unsafe equipment, hands instead of equipment, or equipment unsafely
- 4 Unsafe loading, placing, mixing, combining, etc.
- 5 Taking unsafe position or posture
- 6 Working on moving or dangerous equipment
- 7 Distracting, teasing, abusing, startling, etc.
- 8 Failure to use safe attire or personal protective devices
- 9 Unsafe acts, n. e. c.
- x Unclassified—insufficient data
- y No unsafe act

The following classification gives these items in detail.

DETAILED CLASSIFICATION

Code

- 00 Operating without authority, failure to secure or warn
- 00 Starting, stopping, using, operating, firing, moving, etc.
Without authority
- 01 Without giving proper signal
- 02 Failing to lock, block, or secure vehicles, switches, valves, press rams,
other tools, materials and equipment against unexpected motion, flow
of electric current, steam, etc.
- 03 Failing to shut off equipment not in use
- 04 Releasing or moving loads, etc., without giving warning
- 05 Failure to place warning signs, signals, tags, etc.
- 09 N. e. c.

Code

- 10 **Operating or working at unsafe speed**
- 10 Running
- 11 Feeding or supplying too rapidly
- 12 Driving too rapidly
- 13 Driving too slowly
- 14 Throwing material instead of carrying or passing it
- 15 Jumping from vehicles, platforms, etc.
- 19 N. e. c.
- 20 **Making safety devices inoperative**
- 20 Removing safety devices
- 21 Blocking, plugging, tying, etc., of safety devices
- 22 Replacing safety devices with those of improper capacity (higher amperage electric fuses, low capacity safety valves, etc.)
- 23 Misadjusting safety devices
- 24 Disconnecting safety devices
- 29 N. e. c.
- 30 **Using unsafe equipment, hands instead of equipment, or equipment unsafely**
- 30 Using defective equipment (mushroom head chisels, etc.)
- 31 Unsafe use of equipment (e. g. iron bars for tamping explosives, operating pressure valves at unsafe pressures, volume, etc.)
- 32 Using hands instead of hand tools (to feed, clean, adjust, repair, etc.)
- 33 Gripping objects insecurely; taking wrong hold of objects
- 39 N. e. c.
- 40 **Unsafe loading, placing, mixing, combining, etc.**
- 40 Overloading
- 41 Crowding
- 42 Lifting or carrying too heavy loads
- 43 Arranging or placing objects or materials unsafely (parking, placing, stopping, or leaving vehicles, elevators, and conveying apparatus in unsafe position for loading and unloading)
- 44 Injecting, mixing, or combining one substance with another so that explosion, fire, or other hazard is created (injecting cold water into hot boiler, pouring water into acid, etc.).
- 45 Introducing objects or materials unsafely (portable electric lights inside of boilers or in spaces containing inflammables or explosives; moving equipment in congested workplaces, smoking where explosives or inflammables are kept, etc.)
- 49 N. e. c.
- 50 **Taking unsafe position or posture**
- 50 Exposure under suspended loads
- 51 Putting body or its parts into shaftways or openings; standing too close to openings
- 52 Entering vessel or enclosure when unsafe because of temperature, gases, electric, or other exposures
- 53 Working on high tension conductors from above instead of below.
- 54 Lifting with bent back, while in awkward position, etc.
- 55 Riding in unsafe position (on platforms, tailboards, and running boards of vehicles; tailing on or stealing rides; riding on apparatus designed only for materials, etc.)
- 56 Exposure on vehicular right-of-way
- 57 Passing on grades and curves, cutting in and out, road hogging, etc.
- 58 Exposure to falling or sliding objects
- 59 N. e. c.

Code

- 60 **Working on moving or dangerous equipment**
- 60 Getting on or off moving equipment (vehicles, conveyors, elevators, animals, etc.)
- 61 Cleaning, oiling, adjusting, etc., of moving equipment
- 62 Calking, packing, etc., of equipment under pressure (pressure vessels, valves, joints, pipes, fittings, etc.)
- 63 Working on electrically charged equipment (motors, generators, lines, and other electrical equipment)
- 64 Welding, repairing, etc., of equipment containing dangerous chemical substances
- 69 N. e. c.
- 70 **Distracting, teasing, abusing, startling, etc.**
- 70 Calling, talking, or making unnecessary noise
- 71 Throwing material
- 72 Teasing, abusing, startling, horseplay
- 73 Practical joking, etc.
- 74 Quarreling
- 79 N. e. c.
- 80 **Failure to use safe attire or personal protective devices**
- 80 Failing to wear goggles, gloves, masks, aprons, shoes, leggings, etc.
- 81 Wearing high heels, loose hair, long sleeves, loose clothing, etc.
- 89 N. e. c.
- 99 **Unsafe acts, n. e. c.**
- xx **Unclassified—insufficient data**
- yy **No unsafe act**

Unsafe Personal Factor

Rule for selection.—Select the unsafe personal factor which resulted in the selected unsafe act.

