UNITED STATES DEPARTMENT OF LABOR
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BUREAU OF LABOR STATISTICS
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A. F. Hinrichs, *Acting Commissioner*

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Injuries and Accident Causes in the Longshore Industry, 1942

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Letter of Transmittal

UNITED STATES DEPARTMENT OF LABOR,
BUREAU OF LABOR STATISTICS,
Washington 25, D. C., January 10, 1944.

The SECRETARY OF LABOR:

I have the honor to transmit herewith a report on the occurrence and causes of work injuries in the longshore industry during 1942. This report was prepared by Frank S. McElroy and George R. McCormack in the Industrial Hazards Division under the direction of Max D. Kossoris, chief.

A. F. HINRICHS,
Acting Commissioner.

Hon. FRANCES PERKINS,
Secretary of Labor.

Contents

Bulletin No. 764 of the

United States Bureau of Labor Statistics

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Injuries and Accident Causes in the Longshore Industry, 1942

The Industry Record, 1942

More than 138 longshoremen experienced disabling work injuries in the course of every million employee-hours of longshore work performed during the year 1942. No other industry for which injury-frequency information is available had a record even approaching this unfavorable figure.[1] The highest injury-frequency rate recorded for any other industry in 1942 occurred in the highly hazardous operations of logging, where there were 89.6 disabling injuries for every million employee-hours worked. In the iron and steel industry the rate was 10.4 and in the construction industry it was 36.7.

Despite the fact that every one connected with the longshore industry seems fully aware that this is one of the most hazardous of all industries, there is little evidence of any serious attempts to carry on a safety program. The personal contacts with longshore employers made during the Bureau's survey indicated that, particularly on the South Atlantic and Gulf Coasts, safety-code provisions are seldom followed. Hardly any of the contract stevedores maintain any accident records beyond those which are legally required for workmen's compensation purposes. In most instances, therefore, the employers have only a partial knowledge about the accident experience of their own operations and only vague ideas as to what are the predominant causes of injuries to their employees. In spite of the fundamental and seemingly obvious necessity for maintaining first-aid facilities where injuries are known to occur, it was frequently found that not even a first-aid kit was provided. In only a very few instances was there a first-aid room with a trained attendant in charge.

The use of personal protective equipment is almost unknown. Goggles and respirators are used only when the work is such that it would be physically impossible to carry on without them. Hard hats and safety shoes are conspicuous by their absence. In a number of instances the persons interviewed stated that some effort had been made to promote the use of safety clothing, but that the workers and the unions were strongly opposed to making the use of such equipment compulsory.

Throughout the industry the attitude toward safety appears to be that safety in the abstract is desirable; in practice only a few individuals are willing to spend the time and effort to do anything about it. The result appears in the strikingly high disablement rate.

[1] See the Bureau's Bulletin No. 758 (Industrial Injuries in the United States during 1942), based upon the annual survey covering industrial injuries in 147 industries.

The average injury-frequency rate noted above—138 disabling injuries per million employee-hours worked—is based upon injury summaries for the year 1942 furnished voluntarily to the Bureau of Labor Statistics by 258 employers of longshoremen. In the aggregate these employers reported that, in 42,650,000 employee-hours worked, 43 of their longshoremen were either killed or so disabled that they will never again be able to work in any normal occupation, 497 experienced permanent disabilities which will impair their physical ability for the rest of their lives, and 5,361 were temporarily rendered unable to work for an average of 34 days each. Just what this volume of injuries represents in respect to the entire longshore industry cannot be accurately determined because of the lack of definite figures regarding the actual size of the industry or the average time worked by individual longshoremen during the year. However, assuming that 1,800 hours constitute a reasonable estimate of the average time worked by each longshoreman in 1942 and that there were approximately 90,000 longshoremen in the United States in that year, then the reports received may be estimated to cover the full experience of about 24,000 longshoremen, or more than one-fourth of the entire industry. On this basis, the total volume of disabling injuries for the industry as a whole in the year 1942 would amount to over 22,000. More accurately, it may be stated that the reported figures indicate that in 1942 the chances for an individual longshoreman were approximately 1 in 560 that he would be killed or completely disabled for life; 1 in 48 that he would experience a permanent physical impairment; and 1 in 4 that he would lose time because of a temporary injury.

Despite the fact that the reported figures indicate an extremely high incidence of disabling injuries in longshore work, there are grounds for believing that the frequency rate of 138 represents a substantial understatement of the true injury experience of the industry. As a general rule stevedore employers do not maintain complete injury records. In many instances the only records consist of copies of the workmen's compensation forms which have been filed for the injuries which resulted in compensable disabilities. The suspicion that many of the reports received were based upon such records rather than upon an actual count of all disabling injuries was substantiated in a number of cases when a Bureau representative visited the employers' offices to obtain data regarding accident causes.

For the purpose of maintaining comparability between establishments and industries the standard method of compiling industrial injury statistics provides that all injuries resulting in an inability to work extending beyond the day of injury shall be included in the computation of injury-frequency rates. Compensation, however, is seldom payable unless the disability extends over a period of several days. Reporting only compensable cases results in a frequency rate considerably lower than if it were based on all lost-time cases as called for by the standard. On the basis of the known understatements in some of the reports, therefore, it is strongly suspected that the true injury-frequency rate for the longshore industry in 1942 was more nearly 160 than the 138 indicated by the tabulated reports.

OCCUPATIONAL DIFFERENCES

Holdmen, as a group, have by far the most hazardous assignment among all the longshore occupations. In 1942 this group of workers

experienced an average of 294 disabling injuries in every million employee-hours worked—more than double the average for all longshore work. Warehousemen had the next highest frequency rate (182), but this rate was based upon a comparatively small sample and cannot be considered entirely representative. It is pertinent, however, to note the wide difference in the relative seriousness of the injuries experienced by the holdmen and the warehousemen. Out of 162 reported injuries to warehousemen all but 1 resulted only in temporary disability, and the average time lost per temporary injury was only 19 days. On the other hand, 89, or 8.7 percent of the 1,020 injuries reported for holdmen, resulted either in death or in permanent physical impairment, and the average time lost per temporary disability was 41 days.

TABLE 1.—*Injury Rates and Extent of Disability for Longshoremen, by Occupation, for 258 Stevedoring Establishments, 1942*

Longshore occupations	Number of units reporting	Number of employee-hours worked	Number of disabling injuries				Total number of days lost [1]	Injury rates [2]		Average days lost per temporary total disability
			Total	Resulting in—				Frequency	Severity [3]	
				Death and permanent total disability	Permanent partial disability	Temporary total disability				
All occupations	512	42,650,645	5,901	43	497	5,361	1,090,668	138.4	25.6	34
Car loaders	26	1,759,081	228	0	1	227	6,967	129.6	4.0	29
Checkers	52	940,638	23	0	0	23	398	24.5	.4	17
Dockmen	74	3,987,336	528	3	53	472	82,842	132.4	20.8	37
Hand truckers	30	5,763,661	757	5	71	681	134,936	131.3	23.4	28
Holdmen	76	3,464,404	1,020	2	87	931	170,401	294.4	49.2	41
Trimmers	18	2,434,003	34	0	1	33	1,588	14.0	.7	39
Warehousemen	21	888,496	162	0	1	161	3,391	182.3	3.8	19
Miscellaneous	103	4,046,128	453	9	12	432	83,304	112.0	20.6	36
Not classified	112	19,366,898	2,696	24	271	2,401	606,841	139.2	31.3	34

[1] Includes time charges for permanent disabilities and fatalities. The standard time-loss ratings for fatalities and permanent disabilities are given in "Method of Compiling Industrial Injury Rates," approved by the American Standards Association, 1937.

[2] The frequency rate is the average number of disabling injuries for each million employee-hours worked. The severity rate is the average number of days lost for each thousand employee-hours worked.

[3] Severity-rate data were not furnished by all reporting establishments. The severity rates shown are based upon reports from 193 establishments.

Most of the other major occupational groups of longshoremen had frequency rates of more than 100, but ranging somewhat below the industry average. Dockmen had an average of 132 disabling injuries for each million employee-hours worked; hand truckers had an average of 131; car loaders averaged 130; and the miscellaneous group, which includes winch drivers, hatch tenders, cargo repairmen, gear and lockermen, watchmen, foremen, and other less numerous groups, averaged 112. Checkers, as might be expected, had a comparatively low frequency rate—25. Surprisingly, however, the trimmers had the lowest occupational frequency rate, averaging only 14 disabling injuries for each million employee-hours worked.

GEOGRAPHIC DIFFERENCES

The striking differences in the average injury-frequency rates for the four main coastal areas, as shown in table 2, graphically portray

the variations in the safety activities carried on in the different regions. All of the regional rates were very high, however, and even the lowest indicates that much more intensive safety work must be done before the industry can take much pride in its safety record.

The lowest regional frequency rate in 1942 was 122 for the Pacific Coast. In comparison with the rates for the other regions, this rate reflects the incorporation of the Pacific Coast Marine Safety Code into the working rules of some ports and the continuous accident-prevention activities of the Accident Prevention Bureau of the employers' association. In the North Atlantic area the average frequency rate of 125 undoubtedly was lower than it would have been if the Maritime Association of the Port of New York had not compiled and distributed its Maritime Safety Code. In the South Atlantic area safety conditions are influenced in some degree by the activities in the North Atlantic area, with the result that the average injury-frequency rate there (160) is not nearly so high as that of the Gulf Coast where this influence is not effective. The exceedingly high average frequency rate of 258 for the Gulf ports clearly reflects the complete absence of safety activites noted in that area during this survey.

TABLE 2.—*Injury Rates and Extent of Disability for Longshoremen, by Region, for 258 Stevedoring Establishments, 1942*

Region	Number of establishments	Number of employee-hours worked	Total number of disabling injuries	Injury rates [1]		Average days lost per temporary total disability
				Frequency	Severity	
All regions	258	42,650,645	5,901	138.4	25.6	34
North Atlantic area	115	23,594,852	2,965	125.7	30.5	35
South Atlantic area	31	1,501,523	241	160.5	18.3	26
Gulf area	38	4,026,487	1,041	258.5	12.3	36
Pacific area	74	13,527,783	1,654	122.3	[2]	26

[1] Includes time charges for permanent disabilities and fatalities. The standard time-loss ratings for fatalities and permanent disabilities are given in "Method of Compiling Industrial Injury Rates," approved by the American Standards Association, 1937.
[2] Not available.

The Industry and Its Hazards

THE INDUSTRY

Longshore work, broadly defined, consists of loading and unloading ship's cargo. More specifically, it has been defined as "All handling of cargo in its transfer from vessel to first place of rest, including sorting and piling of cargo on the dock, and the direct transfer of cargo from vessel to railroad car or barge, or vice versa."[2] In practice the

[2] Arbitrators' Award, August 7, 1934: International Longshoremen's Association *vs.* Waterfront Employers of Seattle, Portland, San Francisco, and Los Angeles.
For more detailed discussion of the longshore industry and its operations see also:
Bureau of Labor Statistics Bulletin No. 550, Cargo Handling and Longshore Labor Conditions, U. S. Government Printing Office, 1932.
Modern Ship Stowage, Bureau of Foreign and Domestic Commerce, U. S. Government Printing Office, 1942.
Decasualization of Longshore Work in San Francisco, multilith report of the Works Progress Administration, 1939.
Comparative Labor Standards in Transportation, multilith report of the U. S. Office of Federal Coordinator of Transportation, 1937.
Hours, Wages, and Working Conditions in Domestic Water Transportation multilith report of the U. S. Office of Federal Coordinator of Transportation, 1936.

scope of the work undertaken by longshoremen varies somewhat, depending upon local conditions and agreements with the unions. In some ports, longshoremen may handle cargo not only between ship and dock but also between the dock and railroad cars. In other ports longshoremen are not permitted to load or unload railroad cars. On one dock, visited during the survey, the boundary of the industry was indicated by a white line painted upon the floor. On the ships' side of the line, all operations were reserved for longshoremen. They were not, however, permitted to handle any cargo on the other side of the line. In moving bulk cargo across the line, the practice was to wheel it up to the line in a "Georgia Buggy" (a 2-wheel hand truck) and to slide the loaded buggy across under the momentum of a shove. This practice, incidentally, has resulted in a considerable number of foot and leg injuries to workers who were struck by the frame of the sliding buggies.