In keeping with the general structure of this classification, the unsafe personal factors may be classified in general groups or in specific detail. The general group classification is as follows:

CLASSIFICATION BY MAJOR GROUPS

- Code
- 0 Improper attitude
- 1 Lack of knowledge or skill
- 2 Bodily defects
- 9 Unsafe personal factors, n. e. c.
- x Unclassified—insufficient data
- y No unsafe personal factor

The detailed classification is as follows:

DETAILED CLASSIFICATION

- Code
- 00 **Improper attitude**
- 00 Willful disregard of instructions
- 01 Violent temper
- 02 Absentmindedness
- 03 Willful intent to injure
- 04 Nervous, excitable, etc.
- 05 Failure to understand instructions
- 09 Improper attitude, n. e. c.

Code

- 10 **Lack of knowledge or skill**
- 10 Unaware of safe practice
- 11 Unpracticed or unskilled
- 19 Lack of knowledge or skill, n. e. c.
- 20 **Bodily defects**
- 20 Defective eyesight
- 21 Defective hearing
- 22 Muscular weakness
- 23 Fatigue
- 24 Existing hernia
- 25 Crippled
- 26 Existing heart or other organic weakness
- 27 Intoxicated
- 29 Bodily defects, n. e. c.
- 99 **Unsafe personal factors, n. e. c.**
- xx **Unclassified—insufficient data**
- yy **No unsafe personal factor**

Chapter 10.—Frequency and Severity Rates and Disability Distribution

Frequency and Severity Rates

The determination of uniform, adequate units of exposure to measure the frequency of accident occurrence and the severity of the resulting disabilities is an indispensable basis for the intelligent compiling of accident statistics. The methods used prior to the development of the present standard frequency and severity rates were far from satisfactory and have been generally discarded. Frequency today is rarely measured per 1,000 employees, because it is clearly recognized that the hours worked by 1,000 employees may vary widely from week to week for different plants and even within the same plant. The length of time workers are exposed to the occupational hazards of their jobs is as important as the number of workers exposed. For instance, it is generally agreed that the frequency of disabling injuries will be less for 1,000 employees working 20 hours per week than for the same 1,000 employees working 40 hours per week. Similarly, the concept of the "full-time annual worker" has been generally discarded in the United States, because the number of hours which constituted the working time of a "full-time" worker shifted considerably from time to time, and when fixed at any given number of hours often failed to reflect prevailing practice and experience, becoming little more than a statistical abstraction.

The standard which is more acceptable than either of these two, and which is most generally used, is the frequency rate. *The frequency rate is the number of disabling injuries per million employee-hours worked.*

The companion rate to the frequency rate is the severity rate. *The severity rate is the average days of disability per thousand employee-hours worked.* The reason for not stating this rate in terms of a million employee-hours is that the resulting rate would be so large as to be unwieldy.

In arriving at these rates, three items are important: (1) The type of disabling injury to be included in the injury count (see ch. 5); (2) the method of evaluating the time charges for permanent injuries; and (3) the method of computing the rates. These three items are taken up, in the order named, in the American Standard Method of Compiling Industrial Injury Rates, as approved by the American Standards Association in 1937. The standard was sponsored by the

International Association of Industrial Accident Boards and Commissions, the National Council on Compensation Insurance, and the National Safety Council. A large number of other interested organizations participated in the deliberations.

The sections of the standard dealing with methods of evaluating injuries and the methods of computing rates are here given verbatim, together with explanatory rules.¹ It is emphasized at the outset, however, that these sections are concerned primarily with disabling injuries, and with disability measured in *calendar days* rather than in days lost from work.

AMERICAN STANDARD METHOD OF COMPILING INDUSTRIAL INJURY RATES

Section 3.—Time charges

3.1. *Time charges.*—The time charge is the measure of disability stated in days, as specified in sections 3 and 4 of this code.

3.2. *Time charge for death.*—Six thousand (6,000) days shall be charged for each death. See section 4, also R5 and R10.

3.3. *Time charge for permanent total disability.*—Six thousand (6,000) days shall be charged for each permanent total disability. See section 4, also R5 and R10.

3.4. *Time charge for permanent partial disability.*—The time charge for permanent partial disability shall be as follows:

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

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

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

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

3.7. *Time charge for first-aid cases.*—No methods are specified for determining time charges for first-aid cases. Any agency computing such time charges shall indicate the method used.

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Section 4.—Scale of time charges

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

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

NOTE 1.—Days shown in table are charged for complete dismemberment or complete loss of use of member. Definition 3.4a. For partial dismemberment or partial loss of use of member a percentage of these figures is charged, as explained in definition 3.4b.

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

Section 5.—Injury rates

5.1. *Frequency rates.*—The frequency rates shall be the number of injuries per one million man-hours of exposure. See R12.

5.2. *Severity rate.*—The severity rate shall be the total time charges per 1,000 man-hours of exposure. See R13.