For the purpose of accident investigation and analysis, these variations in the scope of operations from port to port make little difference. The fact that practically all longshore operations must be divided between two workmen's compensation jurisdictions, however, introduced some anomalies in the accident-record keeping procedures of the various stevedoring contractors, which had to be taken into account in compiling the data for this study. Under the Longshore and Harbor Workers Act all injuries which occur on a vessel, or on any working surface attached to a vessel, come within the Federal jurisdiction for workmen's compensation purposes, while injuries experienced on the dock are under State jurisdiction. The Federal compensation regulations are uniform in all ports, but are seldom identical with the State regulations, which vary in considerable measure from State to State. The most important effect of these variations in the State regulations, so far as this survey is concerned, was in respect to the differences in the reports required under the various laws, which resulted in some variation in the amount of detail information available in different localities.

Estimates of the number of workers in the industry are practically unavailable. Much of the work is such that long training is considered unnecessary and the available labor force fluctuates widely as workers who are not permanently attached to the industry offer themselves for employment or withdraw to work in other industries. Longshore work, however, is well unionized and the union membership figures may be taken as a reasonable measure of the number of regular workers in the industry. The voting strength of the International Longshoremen's Association at the 1943 convention of the American Federation of Labor indicated a membership of about 54,000. Statements by the Congress of Industrial Organizations indicate an approximate membership of about 48,000 in the International Longshoremen's and Warehousemen's Union. Both of these organizations include some workers other than longshoremen in their membership. Making allowance for this fact, it would seem reasonable to assume that in 1943 there were probably about 90,000 union longshoremen in the United States. The total number of workers in the industry is undoubtedly somewhat greater than the union membership, but no information on which to base an estimate of the number of nonunion workers is presently available.

EMPLOYMENT

Longshore work generally is not a continuing operation, but is usually carried on under high pressure once the operations are started. Characteristically the stevedoring contractors hire their longshoremen whenever a vessel puts in to take on or discharge cargo. The high cost of maintaining a cargo vessel places a premium upon keeping her in active service between ports and makes quick turn around a matter of great importance. The necessity of holding the idle time of a vessel in port to an absolute minimum dictates that loading and unloading operations shall be continued around the clock, and at as great a speed as possible. Relatively large crews of longshoremen are hired in the effort to speed operations and are released promptly when the vessel is ready to move out. Employment in longshore work, therefore, is essentially casual or intermittent.

HIRING METHODS

Traditionally the procedure of a longshoreman seeking employment is to try to learn where and when a vessel is expected to dock and to be there when she arrives, in the hope that he will be selected as one of the group to perform the loading or unloading. This method of selecting workers from those who happen to be available at the opportune moment quite frequently results in a very uneven distribution of employment among the longshoremen of a port. In normal times the irregularity of employment leads many longshoremen to accept any available employment even to the extent of working consecutive shifts. Beginning with 1943, however, greater opportunities for employment in other industries and induction into the armed forces have reduced the number of available workers so that most longshoremen now are assured of comparatively regular employment. The inclination to work excessively long periods without rest, therefore, is not as strong as in the years before the war.

The force required to load or unload a vessel is almost invariably organized into gangs, each of which works as a unit handling the cargo through one hatch of a ship. In the East, a gang usually consists of a foreman, one or two winch drivers, a hatch tender, about eight holdmen and the same number of dockmen. On the Pacific Coast the minimum size of a gang is standardized at 16 men. This practice of organizing the work by gangs has led to the formation of permanent gangs which offer themselves for employment as groups rather than as individuals.

On the Atlantic and Gulf Coasts the current method of hiring longshoremen generally follows the traditional pattern with slight variations from port to port. In most ports the longshoremen who are available for work assemble daily at specified places and times. This assembly is commonly known as a "shape-up." The contract stevedore then selects his crew from the "shape," either by choosing from among the available permanent gangs, some of which he may know through having employed them previously, or by organizing the necessary number of casual gangs from the unattached longshoremen who are present.

In some ports shape-ups are held only once a day. In New York and several of the other large ports, however, two or more shape-ups are held each day and relief crews are employed when the job is of long

duration. Shape-up times in New York are specified in the agreement between the International Longshoremen's Association and the New York Shipping Association, Deepwater Steamship Lines, and Contracting Stevedores of the Port of New York as 7:55 a. m., 12:55 p. m., and 6:55 p. m.

On the Pacific Coast hiring methods are somewhat different. In that area a planned program of decasualization has been undertaken, based upon the use of hiring halls in place of the shape-up. This program was established by agreement between the Pacific Coast Longshore Division of the International Longshoremen's and Warehousemen's Union and the Employers Association of the Pacific Coast. Hiring halls are maintained and operated jointly by the union and the employers' association in each of the larger ports. Under the hiring-hall system, the employing stevedore notifies the hall when longshoremen are needed and the hall dispatcher sends the necessary number of gangs to the pier. A record of all time worked is maintained in the hall for each permanently organized gang and for each individual longshoreman who is not a member of a regular gang. Assignments are made on the basis of these records so as to equalize the amount of time worked by all of the registered longshoremen.

The expense of operating halls is divided equally between the union and the association. Management of each hall is vested in a Labor Relations Committee, composed of three union representatives and three employer representatives. The hall dispatcher, however, is selected by the union. Employment preference is given to union members, but nonunion longshoremen may also be registered for employment. The Port Labor Relations Committee also has general jurisdiction over working conditions and grievances. A similarly constituted Coast Labor Relations Committee governs general working conditions throughout the Pacific Coast. Problems which cannot be settled in the local port committee are referred to the Coast Committee. In the event of a failure to reach a satisfactory solution in the latter committee, the agreement provides that an arbitrator shall be appointed by the Secretary of Labor to decide the issue.

UNIONIZATION AND EMPLOYERS' ASSOCIATIONS

The predominant labor union for longshoremen on the Pacific Coast is the International Longshoremen's and Warehousemen's Union, an affiliate of the Congress of Industrial Organizations. On the Atlantic and Gulf Coasts the principal union is the International Longshoremen's Association, affiliated with the American Federation of Labor.

On the Pacific Coast practically all employers of longshoremen in Los Angeles, San Francisco, Portland, and the Puget Sound ports are members of the Waterfront Employers' Association of the Pacific Coast. On the Atlantic and Gulf Coasts there are various local associations of employers in particular ports, but there is no unifying employer organization for the entire area.

WAGES AND HOURS

The wage scales for longshoremen vary from port to port on the Atlantic and Gulf Coasts, with the New York rate of $1.25 per hour probably representing the maximum for straight time on general cargo.

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Overtime rates are generally paid for any work extending beyond 8 hours, for night work, and for work on Sunday or specified holidays. The union agreement covering longshore work in the Port of New York provides for a basic 44-hour week and specifies that straight time shall be paid for 8 hours' work between 8 a. m. and 5 p. m., Monday through Friday inclusive, and for 4 hours, from 8 a. m. to 12 noon on Saturday. All other time worked, including any time on holidays, is paid at the overtime rate. The agreements also specify special rates which shall be paid for handling particular kinds of cargo. These "penalty cargoes" are commodities which inherently present unusual hazards or are particularly obnoxious to handle. Examples of the penalty cargoes specified in the New York agreement, and the straight-time rate of pay provided for longshoremen handling those commodities are: Explosives, $2.50 per hour; bulk cargo, $1.30; cement in bags, $1.30; wet hides, etc., $1.40; refrigerated cargo, $1.45; kerosene, $1.45; and damaged cargo, $2.50.

On the Pacific Coast the union agreement provides for a basic 6-hour day, with a basic 30-hour week averaged over a 4-week period. Straight time is paid for the first 6 hours worked between 8 a. m. and 5 p. m. on any week day. All time over 6 hours in 1 day or over 30 hours in a week, all time before 8 a. m. or after 5 p. m., and all time on Sunday or a holiday must be paid for at the overtime rate. Straight time work on general cargo is paid at the rate of $1.10 per hour under this agreement. Penalty cargoes are also listed with straight-time rates ranging from $1.20 per hour for cement and refrigerated cargo to $1.65 per hour for handling damaged cargo or explosives.

OCCUPATIONS

The occupational designations used for identical work in the different ports vary considerably. Among the more widely used classifications, however, are the following: Car loaders, cargo repairmen, checkers and clerks, dockmen, foremen, gear and locker men, hand truckers, hatch tenders, holdmen, trimmers, warehousemen, watchmen, and winch drivers. In addition to these general occupations many ports have specialized groups of longshoremen who work with particular types of cargoes. Outstanding among the groups of specialists are banana handlers and case-oil handlers.

Car loaders are the longshoremen who transfer cargo into and out of railroad cars. Hand trucks are generally used to move the materials between the cars and the dock, but most of the piling and unpiling, both in the cars and on the dock, necessarily must be done by hand. These workers, therefore, are constantly exposed to the hazards of strains from improper lifting, crushed fingers and toes from dropped or mishandled materials, cuts and abrasions from sharp, rough, or broken materials, falls from piled material, and blows from materials which fall from the piles. Inside the cars these hazards are intensified because of the crowded and limited space in which the work must be performed. Car loaders are also frequently exposed to exceedingly high dust concentrations when handling cargoes such as flour or cement. A good safety program for these workers should stress instruction in safe lifting methods; the use of personal safety equipment, such as safety shoes, gloves, aprons, hard hats, cup goggles, and respirators; and instruction in safe piling of materials.

Cargo repairmen repair all broken cases, barrels, or other cargo items. The principal hazards in this occupation arise from the misuse of hand tools, the use of defective tools, and the handling of the broken items which are often sharp-edged or splintered. A safety program for these workers should include the provision and maintenance of tools in good condition; the use of safety shoes, gloves, and aprons; and careful instruction in the safe methods of lifting and handling materials.

Checkers and clerks, or tallymen as they are frequently called, are required to check and record the cargo items which are moved into or out of the vessel. The chief hazard faced in this occupation is the possibility of being struck by the loaded sling as it raises and lowers the cargo.

Dockmen handle all cargo on the pier. In loading operations they move the cargo items to the apron of the pier at the side of the ship and there prepare them to be hoisted on board the vessel. Most frequently this involves piling the cargo items by hand upon a heavy rope net, the corners of which are gathered together and caught by the hook of the hoist forming a large rope bag or sling in which the materials are lifted. This is called "making cargo into a sling." On some docks where fork trucks are used to move the cargo items the material is piled upon pallets directly from the freight cars and is handled mechanically from that point until it is deposited in the hold of the vessel. Pallets are merely raised platforms standing about 6 inches off the floor on longitudinal rails. The fork trucks used in handling loaded pallets are power-operated. Projecting forward from the truck body are prongs or forks which can be raised or lowered through a hoisting mechanism. These forks slide under the pallet between the supporting rails, which allows the loaded pallet to be raised off the floor upon the fork and transported intact to the desired location. At the ship's side, ropes are attached to the pallet and thrown over the crane hook. The pallet with its load of cargo is then lifted aboard ship and deposited in the hold where the various items are removed and stowed away. In unloading operations the dockmen remove the cargo items from the sling at the side of the ship and move them to the points on the dock where the car loaders take over.

Dockmen are exposed to all the hazards of handling heavy materials and to the danger of being struck by material falling from piles. In addition they are exposed to the possibility of being struck by the loaded slings as they are raised and lowered at the side of the ship. The slings frequently swing somewhat and must be steadied or pushed and pulled into proper position. When this is done by hand instead of by means of a rope attached to the sling, or by means of a pole, there is serious danger that the person attempting to guide the sling may get his hands caught and badly crushed by the sling ropes or may even have the load set down on his foot. Dockmen also face the hazard of being struck by the trucks used to move the cargo items. The latter hazard becomes more serious when power trucks are used because of their greater speed. Fork trucks are particularly dangerous in this respect because the load, carried in front of the operator, is frequently so high as to cut off his vision. Safety provisions for these workers should include careful instruction in proper lifting methods; instruction in the safe methods of rigging and guiding

sling loads; the use of safety shoes, gloves, aprons, and hard hats; and instruction and strict rules covering the safe operation of trucks.

Gear and locker men are responsible for the storage and handling of all stevedore gear. Usually this work is done by a longshoreman temporarily assigned to such duties.

The work of holdmen is very similar to that of carmen and dockmen. It is performed inside the ship, which tends to increase the hazards because of the smaller space in which they must work. Little mechanical trucking is done on board ship, but holdmen are exposed to all the dangers associated with the use of hand trucks. The hazard of working under the sling is greater in the hold than on the dock because of the limited area into which the sling is lowered. This is particularly true when the cargo is being stowed directly beneath the hatch. Holdmen are also exposed to dust hazards similar to those experienced by car loaders when they are handling dry dusty cargo. A safety program for workers in this occupation, therefore, should include all of the points necessary in respect to both car loaders and dockmen.

Winch drivers and hatch tenders are jointly responsible for the operation of the power hoists which move the cargo between the ship's hold and the apron of the dock. The winch driver, who actually controls the movements of the hoisting apparatus, can seldom see the load he is handling except when it is raised above the deck. He must, therefore, depend almost entirely upon the hatch tender for operating instructions to move the load. These instructions are usually transmitted by means of hand signals. The hatch tender must always be in a position where he can see exactly where the load is and at the same time be in full view of the winch driver. His position, therefore, is usually on the deck at the side of the open hatch or at the rail on the dock side of the ship. The principal personal hazard faced by the hatch tender is that of being struck by the sling or by material that may fall from the sling as it is raised overhead. The winch driver, on the other hand, is primarily exposed to the mechanical hazards presented by the machinery which he operates. These hazards generally can be overcome easily by the use of guards. However, it is seldom within the power of the stevedore contractor to provide such guarding, since the hoisting apparatus is almost always a part of the ship's equipment—not property of the longshoremen's employer.

Much of the safety of other longshore workers depends upon the manner in which the hatch tender and the winch driver perform their work. The possibility of being struck by the sling is one of the greatest hazards faced by most longshoremen. To prevent this the hatch tender must be alert to see that all workers are in the clear before he orders the sling moved. He should be very familiar with all of the operations so that he can anticipate and be prepared for any unsafe acts on the part of other workers which would expose them under the load. He must not be excitable and he must be level-headed in an emergency, and he must be able to transmit his signals to the winch driver quickly and clearly. The winch driver similarly must be alert to act instantly in response to the signals, which must never be accepted from any one other than the designated hatch tender, and he must never move the load or the hook without having received a signal that it is safe to do so.

The major operations involved in handling bulk cargo such as grain, coal, and oil are usually performed by loading machinery rather than by longshoremen. Dry bulk cargoes, however, must be spread and leveled in the hold by hand or by means of an electric trimmer which must be operated by hand. Longshoremen who perform these duties are called trimmers. These men work on the very uneven, unstable and shifting surface of the cargo, often surrounded by thick clouds of dust. Cup goggles and approved respirators are very necessary equipment, and every precaution must be taken to prevent sparks from the electric equipment since the danger of dust explosion is ever present.

GENERAL HAZARDS OF THE INDUSTRY

Nearly all the hazards encountered in longshore work are common to many other industries; but most other industries have achieved far more success in overcoming those hazards than has the longshore industry. Although the handling of heavy materials is always dangerous work, the dangers can be largely overcome through carefully planned safety programs.

It should be noted however, that the longshore industry has several unique factors which intensify the hazards and tend to make safety work unusually difficult. The fact that longshoremen are hired as casual workers makes it nearly impossible to make much progress in putting on a safety-instruction program in any one establishment. The frequent changes in personnel, particularly in the casual gangs, also mean that many longshoremen are often called upon to work with strangers, men whose habits and methods of working are entirely unknown to each other. Mutual understanding and the ability to anticipate each others actions and reactions, which contribute much to safety in employments where the same individuals work together day after day, are therefore largely denied these longshore workers by the casual nature of their work.

The shifting of personnel also creates difficulties in promoting the use of personal safety equipment. Many of these items, such as safety shoes, goggles, hard hats, and gloves, should be individually fitted and permanently issued to the persons who are to use them. This is essential not only to insure their effectiveness as injury preventives, but also for sanitary reasons and to guard against their being discarded because they are uncomfortable. In other industries, which offer continued employment, the issue of personal safety equipment presents no great problem since management can easily arrange to have supplies available and can stimulate their use by assuming all or part of their cost and by establishing rules making their use mandatory. In longshore work, however, no one employer could successfully make the use of such equipment mandatory, nor could he arrange to fit all of his workers in the short time usually intervening between hiring and the start of work. The use of these items by longshoremen, therefore, depends almost entirely upon the willingness of the individual worker to obtain the equipment at his own expense for his own protection.

The constant pressure for speed in longshore work and the long periods of work also tend to intensify the ever-present hazards. Operating at unsafe speed is commonly thought of as an accident cause in connection with vehicular accidents; but it can also be the

cause of any type of accident—for instance, when a worker attempts to lift a heavy weight by himself, instead of taking time to get help, and as a result suffers a hernia. The effect of fatigue in causing accidents is sometimes difficult to measure, but there can be no question that an alert worker is the safest worker.

SAFETY CODES

On the Atlantic Coast the Maritime Association of the Port of New York has compiled a Maritime Safety Code for Stevedoring and Freight Handling Operations (1939)[3] and has recommended that all stevedore operators follow its provisions. The introduction to this code states: "This safety code includes all direct and incidental cargo handling and stevedoring operations aboard ship and on the dock. Its purpose is to identify the more important hazards, especially as to safe practice rules covering both personal and mechanical or physical fault, to assist in establishing uniformity in safe operation, to serve as a guide or reminder and an incentive to greater safety, and to coordinate and encourage the active participation of all concerned in a practical and effective effort towards the observance of reasonable requirements for safety and health. * * * Sections are provided for [applying to] receiving and delivering cargoes, preliminary or preparatory work before cargo is actually handled, first aid and accident investigation and reporting as well as for the operations of rigging, making up and landing drafts, tiering and stowing cargo, and other work common to stevedoring operations."

The New York code originally was widely distributed in the East among the employing stevedores. Its application, however, is entirely voluntary and at the time this survey was made it was found that comparatively few of the offices contacted had a copy on hand or knew what the code provisions were.

On the Pacific Coast the development of safety codes for longshore work started soon after the passage of the Federal Longshoremen's and Harbor Workers' Act in 1927. In 1928, local committees of employers prepared codes for the ports of Seattle and San Fransisco. In 1929, a coast-wide code was drawn up and recommended for voluntary adoption by all members of the various Pacific Coast marine associations. This code was widely circulated during the following 3 years and was annually reviewed and revised as its provisions were tested in practice. In 1934, however, the coast-wide strike in the longshore industry interrupted work on the code as a coast instrument.

The arbitration award of October 12, 1934, and all subsequent renewals of the working agreement between the International Longshoremen's and Warehousemen's Union and the Waterfront Employers' Association of the Pacific Coast have recognized the importance of a general safety code by specifying: "The employers shall provide safe gear and safe working conditions. A safety code for longshore work shall be negotiated by the parties and if they shall not agree, it shall be arbitrated only by mutual consent." It is of particular interest, however, to note that disagreements in regard to safety code provisions can be arbitrated "only by mutual consent," whereas the general arbitration clause of the agreement provides that—

[3] See appendix, p. 35.

In the event that any Port Labor Relations Committee shall fail to agree on any question before it, it shall be immediately referred *at the request of either party* to the Coast Labor Relations Committee for decision. In the event that the Coast Labor Relations Committee fails to agree on any question involving the interpretation of this agreement or any dispute arising hereunder, or on any other question of mutual concern not covered by this contract and relating to the industry, such question shall, *at the request of either party*, be referred to the Coast arbitrator for decision.

Strict interpretation of the safety code clause of the agreement appears to indicate that either party may prevent a settlement of any disagreement involving safety merely by refusing to agree to arbitration.

Differences of opinion between the employers and the union leaders in regard to the interpretation of the code have so far prevented its adoption under the provisions of the coast agreement. It has, however, been incorporated into the local working rules for a few ports. In actual practice neither the employers not the union pay much attention to the code at the present time.

In direct contrast to the New York code, the Pacific Coast Marine Safety Code [4] applies only to the longshore operations on board vessels. The scope of its coverage is stated as "all operations, persons, employees, employers, and vessels included under the Federal Longshoremen's and Harbor Workers' Compensation Act in the States of the Pacific Coast." None of the code provisions, therefore, apply to cargo handling operations on the dock. In general, the code contains rules governing the safe operation and guarding of equipment on board ship; specifies that certain safe practices shall be observed in particular operations; prohibits particular unsafe practices, such as entering dark holds or compartments without a light; and provides for the maintenance of an approved first-aid kit in charge of a trained attendant on every job. The only reference to personal safety equipment, however, is that "longshoremen shall wear (a) approved goggles when handling cargo liable to injure or irritate the eyes; (b) respirators of an approved type when handling cargo liable to irritate the respiratory passages and lungs. When such goggles and respirators are required, same shall be provided by employer."

EMPLOYERS' ASSOCIATIONS

To implement safety work among its members the Waterfront Employers' Association of the Pacific Coast maintains an Accident Prevention Bureau, which compiles and analyzes statistics relating to injuries experienced by longshore workers on the Pacific Coast. From these analyses the Accident Prevention Bureau prepares reports showing the variations in injury frequency and the prevailing accident causes. These reports, accompanied by accident prevention recommendations based upon such summaries, are made available to members of the Association to stimulate and aid the general safety program. Safety engineers from the Bureau's staff are also available as consultants on any safety problems of the Association's members.

On the Atlantic and Gulf Coasts the employers' associations have undertaken no widespread or continuing safety program other than the preparation of the Maritime Safety Code by the Maritime Association of the Port of New York.

[4] See appendix, p. 45.

UNION SAFETY ACTIVITIES

Except for the incorporation of the Pacific Coast Marine Safety Code into the working rules of a few locals of the International Longshoremen's and Warehousemen's Union, the unions of longshoremen have done little to increase the safety of longshore operations. Safety is rarely mentioned in the union agreements and such references as do appear are usually vague generalities such as, "the employer shall provide safe equipment and safe working conditions." In a few instances the agreements specify that there shall be no smoking on the job, that explosives shall be handled only when they are carefully and safely packed, or that special gloves shall be provided for use in handling certain types of cargo. Some agreements go one step farther in that they specify the maximum quantities of various commodities which may be made into a single sling load.

Analysis of Accident Experience

In addition to the summary reports, outlining in general the accident experience of their employees during 1942, the original accident records were made available by 22 employers of longshoremen for analysis and transcription by a Bureau of Labor Statistics representative. The employers, who cooperated in this part of the survey, operated in 16 different ports, 8 on the Atlantic Coast, 6 on the Gulf Coast, and 2 on the Pacific Coast. Their combined operations included over 8,000,000 employee-hours of longshore work and their records furnished the details of 1,510 accidents. The Bureau's agent visited the offices of these employers and, insofar as possible, transcribed from their records the following items regarding each injury: Age, race, and experience of each person injured; place where the accident occurred and time it occurred; nature and extent of the resulting injury; type of accident; unsafe condition or act which led to the accident; and the object or substance (agency) which caused the injury. In some instances, however, all of the desired details were not available. For this reason, the number of cases analyzed in respect to particular accident factors varies considerably. All parts of the analysis, however, are based upon data from the records of at least 14 employers. The analysis follows the "American Recommended Practice for Compiling Industrial Accident Causes," approved by the American Standards Association, August 1, 1941.

INJURIES AND THE AGE OF WORKERS

In no case was it possible to secure an age distribution for all the longshoremen employed. No conclusion can be drawn, therefore, as to whether or not the age of the worker has any bearing upon the frequency of injuries. Fourteen of the employers, however, were able to supply details regarding both the age and the disability experienced by 1,317 of their employees who were injured. These data [5] corroborate the findings of previous studies in other industries, that injuries to older persons are likely to result in more serious disabilities than those experienced by younger persons, the differences primarily being due to the greater recuperative ability of the younger persons.[6]

[5] See Appendix A, table A.
[6] See Monthly Labor Review, October 1940 (p. 789): Relation of Age to Industrial Injuries.

Less than 8 percent of the injured workers who were under 35 years of age at the time of injury, experienced more than temporary disability. The proportion of fatal and permanent impairment cases rose to over 10 percent in the age groups over 35.

The relationship between age and recovery was even more strikingly apparent in the various age groups in the amount of time lost because of temporary disabilities. On the average the temporary disabilities experienced by workers, who were not over 25 years of age, resulted in less than 10 days of lost time. For the age groups between 25 and 40, the average recovery period ranged from 20 to 26 days. Workers in age groups above 40, however, required an average of 40 or more days to recover from temporary injuries.