5.3. *General comparability.*—In the interest of general comparability, every agency shall, as a minimum, compute frequency and severity rates based on classes of injuries as defined in paragraphs 2.2 to 2.5 inclusive. Such rates shall be designated as "four-class" rates. The computation of additional rates based on classes of injuries as defined in paragraphs 2.2 to 2.6 inclusive is recommended for such agencies as can secure dependable data on temporary partial disabilities. Such rates shall be designated as "five-class" rates and shall in all cases be in addition to "four-class" rates. Rates based on classes of injuries as defined in paragraphs 2.2 to 2.7 inclusive, if computed, shall be designated as "six-class" rates.

Section 6.—Rulings and interpretations

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

R2. *Average number of employees.*—To obtain average, count names on pay roll and salary roll of those at work for each day during period covered and divide the aggregate number of names by the number of working days. For example, 25 working days in November; aggregate number of names of those on pay roll and salary roll and at work—15,000. Divide 15,000 by 25 and the quotient 500 represents the average number of employees.

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

R4. *The number of injuries.*—The number of injuries, not the number of accidents, shall be recorded. For example, if 10 employees are killed in one boiler explosion, 10 injuries shall be recorded.

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

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

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

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

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

R9. *Temporary disability.*—Hernia, loss of teeth, and loss of any toe other than the great toe, are considered temporary disabilities only. For details see R6.

R10. *Actual time lost.*—The actual time lost due to injuries specified in definitions 3.2, 3.3, 3.4a, and 3.4b shall not be charged.

R11. *Calendar period charges.*—All injuries should preferably be charged to the calendar period in which they occurred. For example, man scratches hand on July 31. He reports for first aid on August 2, but on August 3 infection sets in, causing several days' disability. The injury should be charged to July 31. An exception may be made if the change affects an annual summary. Thus, if an injury in December 1931 does not cause any disability until February 1932, after the 1931 summary has been prepared, the work involved in changing the annual

summary is hardly worth while, and it is better to consider the injury as occurring in 1932.²

R12. *Frequency rate.*—To obtain the frequency rate multiply by 1,000,000 the total number of injuries and divide by the total man-hours of exposure.

Formula:

$$\text{Frequency rate} = \frac{\text{No. of injuries} \times 1,000,000}{\text{No. of man-hours of exposure}}$$

R13. *Severity rate.*—To obtain the severity rate, multiply by 1,000 the total time charges in days and divide by the total man-hours of exposure.

Formula:

$$\text{Severity rate} = \frac{\text{Total time charges in days} \times 1,000}{\text{Number of man-hours of exposure}}$$

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

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

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

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

* * * * *

Several items in the American Standard Method of Compiling Industrial Injury Rates require some elaboration. The numbers used identify the rule in the Standard.

3. 6: No definite method is laid down for the determination of time charges for temporary partial disability. The rule merely states that the number of calendar days shall be multiplied by some factor not exceeding unity, the factor to be developed by the agency computing the time charge. The principle involved is the same as evaluating permanent partial disability in terms of permanent total disability. If a permanent total disability is to be charged as 6,000 days, what, for example, shall be the charge for the loss of an arm? Similarly, temporary partial disability is computed in terms of temporary total disability. The employee can work, but because of his disability he cannot perform his regular job. What shall be the time charge?

In workmen's compensation jurisdictions which recognize temporary partial disability and compensate it, the time charge can be de-

² A revision of this rule is now under consideration. See subsequent discussion.

terminated simply and without the development of a factor. The time charge is the total time period, less the period multiplied by the ratio of the worker's earnings after the injury to those he received before the disability.

$$\text{Time charge} = \begin{array}{c} \text{Total days of} \\ \text{temporary} \\ \text{partial} \\ \text{disability} \end{array} - \left[\begin{array}{c} \text{Total days of} \\ \text{temporary} \\ \text{partial} \\ \text{disability} \end{array} \times \frac{\begin{array}{c} \text{Weekly wage} \\ \text{after injury} \end{array}}{\begin{array}{c} \text{Weekly wage} \\ \text{before injury} \end{array}} \right]$$

Suppose the disability lasts 30 days, and that the worker's earnings during this period were \$18 per week as against \$27 at the time of the injury. The ratio factor in such case will be 18/27 or 2/3. Multiplying the entire period of 30 days by this factor, we arrive at 20 days, the equivalent of full time worked. Deducting this from the total of 30 days, the time loss is found to be 10 days, which is the time charge.

Agencies or establishments which cannot use the wage-ratio method probably will find it necessary to use a physician's evaluation of the percentage by which the injured worker's capacity to perform his regular job has been diminished. In the application of this factor, the following formula may be helpful.

$$\text{Time charge} = \begin{array}{c} \text{Total days of} \\ \text{temporary} \\ \text{partial} \\ \text{disability} \end{array} \times \begin{array}{c} \text{Percentage of impairment of work-} \\ \text{ing capacity to perform worker's} \\ \text{regular job} \end{array}$$

If, for instance, a worker has a temporary partial disability lasting 30 days, and the doctor determines the percentage of impairment to be 40 percent, then—

$$\text{Time charge} = 30 \text{ days} \times 0.40 = 12 \text{ days}$$

R5: This rule merely provides that every permanent partial injury shall be counted as an injury even though the injured loses no time from work. For example, a worker may lose the first phalange of his little finger, but lose no time from work. The usual procedure would be to count this as an injury and charge against it 50 percent of the standard time loss of 300 days. The reference in this rule to "death and permanent total disability" is not intended to convey the impression that a worker can experience either of these without loss of any time from work.

R9: There are no standard time charges for hernia, loss of teeth, or loss of any toe other than the great toe. It will be noted that the standard provides a time charge of 300 days for the great toe or any *two or more* toes. But charges are to be made for any temporary total or partial disability which accompanied the hernia, loss of teeth, or loss of any toe other than the great toe.

R10: The standard time charge for permanent partial disability is a flat charge without allowance for a healing period. It differs in this respect from the compensation procedure in many jurisdictions.

Rule 11.

A recently proposed revision of this rule reads as follows:

R11. *Calendar period charges.*—Each injury should preferably be charged to the calendar period in which the accident occurred and its time charge should preferably be according to the disability finally developed and determined. When, as usually occurs, rates are compiled before complete information to achieve this is possible or available, it is necessary for comparative purposes that there be a uniform interval between the close of the period and the date of compilation. The occurrence of injuries and the time charges for them shall be charged to the period according to the information at the expiration of that interval. For an annual period such interval shall be one month. Injuries first reported later than that date shall be charged to the period in which they are reported. Where a change of status as to time charge occurs, whether with or without change as to class of disability, or is reported subsequent to the compilation of rates according to this rule, each agency may make such compilation of these changes or revision of rates as it may desire. However, such compilation or revision shall be separate from and in addition to standard rates according to this rule.

The effect of this change is as follows: Industrial injury rates for any calendar year would be compiled on the basis of information available up to February 1 of the following year. Included in the rate computations would be all injuries for the preceding year which at that time (i.e., February 1) are known to have occurred, as well as time charges for these injuries according to the best information available. If an injury which occurred during the preceding calendar year is not reported until February 1 or thereafter, then the injury is to be charged to the new year. This rule is to govern for comparative purposes, but any establishment may, on its own records, charge the injury back to the year in which it occurred.

The purpose of the proposed modification is to provide uniformity in rate computations for cases not reported or not resulting in disability until after the year is closed. An important aspect of this rule is that no establishment would be required to break a continuous "no-accident record" by the inclusion of one of these earlier cases. For example, John Smith may have sustained a hernia in December 1938, but continued at work. No disabling injury is charged on his account during 1938. By August 1939, an operation becomes necessary, and John Smith is disabled for 3 weeks. The plant has had a continuous no-accident record since January 1, 1939. Under the newly proposed rule, John Smith's accident would be charged to 1939 for the purpose of computing the frequency and severity rates. But the accident would not be considered as having broken the continuity of the no-accident record established since January 1, 1939.

The rule also implies that if an injury has been charged to a given year, but becomes more severe after February 1 of the following year—such as a temporary total disability turning into a permanent partial or even death—the establishment may make whatever changes it wishes to make on its own records, but is not to make any changes for comparative rate purposes.

It has also been suggested that first-aid cases and temporary partial disabilities be counted as disabling injuries as of the time when a more severe type of disability, such as temporary total, begins.

Disability Distribution³

From the foregoing rules and definitions formulated under the auspices of the American Standards Association, it is clear that the frequency and severity rates indicate relatively how often, on the average, disabling injuries occur per unit of exposure (i. e., per million employee-hours) and the severity of these injuries (measured in time loss per thousand employee-hours). The severity rate, however, fails to indicate how severe or serious the injuries really are. Because the rate is dependent on exposure, several fatalities may result in a severity rate no larger than that resulting from a large number of permanent injuries or a still larger number of temporary total injuries.

One way of overcoming this difficulty is to compute a separate severity rate for deaths, permanent total, permanent partial, temporary total, and temporary partial disabilities. But such a method also has its drawbacks, because, although it gives the relative time charge for each type of disability, it does so in terms of employee-hours of exposure.

The method suggested as a supplement is the disability distribution, which shows the number of disabling injuries for each type of disability per thousand injuries and the average time charge per disability. In the study of the iron and steel industry for 1936, for example, the United States Bureau of Labor Statistics computed a severity rate of 2.10—i. e., 2.10 days of time loss for every 1,000 hours worked—as against a rate of 2.15 for the same establishments in 1935. On the face of it, there was practically no change in the severity experience of the industry. But an analysis of the disability distribution showed that, per thousand injuries, there had been in 1936 11 deaths and permanent disabilities as against 10 in 1935 and 71 permanent partial disabilities as against 60 in 1935. The average time charge per permanent partial disability in 1936 was 801 as against 843 in 1935. Consequently, the conclusion was drawn that for the industry as a whole there was during 1936, as compared with 1935, a shift toward relatively more permanent injuries, but that on the average these injuries were of a less serious character than those occurring in 1935.

³Not part of the American Standard Method of Compiling Industrial Injury Rates.