KINDS OF INJURIES EXPERIENCED[7]

Injuries to the lower extremities (toes, feet, and legs), accounting for 43 percent of all the injuries for which details were available, were far more common than injuries to other parts of the body. The upper extremities (hands, fingers, and arms) were involved in 24 percent of the injuries while injuries to the trunk, including back cases, accounted for another 24 percent. Head injuries amounted to about 9 percent of the total.

Foot, toe, and leg injuries.—Injuries affecting only toes constituted about 9 percent of all the injuries analyzed. Nearly half of these (46 percent) were fractures, over a third were severe sprains or bruises, and about 15 percent were cuts and lacerations. Toe injuries were experienced by practically all types of workers, but were particularly prominent among the injuries suffered by the dockmen, car loaders, and holdmen. Generally speaking, they occurred most frequently to workers whose duties involve manual handling of the cargo items. More than 13 percent of all injuries experienced by workers engaged in trucking cargo items, and over 10 percent of those experienced while stowing, piling, or breaking down cargo, were toe injuries resulting principally from falling, dropped, or misplaced cases or heavy cargo items.

Foot injuries, including those affecting the ankle but excluding those affecting only a toe or toes, constituted over 20 percent of the total number of injuries. Most foot injuries resulted from dropped or improperly lowered cargo items. Twisted and sprained ankles were not uncommon. Nearly two-thirds of the foot injuries were sprains or bruises, 22 percent were fractures, and 12 percent were cuts or lacerations. As in the case of toe injuries, the foot injuries were most numerous among the dockmen, holdmen, and car loaders, particularly among the workers engaged in landing or hooking-on sling loads, operating trucks, or stowing, piling, and breaking down cargo.

Injuries to the leg (above the ankle) numbered about 13 percent of all the disabling cases. Nearly 31 percent of these injuries were cuts and lacerations, 16 percent were fractures, and 52 percent sprains or bruises. Holdmen, car loaders, and deck workers, other than winch drivers or hatch tenders, all experienced a high proportion of leg injuries, particularly in the operations of landing or hooking-on sling loads, trucking, and stowing, piling, or breaking down cargo.

[7] See Appendix A, tables B, C, D, E, F, and G.

Although safety shoes cannot prevent accidents, they can and will prevent the occurrence of many foot injuries and will eliminate practically all toe injuries. It is reasonable to say, therefore, that the universal use of safety shoes by longshoremen would have prevented at least 19 percent of all the injuries experienced in the industry during 1942. If they had been worn only by the workers engaged in stowing, piling, or breaking down cargo, landing and hooking-on sling loads, or trucking cargo, they would have prevented more than 20 percent of the injuries experienced in those operations. Protective clothing probably would be of little avail in preventing leg sprains, bruises, or fractures, but the use of leather aprons and leggings undoubtedly would have prevented many of the cuts and abrasions, which constituted over 30 percent of all leg injuries.

Arm, hand, and finger injuries.—Hand and finger injuries, accounting for about 21 per cent of all reported disabilities, were somewhat less numerous than foot and toe injuries, but produced a much higher proportion of permanent impairments. One in every five finger injuries resulted in the loss, or loss of use, of one or more fingers. Finger injuries were particularly numerous in work involving the handling of stevedore gear, and landing or hooking-on sling loads. Generally speaking, most finger injuries were cuts or lacerations from handling rough or sharp-edged cargo items, or crushing injuries from pinches between cargo items. Hand and arm injuries were more commonly sprains or bruises although they also included a high proportion of cuts and lacerations.

Back injuries.—Nearly 14 percent of all reported disabilities resulted from back injuries. The great majority of these were strains, or sprains caused by overexertion, improper lifting, or slips and falls. Relatively few back injuries developed into permanent impairments but the average recovery period for temporary back injuries (42 days) was longer than for any other type of temporary disability except brain concussions. Back injuries occurred to workers in all longshore occupations, but were particularly common among workers engaged in stowing, piling, or breaking down cargo.

Chest, abdominal, and other trunk injuries.—Injuries to the chest, abdomen, and other parts of the trunk (excluding back injuries) accounted for over 10 percent of all the reported disabilities. About one-third of the chest injuries involved broken ribs and about half of the abdominal injuries were hernia cases. Practically all other injuries in this group were strains and bruises. With the exception of the hernia cases, which almost invariably resulted from overexertion, these body injuries were ascribed to a wide variety of accident types, such as slips and falls, or being struck by moving cargo or sling loads.

Head injuries.—Head injuries, including eye cases, totaled slightly less than 9 percent of all the reported disabilities. Eye injuries were not very numerous and generally were not severe. The other types of head injuries, however, tended to be very severe and resulted in a high proportion of deaths and permanent impairments. Most of the eye injuries were the result of flying particles becoming imbedded in the eye, although there were a few cases of conjunctivitis contracted in the handling of materials which are particularly irritating to the eyes. The other head injuries resulted principally from blows inflicted by falling objects or loaded slings. The use of hard hats would have minimized a large proportion of these injuries.

ACCIDENT TYPES AND AGENCIES INVOLVED [8]

More than half of the injuries for which details were available resulted from forcible contact with moving, falling, or flying objects. Slips or overexertion, resulting largely from improper lifting, and falls were each responsible for about 14 percent of the injuries, while crushing accidents, in which the injured persons were caught in, on, or between objects or machines, accounted for nearly 13 percent.

Cargo items were the injury-producing agencies in 46 percent of the injuries, hoisting apparatus was involved in 18 percent, working surfaces in 16 percent, and platform trucks in about 10 percent.

Struck by falling or moving objects.—Blows from moving or falling cargo items accounted for nearly one-fourth of all the disabling injuries experienced by longshoremen. Accidents of this type included many cases involving cargo items which slipped out of the hands of the workers or which fell from piles or dropped out of slings. Foot and toe injuries were prominent in this group of accidents.

All longshoremen who work on the apron of the dock, on the deck of the vessel, or in the hold are exposed to the danger of being struck by the loaded slings as they are raised or lowered into position. When the sling is not placed directly under the head of the boom the load tends to swing as soon as it is raised. Part of the hatch tender's duty should be to anticipate this swing and to warn all workers to stand clear. It frequently happens, however, that the hatch tender cannot see the entire area around the sling and he may order the load raised just as an unseen worker moves into range of the swing. The area around the spot on which the sling must be deposited, or from which it must be lifted, is also frequently piled high with cargo so that there is little room for the workers to stand clear. This is particularly true in the hold. The hold, moreover, is sometimes comparatively dark, making it difficult for the hatch tender to see where the holdmen are. As a result of these circumstances, accidents in which workers are struck by sling loads, or even have the loads set down upon them, occur frequently. Nearly 11 percent of all the injuries studied resulted from accidents of this type.

The extensive use of platform trucks to move the cargo items, both on the dock and in the hold, leads to a considerable volume of injuries resulting from workers being struck by these vehicles. Much of the space in which the trucking must be done is highly congested with piled materials, which obstruct the operator's view, and in many instances the load on the truck itself cuts off the driver's vision. Leg injuries, including a high proportion of fractures, inflicted by contact with the bed of the truck, are the most common result of collisions between workers and industrial trucks. In 1942, over 5 percent of all the disabling injuries to longshoremen resulted from this type of accident.

Slips (not falls) and overexertion.—A great deal of the work involved in longshore operations involves moving cargo items by hand. Injuries from improper lifting methods, therefore, are very common. Generally, these injuries result from lifting with the back instead of the legs, lifting in cramped or awkward positions, lifting excessive weights, or from failure of lifting teams to act in unison. In the aggregate, injuries resulting from overexertion in lifting accounted for nearly 9 percent of all the cases studied in this survey.

[8] See Appendix A, tables L, M, and N.

Slips on wet or uneven working surfaces and other accidents involving great exertion together accounted for nearly 6 percent of all the disabling injuries. Many of these cases occurred when the workers were carrying heavy items or were attempting to push or pull the cargo items into position.

Falls.—Falls from one elevation to another accounted for nearly 6 percent of all disabling injuries compared with nearly 8 percent charged to falls on the same level. Generally, however, the injuries resulting from falls from one elevation to another were the more severe. Falls were experienced with approximately equal frequency in all categories of longshore work. In piling and breaking down cargo, workers frequently fell on the uneven surface of the piles or fell over the edge of the pile. In dock and hold work, they frequently tripped over cargo items or other material lying in their way; or they fell from industrial trucks, off the dock and off the vessels, and from stagings and ladders.

Caught in, on, or between objects.—Accidents of the caught in, on, or between type accounted for nearly 13 percent of all the disabling injuries. The majority of these were crushing injuries, such as fingers and hands pinched between cargo items, or between sling ropes and sling loads; persons crushed between loaded slings and piled cargo or between platform trucks and piled cargo; and hands and fingers caught in unguarded gears, pulleys, or other parts of moving machinery.

Other types of accidents.—Accidents in which the injured person bumped into some stationary object, such as piled cargo or hatch beams, were responsible for 5 percent of all the injuries studied. Cases of dermatitis or poisoning, resulting from the inhalation or absorption of dusts, chemicals, and radiations, were infrequent. Of the 20 injuries of this type for which full details were available, only 1 resulted in death.

Causes of Accident

Most of the circumstances which lead to accidents in longshore work could be corrected very easily were it not for the industry's two outstanding characteristics—casual employment for short periods and continuous pressure for speed. Comparatively few of the hazards encountered in the industry are such that extensive engineering or mechanical guarding is necessary for their elimination. On the contrary, nearly all of the unsafe physical conditions revealed by analysis of over 1,360 longshore injuries are hazards which are not inescapably a part of the work, but rather are created by the way in which the work is performed. The evidence that longshore work is carried on with very little consideration for safety is amply borne out by the general pattern formed by the unsafe acts which contributed to the occurrence of these accidents. By and large these unsafe acts represent violations of the most elementary rules of safety; in short, they are the type of unsafe acts which are committed by persons entirely untrained in safety and condoned only by supervisors who are unconcerned with safety. It seems evident that most of the injuries to longshoremen could be avoided if the workers were thoroughly instructed in safety and were given safety-minded supervision.

The difficulties involved in teaching and practicing safety under the existing system of casual employment are readily apparent, but

in the final analysis these difficulties differ only in degree from those encountered in many other industries in which much safety progress has been achieved. To ascribe the failure to develop a successful safety program in the longshore industry entirely to these difficulties, therefore, is tantamount to questioning the ability of the longshore industry to solve its own problems as well as do other industries, which obviously is not the case. All of the evidence collected in this survey, however, points to one outstanding fact: neither longshore management nor longshore labor is yet fully convinced that safety pays, not only in moral values but also in the material savings which alone are usually greater than the expenditures necessary to insure safety. Safety can be made a reality in longshore work, but it will require continuous effort and full cooperation between management and the workers' leaders to make it effective.

UNSAFE PHYSICAL CONDITIONS [9]

Hazardous arrangement or procedure.—Nearly 43 percent of all the accidents analyzed resulted directly from hazardous arrangement in and about the workplaces or from hazardous working methods. To pile or stow cargo in such a manner that the piles are not stable and are likely to topple, or to build the piles irregularly so that corners will project and be struck by passing trucks or workers, presents not only great possibility of injury but also the probability of material damage to the cargo items. Resort to such piling or stowing methods usually results from a desire to save time, even though it should be obvious that the effort required to rebuild a toppled pile consumes far more time than would be required to build it correctly in the first place. Nevertheless over 13 percent of the accidents were caused by unsafely piled or stowed cargo items.

The exposure of workers to the hazard of being struck by loaded slings while working on the apron of the dock or in the hatchway of the vessel arises largely from the fact that both of these areas are frequently highly congested with cargo, making it difficult for the workers to withdraw from the danger area when the load is raised or lowered. The pressure for speed also frequently results in sling loads being swung over the heads of workers who are engaged in moving in the items for the next load or moving away the items from the previous load. Some sacrifice in operating speed may be necessary to eliminate this exposure to being struck by sling loads. It is axiomatic among safety experts, however, that the safe way of performing any operation is almost invariably the most efficient way. The fact that nearly 13 percent of all disabling injuries to longshoremen result from exposure to being struck by loaded slings indicates that any attention to the organization of work on the dock apron or in the hatchway, based upon safety, would be very productive in the reduction of longshore accidents.