The portrayal becomes more graphic when, instead of an entire industry group, specific types of departments in the iron and steel industry are considered. Heavy rolling mills, for instance, had per 1,000 disabling injuries 14 deaths and permanent total disabilities in 1935 and 30 such injuries in 1936. But permanent partial disabilities per 1,000 disabling injuries declined from 130 to 80, and the average time loss per injury from 897 to 752 days. There was no change in the average duration of cases of temporary total disability of 36 days per case.

The following table for 30 manufacturing industries, covering the years 1935 and 1936, serves to illustrate the point further.

Disability Distribution per 1,000 Injuries and Average Days Lost per Disability for Identical Establishments in 30 Manufacturing Industries, 1935 and 1936

Industry	Death and permanent total disability ¹		Permanent partial disability				Temporary total disability			
	Number per 1,000 injuries		Number per 1,000 injuries		Average days lost per disability		Number per 1,000 injuries		Average days lost per disability	
	1935	1936	1935	1936	1935	1936	1935	1936	1935	1936
All industries.....	7	7	74	67	923	902	919	926	19	18
Agricultural implements.....	2	5	92	95	802	800	906	900	18	16
Automobiles.....	6	6	98	94	734	705	896	900	23	21
Automobile tires and rubber goods.....	5	7	41	44	821	899	954	949	24	18
Boots and shoes.....	2	2	56	47	825	927	942	951	16	16
Brick, tile, and terra cotta.....	10	7	26	27	681	852	964	966	17	15
Carpets and rugs.....	3	0	119	123	891	882	878	877	15	13
Chemicals.....	22	17	94	92	1,194	1,115	884	891	20	21
Cotton goods.....	4	2	55	47	1,037	1,080	941	951	16	18
Electrical machinery, apparatus, and supplies.....	8	8	127	108	777	742	865	884	19	16
Fertilizers.....	15	17	52	32	1,325	1,646	933	951	14	16
Flour, feed, and other grain-mill products.....	12	10	62	57	1,516	1,219	926	933	20	17
Foundry and machine-shop products.....	5	6	76	64	906	858	919	930	18	17
Furniture.....	7	3	121	114	815	850	872	883	15	14
Glass.....	6	8	36	27	851	1,016	958	965	17	17
Hardware.....	0	2	105	111	488	575	895	887	13	14
Iron and steel.....	10	11	71	60	843	801	919	929	24	21
Leather.....	4	3	62	61	1,009	1,005	934	936	15	15
Logging.....	19	15	52	32	1,487	1,408	929	953	26	23
Lumber:										
Planing mills.....	6	10	70	80	1,058	1,077	924	910	17	15
Sawmills.....	7	7	68	57	1,384	1,297	925	936	21	20
Machine tools.....	10	6	61	56	722	791	929	938	17	15
Paper and pulp.....	7	5	57	61	1,115	1,216	936	934	19	18
Petroleum refining.....	13	20	108	115	1,237	856	879	865	23	25
Pottery.....	6	6	29	19	390	960	965	975	17	15
Shipbuilding, steel and wood.....	16	15	37	65	879	915	897	920	19	16
Slaughtering and meat packing.....	6	4	67	58	884	965	927	938	15	14
Stamped and enameled ware.....	7	4	113	124	841	713	880	872	16	14
Steam fittings, apparatus, and supplies.....	6	9	62	38	830	565	932	953	17	14
Stoves.....	4	5	62	58	940	830	934	937	19	17
Woolen goods.....	3	2	66	86	1,168	1,174	931	912	16	18

¹ Each death or permanent total disability is charged with a time loss of 6,000 days.

The disability distribution, however, is best used in combination with frequency rates. If the disability distribution is used by itself, it may indicate that in a given industry, such as petroleum refining

for instance, the relative number of deaths and permanent injuries is high, from which the conclusion may be drawn that the industry is highly hazardous. Actually, the frequency rate for petroleum refining for 1936 was only 10.42, indicating a relatively good accident experience. Going back for a number of years, it is found that the industry, through safety work, has steadily reduced its frequency rate from 31.36 in 1930 to 10.42 in 1936. The high proportion of serious disabilities, therefore, is due primarily to an absence of minor injuries, which apparently have been prevented.

The disability distribution, if used intelligently, will disclose shifts away from or toward serious injuries, and will permit comparisons between industries concerning the actual seriousness of the injuries incurred. Caution must be exercised in the conclusions drawn from such rates, and, of course, no such distribution should be compiled for a particular industry when the total number of disabling injuries for that industry is small.

Appendix A.—Tabulating Card

Jurisdictions with facilities for mechanical tabulating will be interested in the type of tabulating card necessary to bring out the data suggested in the tables. The card reproduced here is that used by the Bureau of Workmen's Compensation of Pennsylvania. This Bureau has been employing since January 1, 1938, essentially the statistical method proposed in this Manual for accident cause analysis, using a report form similar to, although somewhat more detailed, than the one suggested in chapter 6.

In discussing this tabulating card, it will be necessary at times to describe briefly the present or anticipated practices of the Pennsylvania Bureau of Workmen's Compensation.

Case number.—The tabulating card columns for the case number permit a serial number as high as 999,999—not because that number indicates the size of the report volume received annually by the Bureau, but because of the likelihood that the volume may reach or exceed 100,000, and therefore require 6 columns on the card. The first of the 7 digits is used to indicate the year during which the report of industrial injury was filed with the Bureau. All reports received in 1938, for instance, begin with 8, those filed in 1939 start with 9, those for 1940 with 0, and so on. The number assigned to the 58,865th case filed with the Bureau during 1938 therefore had the serial case number of 8,058,865. This procedure is aimed at facilitating tabulations on the basis of reports received during the year, the method adopted recently by Pennsylvania. A single sorting operation on this first digit will sort out all cases reported during the year, regardless of the year of injury.

Jurisdictions with a smaller annual case load, and which follow or wish to follow this method of individual case numbers, need use only as many columns as will suffice to meet the maximum case load anticipated.

Employer number.—The employer number used by Pennsylvania's Bureau of Workmen's Compensation contains 8 digits. The first 4 of these are to identify the major industrial activity of an employer. The 4-digit code proposed as standard is to be used in this connection. The last 4 digits are to identify the individual employer within the field of his major economic activity. The numbers to be used for this purpose are assigned serially to the employer, depending on the order in which his first accident report is received after the system

has gone into operation. The number, once assigned, identifies the employer *permanently*. The John Smith Packing Co., engaged in wholesale meat packing, may be the 346th firm to report an industrial disabling injury in the meat-packing industry. Under the 4-digit code, the concern's industry classification is 2011. The employer number for the company therefore would be 2011-0346, to be shown on the card as 20110346. This number identifies the John Smith Packing Co. as long as it does business in the State.

Again, States in which the workmen's compensation act does not extend to all the industries shown in the industry code, or which do not contain all these industries, may not require a number with 8 digits. The 4 digits for the employer's identification within his industry classification allow for a total of 9,999 individual employer listings. Some jurisdictions may find that 999 are sufficient, and may therefore cut the number of digits to 3. Similarly, if the industry classification is to be carried to only 3 digits, another digit can be cut off there. It should be borne in mind, however, that broadening the industry classification automatically tends to increase the number of firms that will fall into any given classification. For illustration, when using the 4-digit industry-classification code, 3 digits may be sufficient to cover the maximum number of concerns in wholesale meat packing. But if a 3-digit industry classification is used, the group of meat products (code 201) will contain, in addition to "meat packing, wholesale," the industries of sausages, prepared meats, etc.; sausage casings; and poultry dressing and packing. Obviously, more firms will fall into such a general classification than into "meat packing." It is likely that what may be gained by contracting the industry code may have to be expended by allowing for additional serial numbers.

County.—Some jurisdictions prefer to publish accident and workmen's compensation data by counties. The most important justification for such a classification is that factory-inspection districts are often arranged by counties, and that the county identification for each reported injury permits allocating these injuries to individual factory-inspection districts, for the information of the inspectors. As a general rule, 2 digits will suffice, allowing for a maximum of 99 counties. Jurisdictions in States with a larger number of counties, if they want data by counties, will have to use 3 columns, providing for a maximum of 999 counties. Another justification is the fact that local safety organizations commonly request statistical information on a local basis.

Industry.—The industry classification in use when the system was introduced was a 4-digit code, which was to be replaced by the standard code when completed. In most instances, it will coincide with the first 4 digits of the employer number, but it will differ if the

accident involved occurred in a type of activity not identical with the major activity of the concern. For instance, the accidental injury or industrial disease may have occurred in a coal mine of a steel corporation, or in a retail store of a clothing manufacturer. The industry in which the injury occurred is in this way specifically identified, in addition to the major economic activity to which it is tied. The advantage of this type of analysis is that it permits a determination of whether the accident experience of captive or subsidiary establishments is better or worse than those of establishments operated independently. The point, of course, is that the operations of captive or subsidiary establishments may be subject to the safety regulations covering the large firm's operations, where no such program may cover the independent concern which may be as large or even larger, in terms of employment, than the captive or subsidiary plant, mine, etc., in itself.

Accident date.—The month of the year is punched in the first 2 columns, from 01 for January to 12 for December. The year is indicated by the last digit, 1938, for instance, being indicated by 8, 1939 by 9, etc. The difference between this number and the first digit of the employer number is that the number here represents the year in which the disability was *incurred*, whereas the first digit of the employer number indicates the year in which the injury was *reported* to the Bureau of Workmen's Compensation. Injuries sustained in November or December of 1938, for instance, may not be reported until early in 1939. Particularly will delays of this type be true of contested cases. The tabulations of Pennsylvania, as already stated, are on the "year in which reported" basis, rather than on the "year in which the accident occurred" basis.

Hours worked.—This item will not be found in the proposed report form. In addition to asking for the hour of the accident, the Pennsylvania form has the additional question: Hour injured began working. The difference between the hour the injured began working and the hour at which the accident occurred measures the number of hours the employee worked before being injured. The data are intended to throw some light on the incidence of disabling injuries as related to the hours of the working day.