Defective agencies.—Mechanical defects in the hoisting apparatus itself produced relatively few injuries. Improperly built and improperly slung loads, however, led to a considerable volume of accidents. These included instances in which the load was too heavy, or was improperly attached to the hook, or was unevenly piled in the sling so that articles of cargo spilled out and fell on the workers below.

[9] See Appendix A, tables J and K.

Slippery, worn, and uneven working surfaces produced nearly 5 percent of the injuries by causing falls and near falls. Some of the slippery conditions were due to ice or snow which might have been made much less dangerous through the liberal use of sand. Attention simply to good housekeeping, such as better maintenance around the docks and prompt attention to the cleaning up of spilled materials, however, would have prevented most of these injuries.

The handling of defective cargo, particularly broken cases with rough and splintered edges, accounted for over 3 percent of the injuries. In large measure these items became defective through improper handling, and the most effective way to avoid the hazard which they present would be to prevent their being broken in the first place. Once they are broken, however, the workers who must handle them should be equipped with protective gloves and aprons.

Unsafe lifting.—The cases included in this category of unsafe mechanical or physical condition include accidents resulting from manual lifting of objects which should have been lifted mechanically, from individuals' lifting objects which should have been lifted by a team, and from the lifting of objects in cramped or crowded quarters which should have been cleared before the operation started. In a few accidents resulting from individuals' lifting what appeared to be excessive weights there was some question whether the injury actually might not have occurred because of improper lifting procedure; when this question could not be specifically answered the case was considered as involving the lifting of excessive weight and was included in this group. A substantial volume of injuries, 15 percent of all cases analyzed, resulted from the unsafe conditions falling in this classification.

Accidents of this type are primarily due to inadequate supervision. In all work involving lifting, the supervisor should be required to see that proper space is provided for the operation and that adequate teams or proper mechanical lifting equipment are available.

UNSAFE ACTS OF PERSONS [10]

Taking unsafe position or posture.—Nearly a third (32 percent) of the injuries analyzed were the direct outcome of the injured person's placing himself in an unsafe position or posture. Most prominent of the specific acts in this general group was that of working or standing under or in the path of suspended or moving sling loads. Other unsafe acts in this category involved such actions as working, standing, or walking in front of moving vehicles; riding the sling or the hook; working or walking too near the edge of the dock, deck, or hatchway; and working in a cramped position. The injuries resulting from these unsafe acts included a high proportion of fatalities and a considerable volume of very severe temporary disabilities. The average recovery period for temporary disabilities in this group was 41 days, as compared with an average of 34 days for all temporary disabilities experienced by longshoremen.

Using unsafe equipment, hands instead of equipment, or equipment unsafely.—Relatively few injuries resulted from using unsafe mechanical equipment or from using mechanical equipment unsafely, but nearly 24 percent of all the cases resulted from the unsafe act of gripping objects insecurely or taking hold of objects incorrectly. These were principally cases in which cargo items slipped from the hands of workers and fell upon their feet.

[10] See Appendix A, tables H and I.

Operating or working at unsafe speed.—"Shortcutting" accidents—accidents which occurred because someone took a chance in order to save time—produced more than 18 percent of the injuries. These unsafe acts included running; sliding down or climbing ropes instead of using ladders; jumping from piles and platforms instead of climbing down; operating platform trucks at high speed in congested areas; and throwing materials instead of passing or carrying them.

Failure to wear safe attire.—About 5 percent of the accidents resulted directly from the failure to wear safe clothing or proper personal safety equipment. The cases involving failure to wear safe clothing included workers who handled lime while working without shirts and as a result received severe body burns when their perspiration slaked the dust on their shoulders; workers who wore trousers with torn and ragged ends which finally tripped them; and workers who wore loose clothing which caught on projections and in the lines of the sling. In respect to the failure to use personal safety equipment, only accidents in operations for which such equipment is essential were included in this group. Cases in which the wearing of safety shoes, hard hats, and similar equipment would have prevented injury, but would not have prevented the accident, were not considered as falling within this category of unsafe act. The failure to wear safety shoes while removing copper bars from an unstacked heap in which the bars shifted and rolled down whenever one was pulled from the pile, however, was considered an unsafe act of this type. Similarly, the failure to wear gloves when handling wire cables which had broken strands was also considered as a failure to wear safe attire.

In a great many instances the specific unsafe acts which led to injuries were the result of conditions over which the individual worker had little control. In others the individuals could have elected to act safely, but either through lack of safety understanding or because safety seemed unimportant they chose to take a chance. Basically, however, every unsafe act, regardless of how designated, is management's responsibility. As long as the supervisors do not plan the work to avoid unsafe conditions and insure strict observance of safe practices on the part of the workers there are bound to be many accidents and many injuries.

Causes and Prevention of Typical Longshore Accidents

To illustrate the general type of accidents experienced by longshoremen, brief accounts of a number of accidents were secured and typical examples of these were given individual consideration. The descriptions of these accidents, accompanied by suggestions as to the preventive measures, which might have avoided the occurrence of injury, are given below.

DESCRIPTION OF ACCIDENTS AND SUGGESTED METHODS OF PREVENTION [11]

1. Longshoreman was standing on hatch beam uncovering hatch. He failed to let go of his end of the hatch cover and was dragged into the hold. Fatal.

(a) *The removing of the hatch covers should be done while working from hatch covers or deck, and standing on hatch beams to remove hatch covers should be prohibited.*

(b) *Men should work in unison and give warning when releasing loads, lifts, or strains.*

2. Longshoreman was fatally injured when he was caught between the couplings of two freight cars as they were being pushed into position by a crane.

(a) *Coupling operations should proceed only on a signal from brakeman having full view of the ends of the cars being coupled.*

(b) *The movement of railroad cars should be undertaken by railroad crews or by men qualified to do this type of work.*

3. Longshoreman was injured while attempting to avoid being struck by a sling load of freight. He stepped into a door at upper deck level, which proved to be an unguarded doorway to the escape hatch leading to the bottom of the ship. His fall resulted in a fractured skull, fractured right jaw, injury to right eye, two broken vertebrae, broken bones in right foot, fractured right leg, injuries to left foot, and fractured left shoulder. Still disabled 6 months later.

(a) *Whenever practicable all hatch or deck openings should be covered when not in use.*

(b) *Workmen should not stand or walk under or in the line of movement of the sling.*

(c) *Hatch bosses should not permit drafts to be moved until all workmen are in the clear.*

4. Man was loading coal in buckets when large piece of coal rolled from top of pile and struck his finger, causing him to lose fingernail. Disabled 4 days.

(a) *The loading face of coal piles should be kept broken down to an angle of approximately 60 degrees.*

(b) *Strong leather gloves should be worn on coal-handling operations.*

5. Longshoreman handling bars of copper was struck by a bar which slipped from the tier and fell on right great toe. Disabled 9 days.

(a) *Bars of copper should be piled flat and layers cross-tied with dunnage between each layer.*

(b) *Bars should be removed from tiers in a manner to prevent others from falling.*

(c) *Workmen handling heavy or bulky materials should wear safety shoes.*

6. Holdman was stowing railroad rail, using a rail fork bar to turn rail over into place. Rail was caught or jammed at one end; the bar slipped and rail sprung back, causing point end of bar to strike man in the right eye. Loss of eye.

(a) *No attempt should be made to turn or roll railroad rail until rail is free for entire length.*

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[11] In the analysis of these accidents, selected as typical of those reported, the authors were assisted by H. W. Heinrich, assistant superintendent of the engineering and inspection division, and by Thomas J. Whelan, supervising engineer, and R. J. Behley, assistant supervising engineer, in the construction unit of the engineering and inspection division of The Travelers Insurance Companies.

The analysis was made from cards to which the accident descriptions had been transcribed so as not to reveal the identity of the reporting establishments.

7. Dockman was making up a draft of steel slabs. A slab slipped from the pile, not from the draft, and struck man on back of both legs. Disabled 2 days.

(a) *Steel slabs should be piled flat and cross-tied with dunnage between each layer.*

(b) *Slabs should be removed from tiers in a manner to prevent movement of other slabs.*

8. While raising hatch cover with his hook a longshoreman placed his right hand under the cover; the hook slipped off the cover, causing cover to fall back on his hand. Disabled 1 week.

(a) *Adequate hand grips should be provided on all hatch covers.*

(b) *When hand grips are not provided on hatch covers, covers should be handled with cotton hooks and free hand kept in clear.*

(c) *Cotton hook should be kept sharp and in good condition.*

9. Longshoreman was using a bar to move steel slabs on a roller. A slab slipped off the roller against the bar. The weight of the slab caused the bar to fall from his hands and strike him across the feet. Disabled 3 days.

(a) *Bars used in handling steel should be gripped securely and placed under or against steel members being moved at an angle designed to deflect the weight away, rather than on to the bar.*

(b) *Safety shoes should be worn and feet should be kept clear.*

10. Dockman carrying a bag of coffee slipped on castor beans on dock floor and strained his back. Disabled 10 days.

(a) *When coffee, castor beans, or any similar cargo is being worked, walkways and working areas should be kept broom clean.*

11. Longshoreman attempted to break a dunnage board by leaning it against a box and stamping on it. A piece of the board flew up and struck him in the eye. Disabled 2 days.

(a) *Dunnage should not be broken over knees or by jumping on same.*

(b) *Saws should be provided and used for cutting dunnage.*

12. Three holdmen were using prys to stow steel rails. Two of the workers released their prys, throwing the entire weight on the third man's pry. The prybar was pulled from his hands by the unexpected pressure and snapped down upon his toes. Disabled 30 days.

(a) *Workmen should work in unison and give warning when releasing loads or strain.*

(b) *Safety shoes should be worn and feet should be kept clear.*

13. Holdman was trying to steady a draft of bagged flour. The swinging draft struck him on right hand, wrist, and elbow. Disabled 4 days.

(a) *Workmen should not reach for swinging or descending drafts, but should stand in the clear until draft is landed or comes to rest at working level.*

(b) *Swing drafts should be landed to steady same.*

14. A dockman, handling copper bars, was struck on the toe by a bar which slipped from the hands of another worker. Fractured great toe.

(a) *Workmen should be spaced so as not to endanger one another.*

(b) *Safety shoes should be worn by employees handling heavy objects.*

15. Longshoreman handling a platform, dropped it on the big toe of his right foot. Loss of toe.

(a) *Workmen should be given assistance when handling platforms or other bulky or heavy objects.*

(b) *The wearing of safety shoes might have reduced the severity of this injury.*

16. Holdman, who was trying to pry rubber bales apart, was struck on left hand by the cargo hook of another employee. Infection, disabled 3 weeks.

(a) *Workmen using cargo hooks should be spaced so as not to endanger each other.*

(b) *Hooks when not in use should be carried on the person with points protected by hooking under belts.*

(c) *First aid should be provided promptly to prevent infection.*

17. Hatch tender climbed over the rail to board ship, stepped on a boom which was lashed at the ship's rail, and then stepped down backwards. In doing so he stepped on an angle iron, which was attached to the deck, and injured his ankle. Disabled 5 days.

(a) *Climbing over rails to board ship should be prohibited.*

(b) *Safe access by means of ramps or gangways should be provided.*

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18. A dockman was stooping over a draft near the string piece when he was struck in the back by a tractor which was carrying a draft of oil drums to the string piece. Disabled 3 weeks.

(a) *Tractors should approach location where drafts are being made up with extreme caution.*

(b) *Movements of tractors in close proximity to loading or unloading operations should be controlled by an authorized signalman.*

(c) *Drafts suspended from tractor booms should not obscure the operator's line of vision.*

19. Dockman was slinging up a drum of caustic soda which had sprung a leak. Some of the soda fell on his foot and got inside his shoe, causing a bad burn. Disabled 10 days.

(a) *Broken crates, leaky drums, or torn bagged cargo should be set aside to be repaired by cooper, before being handled as regular cargo.*

20. Longshoreman working in the hold of a bunkering barge signaled the operator to lower the clam shell to take up coal. When the bucket dropped, its lip struck the holdman's foot, severing his great toe and fracturing another.

(a) *Men working in barge should stand in the clear while the bucket is ascending or descending.*

(b) *Safety shoes should be worn by workmen loading coal buckets.*

21. A holdman, who was packing bags in a barge, stepped across the barge directly under a lowering load. The winchman stopped the load in time to prevent its entire weight from resting on the holdman, but not in time to prevent it from crushing and fracturing his leg and ankle. Disabled 10 weeks.