This item will be found of secondary importance in most jurisdictions, and has not been provided for on the proposed report form.

Age.—The two columns for age allow for 99 years.

C. C. (conjugal condition) and sex.—Marital status and sex are provided for in this column.

Dependency.—Two columns are provided for this item on the Pennsylvania card in keeping with a code somewhat more complex than the one suggested in chapter 7. The code suggested as standard requires only one column.

Occupation.—Three columns are required by the occupation code now used by the Bureau.

Time employed.—The single column meets the requirements of the code given in chapter 7. The purpose of this information is to determine whether employees new to jobs have relatively higher proportions of disabling injuries than workers who have been working at their jobs for longer periods of time.

Wage.—The wage is punched to the nearest dollar and is the wage actually earned per week at the time of injury. The purpose of this information is to furnish data for the computation of wage loss.

Accident cause (Agency; agency part; accident type; unsafe act; mechanical defect; personal defect).—The provisions on the card meet the requirements of the complete proposed cause code. The coding is carried to the full detail allowed by the code. Jurisdictions wishing to delete some of these items or to contract some of the codes will be able to reduce the number of columns required accordingly.

Injury.—Nature: The one column meets the requirements of the proposed code.

Location: The two columns are required by the proposed code. They may be reduced to one if the contracted code for location of injury is used. Generally, however, such a contraction will not be found to be desirable.

Report lag.—All jurisdictions need report-lag information, but, because of deficient staffing or pressure of work, some may not be able to tabulate such data. It is urged that, where possible, provision be made for this item.

Insurance carrier.—As a general rule, two digits, allowing for the listing of 99 carriers, will be found sufficient. Jurisdictions with exclusive State funds, of course, will not require this information at all and consequently may omit this item from the card, or may wish to use it to identify self-insuring employers.

Disability.—The proposed code requires only one column.

Payment lag.—Jurisdictions unable to compile data on payment lag will want to omit this item from the card.

Time lost.—The time lost because of the disability is to be shown in weeks and calendar days. The three columns for weeks allow for a total of 999 weeks on any one card, and the “days” column allows for another 6 days. It is unlikely that more than three columns will be required for “weeks” in any jurisdiction, because 999 weeks are equivalent to more than 19 years. Should it be necessary, an extra column may be added. The “days” column is to be used for fractions of weeks. If a disability, for instance, lasts only 4 days, the punching will be 0004. If, on the other hand, it is 67 weeks and 0 days, then the punching will show 0670. The “time lost” item, incidentally, should

reflect the actual period of disability, and not the period for which compensation is payable or has been paid.

Cost (compensation; medical; other; total).—Under these items are to be punched the costs for each reported injury. If no compensation payment is involved, but only medical cost, and that is reported, then zeros are to be punched in the compensation columns, and the amount paid as medical, rounded to the nearest dollar, should be punched in the appropriate columns. The number of columns used for each of these items will, of course, depend on the maximum amounts payable under the given State law and should be so adjusted.

Status of case.—The column utilized for the item of “status of case” is a “left-over” and serves for a problem peculiar to the Pennsylvania Bureau organization and otherwise would remain blank. The proposed method of coding, therefore, even when carried to all possible detail allowed by the proposed codes, and including one extra column for dependency and two more for hours worked than the proposed codes require, still leaves one vacant column. If the three extra columns are not necessary, the 80-column card will care for all of the proposed code detail and still leave 4 columns to spare.

typewriter, no additional lines are required on the form. But if the entries are to be made by hand, then it will be desirable to have the card ruled with the lines about $\frac{3}{16}$ of an inch apart. The suggested dimensions of the card are $8\frac{1}{2}'' \times 11''$.

The items at the head of the card require little explanation. If the employer is insured by a casualty carrier, then the name of the carrier is to be shown. If the employer is self-insured, the entry should be "self-insurer." If the carrier is changed, the first entry is to be crossed out and the new carrier to be shown directly above.

Similarly, the "policy expires" date is to be corrected as a new policy is written or an old one renewed. The correction can be made by crossing out the old number and writing the new number above it.

For the individual disabling injuries reported, the following items are to be shown: The injured employee's name; the date of the accident, or, in the case of an industrial disease, the date on which the disability began; the case number; the nature of the injury, to be shown, where necessary, in abbreviated form, such as: amp. for amputation, conc. for concussion, punc. for puncture, fract. for fracture, etc.; the type of disability to be shown as: D. for death, P. T. for permanent total, P. P. for permanent partial, T. T. for temporary total, T. P. for temporary partial, and M. for medical only (noncompensable); injury location to be described briefly as hand, index and middle fingers, left eye, right leg, toes (right foot), etc. Under "weeks" and "days" is to be shown the *actual* (not the compensable) period of disability; and under the various items shown under "cost," the amounts paid as compensation benefits, medical expense, other expenses (such as funeral, artificial appendages, etc.), and the total cost.

The entries through "injury location" are to be made from the injury report. The remaining entries are to be made from the final-settlement receipt. If the employer card is used to furnish the case number for reports filed subsequent to the injury report, then the disability and cost entries can be made on the card at the same time that the case number is copied from the card onto the final report.

Appendix C.—Accident-Cause Statistics and Accident Prevention in Pennsylvania

On January 1, 1938, the Bureau of Workmen's Compensation of Pennsylvania put into effect a method of statistical analysis aimed at providing the accident prevention section of the Bureau of Inspection with adequate information concerning the frequency and causes of industrial injuries. The procedure was based essentially on a modification of the Heinrich Cause Code, and was patterned closely after the version presented in chapter 9. It utilized also an employer's report of industrial injury patterned closely after the report form suggested here, but carrying more detail. The Pennsylvania report form was adopted after it had been submitted to the criticisms of employer and insurance company representatives at an open meeting, and various changes had been made in the original draft in keeping with these criticisms.

The coding is done directly by an experienced factory inspector, a graduate engineer.¹ He analyzes the incoming reports of injuries and assigns the proper cause-code items, indicating agency, agency part, accident type, unsafe act, unsafe mechanical or physical conditions, and, in certain instances, personal fault. These code items, together with all the other information coded, are transferred to tabulating cards, which are afterward verified for accuracy of punching. These cards are then sent to the tabulating section for the monthly tabulations.

The monthly statistical tabulations are of two kinds: (1) Those for publicity, and (2) those for the accident prevention section. The first of these tabulations comprise 4 tables monthly. Table 1 gives a distribution by major industry groups of all injuries reported during the month, classified by the "object causing injury"; i. e., the agency, for which the major groups in the agency code are utilized. Table 2 distributes these reported injuries by accident cause (both unsafe act and unsafe material or physical conditions) and "object causing injury." In the cause classifications, the major cause groups given in chapter 9 are used. Table 3 gives accident types as well as nature of injury by "object causing injury," and table 4 gives a distribution of reported injuries by accident cause, accident type, and nature of injury.

¹ Replaced July 1939.

The tabulations for the accident prevention section are divided into (1) those which are made monthly or quarterly, and (2) those which are to be utilized for special safety drives or for publicity activities aimed at specific accident causes.

In the first of these categories, the following tables are to be compiled regularly, the first three monthly and the fourth quarterly:

(1) Table 1 is to present monthly, for each of the 7 factory-inspection districts, the number of reported disabling injuries by extent of disability (i. e., fatal, permanent total, permanent partial, and temporary total), as well as the percentage which each of these is of the total reported injuries. For instance, in a given month district No. 1 had 7 fatalities, which amounted to 15 percent of the total fatalities for the State. The table is also to contain cumulative total and cumulative percentage figures, to give a running summation from the beginning of the year through the last month covered.

(2) Table 2 is to give monthly for each district a summation of accident causes (using major cause groups) by industry. The number of injuries, as well as the percentage which each number is of the total, is to be shown. The industries listed will vary according to those found in each particular district.

(3) Table 3 is to show monthly for each district the "agency" involved in the accident cause and the type of disability that resulted from it. These disabilities are to be classified by extent, i. e., fatal, permanent total, etc.

(4) Table 4, compiled quarterly, is to show for each district *by individual employers* the number of fatal, permanent, and temporary injuries.

Upon request, the accident prevention section is to be furnished, on several days' notice, the experience of any employer.

The purpose of all these data, of course, is to acquaint the safety men in each district with the injury experiences of employers, to indicate the important accident causes, and to make possible the identification of establishments whose accident records warrant investigation. Instead of making routine inspections, spending time on good as well as bad accident-record plants, safety men will be able to determine where their work will be most effective. The statistics are to tell them where to go and what accident causes to look for.

In this connection, it is pertinent to indicate briefly the changes that were made in the organization of the section to enable it to utilize the statistical analysis and to function more effectively. The factory inspectors of Pennsylvania are required to inspect plants not only for hazards, but also for compliance with wage and hour laws, child-labor laws, etc. These burdens leave little time for any intensive and intelligently planned safety work. It was therefore thought

advisable to select from the ranks of the factory inspectors of each district a competent and trained safety man, who was to be freed of all duties except safety work. The functions of each of these specialized safety men are: To work with other inspectors in making accident investigations; to train these factory inspectors in safety; to promote safety organizations in plants; to promote local safety councils; to make surveys of accident problems in particular industries; to study the accident statistics and to determine from them where action is necessary and what types of unsafe acts and conditions are to be guarded against, and to communicate this information to the other inspectors in the district; to act as clearing centers for safe practices in their districts; and finally, to cooperate closely with local safety movements.

Special drives are to be organized periodically to meet specific accident hazards, such as improper illumination or ventilation, unsafe ladders and scaffolds, etc. Each drive is to be based on the statistics of disabling injuries due to the particular hazard, and is to have the cooperation of manufacturers interested in proper equipment, of safety groups, etc., and to utilize the press, the radio, the meeting hall, and any other avenue that will spread the gospel of safety.

It is believed that the cost of this entire program will be but a fraction of the savings to the employers and employees of the State in terms of prevented accidents.