(a) *Workmen should not stand or cross under drafts that are ascending or descending.*

(b) *Hatch bosses should not permit drafts to be suspended above or lowered into hatches or barges until all workmen are in the clear.*

22. Holdman was struck by a falling truck body which slipped from the sling as it was being lowered into the hold. Fatal.

(a) *Workmen should be made to stand in the clear when drafts, equipment, or machinery are being lowered into holds.*

(b) *Properly adjusted and secured slings or clamps should be used in handling special or unusual loads.*

23. A draft of ship stores was being landed on deck. The draft swung and crushed man against bulwark rail. Fatal.

(a) *Workmen should not stand between any fixed object and moving draft.*

24. Before the deceased started to work, ship's crew had released the inshore guy from the ship's cleat in order to swing the boom, so as to land ship's stores nearer the galley. When the gang, of which deceased was a member, started to strip the beams from No. 3 hatch in order to start loading, they assumed the guy line was secured on the ship's cleat as they had left it. The ship's crew, however, had failed to re-secure it properly, and when a draft of cargo was hoisted from the deck, and a strain put on the up and down boom, the boom swung, causing the draft to strike the deceased, precipitating him into the hold, causing death.

(a) *All rigging used for stevedoring operations should be checked by foreman just prior to using, daily thereafter and whenever operations have been discontinued for a considerable period.*

(b) *Crews using ship booms should leave same properly guyed or otherwise secured after completing operations.*

25. While working on aft deck, a member of the ship's crew got in the way of a swinging draft, which knocked him over the side onto the barge. Disabled for 3 weeks.

(a) *Stevedoring operations should not be conducted in hatches, or over decks, where members of ship's crew or employees of others are at work.*

26. While guiding a steel hatch cover into place, a longshoreman put his hand in the ring where the bridle was attached. When full strain was taken on the bridle the man's fingers were severely lacerated. Disabled 5 days.

(a) *A lanyard or tag line attached to the hooked ends of sling should be used to guide hatch covers into position.*

27. A longshoreman climbed on a mine-cutter davit to clear a rope guy. He lost his balance and fell on mine cutter, receiving severe facial and head lacerations. Disabled 11 days.

(a) *Guys, running and mooring lines should be installed and secured so as not to foul other gear.*

28. A dockman stepped back to get out of the way of a rising draft of cases, struck his heel on the edge of dock guard rail, fell into the water and drowned.

(a) *Workmen on docks when stepping into the clear should move away from the exposed edge.*

(b) *Cargo or save-all nets should be slung between ship's rail and string piece.*

(c) *Conspicuously placed life rings with lines attached should be available where stevedoring operations of this kind are being carried on.*

29. Longshoreman slipped from gang plank into water between boat and dock. Drowned.

(a) *Gang plank should be of adequate width, railed, and otherwise secured to provide safe passage for men unloading ship.*

(b) *Save-all or cargo nets should be slung from ship's side to string piece under exposed gang ways.*

(c) *Conspicuously placed life rings with lines attached should be available where stevedoring operations of this kind are being carried on.*

30. Dockman was guiding a draft of lumber which was being landed on the dock. The load was set down on his foot crushing his big toe. Disabled 2 weeks.

(a) *Feet should be kept in the clear when landing drafts.*

(b) *Drafts should be pushed, not pulled.*

(c) *Safety shoes should be worn on stevedoring operations.*

31. Longshoreman employed as hook-on man for ship's gear was hit by a lumber carrier and killed instantly. Carrier was backing up, and driver failed to see the man before the moment of impact.

(a) *Lumber carriers should not operate among workmen loading or unloading ships, unless movements are directed by an authorized signalman.*

32. Longshoreman was assisting in removing refrigerating hatch cover from No. 1 hatch, between decks. One of the hatch covers was pushed hard against leg causing severe bruises. Disabled 3 days.

(a) *The lifting and moving of refrigerating hatch covers should be controlled by tag lines to limit swinging of covers being moved.*

33. Longshoreman, who was moving two bales of tobacco by hand truck, came too far to his left on the gangplank. The tobacco, which was projecting too far over one side of truck, struck the side of the vessel causing the man to be jerked to the left. He fell between the wharf and vessel. Drowned.

(a) *Bales of tobacco or other loads should be centered on hand trucks.*

(b) *Truckers should follow designated lines of travel, keeping clear of all obstructions.*

(c) *When non-railed gangplanks are used, save-all or cargo nets should be slung from ship's side to pier.*

(d) *Conspicuously placed life rings with lines attached should be available on docks where stevedoring operations are being carried on.*

34. A longshoreman who was pushing a heavy box on a roller, got his foot caught and crushed under the box. Disabled 8 days.

(a) *When moving boxes, crates, or other containers on rollers, the pushing of the load should be done from behind.*

(b) *Safety shoes should be worn by workmen moving or handling heavy or bulky materials.*

35. A holdman was hooking a block to a tub when the tub rolled and mashed two of his toes. Disabled 94 days.

(a) *Tubs or other containers that are to be loaded should be set level on substantial surface to prevent accidental movement.*

(b) *Safety shoes should be worn by workmen making up or landing cargo.*

36. Longshoreman was standing on deck of ship waiting to go aboard a barge, which was making fast alongside. Before the captain of the barge had finished making fast and had time to place a ladder in position, the longshoreman attempted to swing abord the barge with the assistance of a cable fastened to a cargo davit on the ship. The cable was short and he dropped part of the distance to the deck

of the barge, dislocating his right ankle and fracturing his right foot. Disabled 10 weeks.

(a) *Employees should not climb aboard vessels until docking or mooring operations have been completed and gangways or ship's ladders have been placed.*

37. A longshoreman stepped on a hatch cover which was not in proper position. The cover tipped and he fell 35 feet into the hold. The result was a broken arm and internal injuries. Disabled 8 weeks.

(a) *If hatch covers must be worked on, they should be checked for proper fit and if found to be loose or short, should be blocked or wedged to take a good bearing on the supporting angles.*

(b) *The promiscuous walking across hatch covers should be discouraged.*

38. A longshoreman was attempting to turn a 3-ton case which was being raised from the wharf to the ship when the bull line broke. The case swung back and pinned him against a curtain girder, breaking his jaw and shoulder and puncturing his lung. Still disabled after 3 months.

(a) *Employees should not stand in a position where they may be struck by a load or draft being moved by a bull line, should bull line or other gear let go.*

39. A tractor pushed a railroad car over a man who was under the car unfastening tank straps. Fatal.

(a) *Workmen should never be allowed to work under, on, or in railroad cars unless* MEN WORKING *signs are posted on tracks clear of ends of cars or watchmen are in attendance.*

(b) *Railroad cars should not be moved until men working under, on, or in cars are warned that car is to be moved and men are in the clear.*

40. Dockman was making up a draft of general cargo on the dock to be loaded into the ship. One of the cases in the pile from which the cargo was being removed fell on his toe. Disabled 10 days.

(a) *Instructions to employees tiering freight or cargo on dock should include proper height of tiers, method of tieing in, and the need for set-back of tiers.*

(b) *Material should be removed from the pile in a manner to prevent the remainder of the pile from falling.*

(c) *Hard-toe type safety shoes should be worn by all workmen handling cargo.*

41. Dockman was pulling wire from under a draft of pipe. The end of the wire flew in the air striking his face. Disabled 2 days.

(a) *When it is necessary to pull loose tie wire from under drafts or piles of cargo, a steady even pull should be exerted.*

(b) *The grip should be moved up as the wire is withdrawn to limit the length of wire that may whip back.*

42. Dockman was placing a case on top of a pile. He stepped backward and fell from the pile. Disabled 7 days.

(a) *Men standing on tiers should work facing toward the edge of the pile.*

43. Holdman was assisting to stow a large case containing an automobile truck. He was using a pry bar in the operation. A bull line had been attached to the case to pull it into position in stowage. The bull line dislodged a 'tween deck beam; the beam fell and struck the bar, which the man was using and caused it to puncture his chest. Fatal.

(a) *Hatch beams left in position should be pinned, locked, or lashed in place.*

(b) *Where hauling lines or load lines are not free running, the use of snatch or lead blocks is recommended.*

44. Longshoreman was standing in railroad car waiting for cargo hooks when a bundle of truck bodies toppled over and crushed him. Fatal.

(a) *When unloading cars, material should be taken from the car in a manner to prevent the remainder from falling.*

(b) *Long case material stacked on end or in a dangerous position should be secured to prevent movement during unloading operations.*

45. Longshoreman lost his balance and fell overboard from dock while hooking draft, landing on a fender log. Fatal.

(a) *Cargo nets or save-alls should be slung between ship's side and string piece at location of operations.*

46. A foreman broke several ribs, when he fell from ladder while trying to push open a sticking box car door. Disabled 5 weeks.

(a) *Ladders should not be used as a support when pushing open box car doors.*

(b) *Difficult doors can be pulled open if several workmen are used to pull on a line secured to the door.*

47. Fellow employees were taking off the iron beams from No. 1 hatch. The beam being moved struck a beam in place, causing the second beam to fall into the hold where it struck a holdman, inflicting severe leg injuries. Disabled 7 days.

(a) *Hatch beams in position should be pinned, locked, or lashed in place and securing device not removed until beam is to be moved.*

48. A trucker was backing an empty truck into gangway at No. 2 hatch. A draft of raw sugar being lowered struck the end of his truck, causing handle to hit his left arm. Fractured arm.

(a) *Employees should be given warning when approaching location where drafts are being moved and should stand in the clear until drafts have been brought to rest.*

(b) *Employees should not stand by the shafts of hand trucks when trucks are being loaded or unloaded.*

49. Dockman was shifting a case which he had taken off a truck. To balance himself he put his right hand on the tail of the truck; another case the driver was moving fell on his finger. Fractured finger.

(a) *When two or more men undertake to unload truck, the operations should be carried on in sequence and no movement should be started until the adjacent workman is in the clear.*

APPENDIX A.—Statistical Tables

TABLE A.—*Disabling injuries to longshoremen, by age of injured and extent of disability, for 14 stevedoring establishments, 1942*

Age group	Number of disabling injuries								Average days lost per temporary total disability
	Total		Resulting in—						
			Death and permanent total disability		Permanent partial disability		Temporary total disability		
	Number [1]	Percent	Number	Percent	Number	Percent	Number	Percent	
All age groups	1,368	100.0	(1) 10	0.7	119	8.7	1,239	90.6	34
20 years and under	26	100.0	(1) 1	3.8	0	-------	25	96.2	7
21 to 25 years	76	100.0	0	-------	2	2.6	74	97.4	9
26 to 30 years	173	100.0	0	-------	13	7.5	160	92.5	20
31 to 35 years	175	100.0	1	.6	6	3.4	168	96.0	25
36 to 40 years	187	100.0	0	-------	21	11.2	166	88.8	26
41 to 45 years	202	100.0	3	1.5	18	8.9	181	89.6	43
46 to 50 years	194	100.0	1	.5	25	12.9	168	86.6	42
51 to 55 years	156	100.0	2	1.3	17	10.9	137	87.8	45
56 to 60 years	85	100.0	1	1.2	10	11.8	74	87.0	40
61 years and over	43	100.0	1	2.3	5	11.6	37	86.1	70
Unknown	51	100.0	0	-------	2	3.9	49	96.1	46

[1] Figures in parentheses indicate the number of permanent total disability cases included.

TABLE B.—*Disabling injuries to longshoremen, by part of body injured and extent of disability, for 22 stevedoring establishments, 1942*

Part of body injured	Number of disabling injuries					Average days lost per temporary total disability
	Total		Resulting in—			
	Number	Percent [1]	Death and permanent total disability [2]	Permanent partial disability	Temporary total disability	
Total	1,510	100.0	(1) 10	122	1,378	33
Eye(s)	26	1.8	0	0	26	8
Brain or skull	37	2.5	4	0	33	60
Head, not elsewhere classified	65	4.4	(1) 2	10	53	25
Chest (lungs)	55	3.7	1	0	54	39
Back	203	13.7	0	4	199	42
Abdomen	26	1.8	1	1	24	34
Trunk, not elsewhere classified	75	5.1	1	4	70	41
Arm(s)	45	3.0	0	3	42	26
Hand(s)	84	5.7	0	8	76	23
Finger(s)	232	15.7	0	46	186	20
Leg(s)	193	13.0	0	8	185	41
Foot or feet	303	20.3	0	22	281	36
Toe(s)	137	9.3	0	14	123	21
Not classified	29	-------	1	2	26	33

[1] Percentage of disabling injuries in which part of body injured is known.
[2] Figures in parentheses indicate the number of permanent total disability cases included.

TABLE C.—*Disabling injuries to longshoremen, by part of body injured and nature of injury, for 17 stevedoring establishments, 1942*

Part of body injured	Total number of disabling injuries	Number of disabling injuries resulting in—								
		Amputations	Burns and scalds	Cuts and lacerations		Strains, sprains and bruises	Fractures	Hernia	Industrial disease	Not classified
				Without infection	With infection					
Total	1,417	12	9	332	32	741	243	12	7	29
Eye(s)	26	0	1	19	0	2	0	0	3	1
Brain or skull	37	0	0	16	0	12	8	0	1	0
Head, not elsewhere classified	60	0	0	38	0	16	5	0	0	1
Chest (lungs)	52	0	0	1	0	32	16	0	0	3
Back	189	0	1	3	0	181	3	0	1	0
Abdomen	25	0	0	0	0	13	0	12	0	0
Trunk, not elsewhere classified	71	0	0	1	0	68	2	0	0	0
Arm(s)	42	0	1	10	2	24	4	0	0	1
Hand(s)	81	0	1	29	3	35	12	0	0	1
Finger(s)	216	10	1	115	12	31	41	0	1	5
Leg(s)	183	0	0	46	10	95	30	0	1	1
Foot or feet	278	1	4	30	3	174	60	0	0	6
Toe(s)	130	1	0	18	2	49	60	0	0	0
Not classified	27	0	0	6	0	9	2	0	0	10

TABLE D.—*Disabling injuries to longshoremen, by place of accident and location of injury, for 22 stevedoring establishments, 1942*

Place of accident	Total number of disabling injuries	Number of disabling injuries affecting—					
		Eye(s)	Brain or skull	Head, not elsewhere classified	Chest (lungs)	Back	Abdomen
Total	1,510	26	37	65	55	203	26
On board ship	843	10	25	41	38	118	12
Deck	187	6	6	9	11	27	3
Hold	509	4	15	27	19	70	7
Other	24	0	4	1	3	5	1
Ship location not stated	123	0	0	4	5	16	1
Afloat, not on board ship	43	0	0	3	3	14	1
Dock	413	14	9	15	7	49	7
Railroad cars	116	1	1	3	4	11	5
Not elsewhere classified	49	1	0	1	0	5	0
Unknown	46	0	2	2	3	6	1

Place of accident	Number of disabling injuries affecting—							
	Trunk, not elsewhere classified	Arm(s)	Hand(s)	Finger(s)	Leg(s)	Foot or feet	Toe(s)	Not classified
Total	75	45	84	232	193	303	137	29
On board ship	47	19	41	127	127	164	63	11
Deck	13	6	8	29	23	33	11	2
Hold	28	9	29	73	80	98	44	6
Other	1	1	0	1	4	2	0	1
Ship location not stated	5	3	4	24	20	31	8	2
Afloat, not on board ship	7	0	0	2	1	7	1	4
Dock	14	17	27	65	43	92	45	9
Railroad cars	3	7	11	23	14	20	12	1
Not elsewhere classified	1	1	2	13	3	11	8	3
Unknown	3	1	3	2	5	9	8	1

TABLE E.—*Disabling injuries to longshoremen, by place of accident and nature of injury, for 17 stevedoring establishments, 1942*

Place of accident	Total number of disabling injuries	Number of disabling injuries resulting in—								
		Amputations	Burns and scalds	Cuts and lacerations		Strains, sprains, and bruises	Fractures	Hernia	Industrial disease	Not classified
				Without infection	With infection					
Total	1,417	12	9	332	32	741	243	12	7	29
On board ship	783	4	6	181	18	412	141	4	3	14
Deck	183	1	2	42	5	102	30	0	0	1
Hold	493	3	4	115	8	264	90	2	3	4
Other	23	0	0	6	2	10	4	1	0	0
Ship location not stated	84	0	0	18	3	36	17	1	0	9
Afloat, not on board ship	41	0	0	2	0	30	4	1	0	4
Dock	389	5	3	102	9	190	65	3	4	8
Railroad cars	114	1	0	29	2	61	15	3	0	3
Not elsewhere classified	49	0	0	12	2	21	14	0	0	0
Unknown	41	2	0	6	1	27	4	1	0	0

TABLE F.—*Disabling injuries to longshoremen, by nature of work of injured and location of injury, for 22 stevedoring establishments, 1942*

Nature of work	Total number of disabling injuries	Number of disabling injuries affecting—					
		Eye(s)	Brain or skull	Head, not elsewhere classified	Chest (lungs)	Back	Abdomen
Total	1,510	26	37	65	55	203	26
Handling cargo	1,044	21	16	38	37	161	22
Stowing or piling cargo	317	5	8	12	7	55	8
Breaking down load or cargo	110	3	1	6	4	21	1
Stowing, piling or breaking down, not stated	355	2	2	9	13	62	9
Landing slingloads	68	1	3	4	2	3	0
Hooking on slingloads	30	0	0	3	0	2	0
Mechanical trucking	42	6	1	3	5	1	1
Hand trucking	32	0	0	0	2	5	3
Driving winch	9	1	0	1	2	3	0
Tending hatch	7	1	0	0	0	2	0
Other	74	2	1	0	2	7	0
Handling dunnage	13	0	0	1	0	2	0
Handling ship's gear	35	0	1	1	1	2	0
Handling stevedore gear	47	1	2	2	3	6	0
Not elsewhere classified	127	1	9	8	4	13	1
Unknown	244	3	9	15	10	19	3

Nature of work	Number of disabling injuries affecting—							
	Trunk, not elsewhere classified	Arm(s)	Hand(s)	Finger(s)	Leg(s)	Foot or feet	Toe(s)	Not classified
Total	75	45	84	232	193	303	137	29
Handling cargo	48	27	61	157	131	205	105	15
Stowing or piling cargo	12	8	26	47	39	58	32	0
Breaking down load or cargo	3	2	5	17	8	26	9	4
Stowing, piling or breaking down, not stated	20	9	21	49	41	70	43	5
Landing slingloads	6	1	5	8	13	18	3	1
Hooking on slingloads	2	0	0	12	6	3	1	1
Mechanical trucking	1	1	1	5	6	6	4	1
Hand trucking	0	1	0	1	4	9	6	1
Driving winch	0	1	0	0	1	0	0	0
Tending hatch	0	0	0	2	1	0	0	1
Other	4	4	3	16	12	15	7	1
Handling dunnage	0	0	1	4	2	1	2	0
Handling ship's gear	6	0	1	7	8	5	3	0
Handling stevedore gear	2	2	3	13	4	5	4	0
Not elsewhere classified	9	8	5	13	19	27	3	7
Unknown	10	8	13	38	29	60	20	7

TABLE G.—*Disabling injuries to longshoremen, by nature of work of injured and nature of injury, for 17 stevedoring establishments, 1942*

Nature of work	Total number of disabling injuries	Number of disabling injuries resulting from—								
		Amputations	Burns and scalds	Cuts and lacerations		Strains, sprains, and bruises	Fractures	Hernia	Industrial disease	Not classified
				Without infection	With infection					
Total	1,417	12	9	332	32	741	243	12	7	29
Handling cargo	994	7	8	230	17	537	166	8	5	16
Stowing or piling cargo	306	1	1	76	5	170	46	5	1	1
Breaking down load or cargo	102	0	1	22	2	63	11	0	0	3
Stowing, piling, or breaking down—not stated	334	1	4	69	6	190	52	3	3	6
Landing slingloads	65	0	0	15	0	30	18	0	0	2
Hooking on slingloads	28	1	0	9	0	12	6	0	0	0
Mechanical trucking	42	1	0	13	1	13	13	0	0	1
Hand trucking	29	0	0	4	0	18	6	0	0	1
Driving winch	9	0	0	1	0	6	0	0	1	1
Tending hatch	6	0	0	1	1	3	1	0	0	0
Other	73	3	2	20	2	32	13	0	0	1
Handling dunnage	13	0	0	4	0	8	1	0	0	0
Handling ship's gear	34	0	0	7	1	19	7	0	0	0
Handling stevedore gear	44	1	0	12	2	20	9	0	0	0
Not elsewhere classified	118	1	1	29	3	53	23	1	0	7
Unknown	214	3	0	50	9	104	37	3	2	6

TABLE H.—*Disabling injuries to longshoremen, by nature of work of injured and unsafe act, for 14 stevedoring establishments, 1942*

Nature of work	Total number of disabling injuries	Number of disabling injuries caused by—						
		Operating without authority, failure to secure or warn	Operating or working at unsafe speed	Using unsafe equipment, or equipment unsafely	Unsafe loading, placing, etc.	Taking unsafe position or posture	Failure to use safe attire	Unknown
Total	1,367	12	170	224	164	284	44	469
Handling cargo	969	10	99	189	142	180	39	310
Stowing or piling cargo	303	1	37	68	67	43	9	78
Breaking down load or cargo	100	1	12	21	15	10	3	38
Stowing, piling, or breaking down—not stated	322	1	23	75	52	52	22	97
Landing slingloads	62	0	7	8	0	37	0	10
Hooking on slingloads	28	4	0	3	1	12	0	8
Mechanical trucking	40	1	2	0	1	9	1	26
Hand trucking	28	0	2	3	4	1	0	18
Driving winch	7	0	2	0	0	1	0	4
Tending hatch	6	0	1	1	0	1	0	3
Other	73	2	13	10	2	14	4	28
Handling dunnage	13	0	1	0	2	3	0	7
Handling ship's gear	34	1	2	8	2	6	0	15
Handling stevedore gear	44	1	4	9	4	9	1	16
Not elsewhere classified	111	0	49	4	4	18	1	35
Unknown	196	0	15	14	10	68	3	86

TABLE I.—*Disabling injuries to longshoremen, by unsafe act and extent of disability, for 14 stevedoring establishments, 1942*

Unsafe act	Number of disabling injuries					Average days lost per temporary total disability
	Total		Resulting in—			
	Number	Percent [1]	Death and permanent total disability [2]	Permanent partial disability	Temporary total disability	
Total	1,367	100.0	(1) 10	119	1,238	34
Operating without authority, failure to secure or warn	12	1.3	1	3	8	20
Operating or working at unsafe speed	170	18.9	0	10	160	36
Lack of proper care in walking or climbing	156	17.3	0	9	147	36
On stowed or piled cargo	54	6.0	0	0	54	31
On other working surfaces	71	7.8	0	6	65	32
Other	31	3.5	0	3	28	54
Other	14	1.6	0	1	13	36
Using unsafe equipment or equipment unsafely	224	24.9	1	38	185	23
Gripping objects insecurely or taking wrong hold of objects	212	23.6	0	37	175	23
Hand tools	22	2.4	0	6	16	18
Cargo	146	16.3	0	24	122	22
Other	44	4.9	0	7	37	28
Other	12	1.3	1	1	10	23
Unsafe loading, placing, etc	164	18.3	0	0	164	37
Lifting	140	15.6	0	0	140	39
Cargo	110	12.3	0	0	110	38
Other	30	3.3	0	0	30	41
Other	24	2.7	0	0	24	23
Taking unsafe position or posture	284	31.7	6	24	254	41
Exposure to moving vehicles	24	2.7	2	1	21	40
Exposure under or to suspended or moving sling loads	158	17.6	3	11	144	42
Other	102	11.4	1	12	89	38
Failure to use safe attire	44	4.9	0	0	44	9
Unknown	469		(1) 2	44	423	34

[1] Percentage of disabling injuries for which unsafe act is known.
[2] Figures in parentheses indicate the number of permanent-total disability cases included.

TABLE J.—*Disabling injuries to longshoremen, by nature of work of injured and unsafe mechanical condition, for 14 stevedoring establishments, 1942*

Nature of work	Total number of disabling injuries	Number of disabling injuries caused by—					
		Improper guarding	Defective agencies	Hazardous arrangement or procedure	Unsafe lifting	Not classified	No unsafe condition
Total	1,369	20	159	362	128	524	176
Handling cargo	971	9	95	275	113	326	153
Stowing or piling cargo	304	3	31	80	51	76	63
Breaking down load or cargo	100	1	11	28	12	30	18
Stowing, piling, or breaking down—not stated	323	3	30	70	46	108	66
Landing slingloads	62	0	9	38	0	14	1
Hooking on slingloads	28	0	4	8	1	14	1
Mechanical trucking	40	1	2	17	0	20	0
Hand trucking	28	0	2	9	1	16	0
Driving winch	7	0	1	2	0	4	0
Tending hatch	6	0	2	1	0	3	0
Other	73	1	3	22	2	41	4
Handling dunnage	13	0	1	4	1	7	0
Handling ship's gear	34	1	4	3	1	18	7
Handling stevedore gear	44	1	5	10	3	18	7
Not elsewhere classified	111	4	18	24	1	61	3
Unknown	196	5	36	46	9	94	6

TABLE K.—*Disabling injuries to longshoremen, by unsafe mechanical condition and extent of disability, for 14 stevedoring establishments, 1942*

Unsafe mechanical condition	Number of disabling injuries					Average days lost per temporary total disability
	Total		Resulting in—			
	Number	Percent [1]	Death and permanent total disability [2]	Permanent partial disability	Temporary total disability	
Total	1,369	100.0	(1) 10	119	1,240	34
Improper guarding	20	2.4	0	5	15	79
Unguarding staging or scaffolds	7	.8	0	2	5	87
Other	13	1.6	0	3	10	75
Defective	159	18.8	3	14	142	30
Working surfaces	39	4.6	0	1	38	22
Slippery	18	2.1	0	1	17	44
Other	21	2.5	0	0	21	7
Cargo	28	3.3	0	2	26	12
Sharp-edged	19	2.2	0	1	18	10
Other	9	1.1	0	1	8	20
Hoisting apparatus	67	7.9	3	7	57	36
Defective or improperly slung loads	56	6.6	2	6	48	38
Other	11	1.3	1	1	9	19
Other	25	3.0	0	4	21	50
Hazardous arrangement or procedure	362	42.9	4	23	335	40
Congestion of working surfaces	22	2.6	0	4	18	34
Unsafely piled or stowed cargo	112	13.3	0	5	107	38
Unsafely loaded vehicles	16	1.9	0	1	15	56
Exposure to sling	107	12.7	1	7	99	46
Loose material on working surfaces	13	1.5	0	0	13	36
Other	92	10.9	3	6	83	35
Unsafe lifting	128	15.1	0	0	128	37
Cargo	109	12.9	0	0	109	39
Other	19	2.2	0	0	19	28
No unsafe condition	176	20.8	0	31	145	23
Not classified	524	----	(1) 3	46	475	32

[1] Percentage of disabling injuries for which unsafe mechanical condition is known.
[2] Figures in parentheses indicate the number of permanent-total disability cases involved.

TABLE L.—*Disabling injuries to longshoremen, by agency and extent of disability, for 22 stevedoring establishments, 1942*

Agency	Number of disabling injuries					Average days lost per temporary total disability
	Total		Resulting in—			
	Number	Percent [1]	Death and permanent total disability [2]	Permanent partial disability	Temporary total disability	
Total	1,510	100.0	(1) 10	122	1,378	33
Hoisting apparatus	232	17.9	4	24	204	39
Belts	21	1.6	1	4	16	38
Slings (including loads)	197	15.2	3	19	175	40
Other	14	1.1	0	1	13	14
Platform trucks; power- or hand-operated	123	9.5	1	10	112	37
Railroad cars	25	1.9	1	1	23	46
Other vehicles	16	1.2	1	2	13	61
Hand tools	47	3.6	0	9	38	17
Working surfaces	202	15.6	0	12	190	35
Staging or scaffolds	22	1.7	0	4	18	50
Stowed cargo	56	4.3	0	0	56	31
Other	124	9.6	0	8	116	35
Cargo	597	46.1	1	45	551	31
Dunnage	28	2.2	0	2	26	16
Skids and platforms	26	2.0	0	2	24	18
Not classified	214	----	(1) 2	15	197	36

[1] Percentage of disabling injuries in which agency is known.
[2] Figures in parentheses indicate the number of permanent-total disability cases included.

TABLE M.—*Disabling injuries to longshoremen, by nature of work of injured and accident type, for 22 stevedoring establishments, 1942*

Nature of work	Total number of disabling injuries	Number of disabling injuries caused by—							
		Striking against	Struck by	Caught in, on, or between	Falls		Slips, (not falls) and overexertion	Inhalation, absorption, ingestion	Not classified
					On same level	From one elevation to another			
Total	1,510	78	778	186	116	85	215	20	32
Handling cargo	1,044	52	546	141	65	47	166	14	13
Stowing or piling cargo	317	24	156	39	25	10	60	1	2
Breaking down load or cargo	110	3	57	12	14	5	16	2	1
Stowing, piling or breaking down—not stated	355	9	195	42	10	17	71	8	3
Landing slingloads	68	1	39	14	5	3	4	0	2
Hooking on slingloads	30	2	15	9	1	1	2	0	0
Mechanical trucking	42	2	19	12	1	4	3	0	1
Hand trucking	32	5	19	1	2	1	4	0	0
Driving winch	9	2	2	0	2	0	1	1	1
Tending hatch	7	0	3	1	1	1	0	0	1
Other	74	4	41	11	4	5	5	2	2
Handling dunnage	13	0	10	0	0	0	2	0	1
Handling ship's gear	35	1	15	7	6	2	4	0	0
Handling stevedore gear	47	2	24	7	7	2	4	0	1
Not elsewhere classified	127	7	43	8	26	22	18	2	1
Unknown	244	16	140	23	12	12	21	4	16

TABLE N.—*Disabling injuries to longshoremen by type of accident and extent of disability, for 22 stevedoring establishments, 1942*

Type of accident	Number of disabling injuries					Average days lost per temporary total disability
	Total		Resulting in—			
	Number	Percent [1]	Death and permanent total disability [2]	Permanent partial disability	Temporary total disability	
All types of accidents	1,510	100.0	(1) 10	122	1,378	33
Striking against	78	5.3	0	4	74	17
Cargo (including piled or stowed)	29	2.0	0	3	26	12
Other	49	3.3	0	1	48	21
Struck by	778	52.6	(1) 7	54	717	33
Hoisting apparatus	175	11.8	3	11	161	43
Slings (including loads)	159	10.7	2	10	147	42
Other	16	1.1	1	1	14	48
Platform trucks; power- or hand-operated	79	5.3	1	4	74	38
Hand tools	41	2.8	0	9	32	14
Cargo	345	23.4	1	21	323	32
Skids and rollers	30	2.0	0	3	27	20
Other	108	7.3	(1) 2	6	100	32
Caught in, on, or between	186	12.6	2	44	140	31
Hoisting apparatus	44	3.0	1	13	30	25
Slings (including loads)	32	2.2	1	9	22	29
Other	12	.8	0	4	8	17
Platform trucks; power- or hand-operated	19	1.3	0	5	14	61
Cargo	89	6.0	0	20	69	26
Other	34	2.3	1	6	27	39
Falls	201	13.6	0	14	187	43
On same level	116	7.8	0	5	111	40
On stowed or piled cargo	28	1.9	0	0	28	30
On other working surfaces	81	5.4	0	4	77	44
Other	7	.5	0	1	6	20
From one elevation to another	85	5.8	0	9	76	46
From vehicles	18	1.2	0	1	17	41
From staging or scaffolds	17	1.2	0	4	13	50
From stowed cargo	20	1.4	0	0	20	27
Other	30	2.0	0	4	26	64
Slips (not falls) and overexertion	215	14.5	0	4	211	34
Slips on working surfaces	36	2.4	0	0	36	27
Lifting cargo	129	8.7	0	1	128	37
Other	50	3.4	0	3	47	32
Inhalation or absorption of dusts, chemicals, and radiations	20	1.4	0	1	19	13
Not classified	32		1	0	30	24

[1] Percentage of disabling injuries in which type of accident is known.
[2] Figures in parentheses indicate the number of permanent-total disability cases included.

APPENDIX B.—SAFETY CODES

Maritime Safety Code for Stevedoring and Freight Handling Operations [1]

A Manual of Safe Practice Rules for the Prevention of Personal Injury Accidents to Employees Engaged in the Handling of Cargoes

INTRODUCTION

The scope of this safety code includes all direct and incidental cargo handling and stevedoring operations aboard ship and on the dock. Its purpose is to identify the more important hazards, specifically as to safe practice rules covering both personal and mechanical or physical fault, to assist in establishing uniformity in safe operation, to serve as a guide or reminder and an incentive to greater safety, and to coordinate and encourage the active participation of all concerned in a practical and effective effort towards the observance of reasonable requirements for safety and health.

Safe practice rules have been arranged as far as possible so as to check with the sequence of operations conducted in stevedoring work. This results in the grouping of items under general heads and the selection, under these general heads, of subheads which permit the inclusion only of such rules as apply to the operations or conditions coming within the general and subheadings. It should be noted, however, that certain safe practice rules in any one section are also applicable to other sections.

The individual rules which have been selected represent the best available material and generally accepted practice. They are offered as minimum safety requirements with the thought that additional rules should be adopted and followed as found necessary to cover individual operations and special circumstances.

Realizing that stevedoring safety is largely a matter of the attitudes and abilities of personnel, the first section of the code is reserved for requirements dealing with experience and skill, placing men and assigning specific work, supervision and responsibilities.

Sections are provided for receiving and delivering cargoes, preliminary or preparatory work before cargo is actually handled, first aid and accident investigation and reporting as well as for the operations of rigging, making up and landing drafts, tiering and stowing cargo and other work common to stevedoring operations.

Maritime Safety Code

FOREWORD

The prevention of personal injury to workers is recognized as an inherent factor in employer-employee relationship and in business management. Both employer and employee have always been conscious of its significance from a humane point of view and also are

[1] Compiled and Recommended by The Maritime Association of the Port of New York, 80 Broad Street, New York City. 1939.

keenly aware of its value as an economic factor in promoting continuity of employment, and efficiency of operation.

The Maritime Association of the Port of New York, recognizing its opportunity and its moral obligation to be of assistance, publishes this safety code for stevedoring and freight-handling operations with the hope and in the belief that it will play an effective part in reducing the frequency and severity of injuries to workers who engage in the handling of cargoes.

Substantial progress has been made in acquiring a broader and more specific knowledge of accident occurrence and prevention. This permits the development of prevention methods which are at the same time businesslike and effective. It is now common knowledge that more than 90 percent of all accidents are of a preventable type and that with due regard to practicality at least half can be avoided by simple common-sense measures. Approximately 85 percent of all accidents have been proven to result from definite unsafe practices of persons. Prevention requires that the more important and more frequently violated safe performance rules be identified and that the employer and his supervisors join with the owners and operators in a determined and continuous effort to eliminate them. Approximately 15 percent of accidents are due to faults in the design, construction, and condition of vessels and structures, equipments, and cargoes. With respect to the correction of these mechanical and physical hazards, it is also necessary that an effective and determined cooperative effort be made.

The effects of accident occurrence fall most heavily on the workers who suffer injury and whose livelihood is at stake. The industry bears the burden of monetary cost and of impaired efficiency. Thus the stevedore employees, the stevedore contractors, and the owners, lessees, and operators of vessels and docks are directly concerned in a common problem of vital interest to all.

The frequency and severity of accidents should be and can be reduced. No political or controversial questions are involved. Methods of control are known and readily available. The unsafe practices and conditions of most importance are itemized under suitable identifying headings in this code. The essential requirement to success is the sincere, sympathetic, and effective cooperation of all interests in the control of a situation which is of the greatest significance in terms of life and limb, personal welfare, continuity of employment, and good business.

SECTION I.—*Responsibilities of Personnel*

PART A.—*The owner, master, and officers of the vessel.*

1. To supply and maintain in safe condition for use, all ship's gear, equipment, tools, and work spaces which are to be used in stevedore operations.
2. To maintain order and discipline with respect to ships' crews, passengers, licensees, and visitors, so as to avoid interference with the safe performance of stevedoring work.

PART B.—*The owner, or lessee of the dock, warehouse, or terminal.*

1. To place and maintain all work spaces, structures thereon, and such gear and equipment as comes under his control, in safe condition for stevedoring work.
2. To maintain order and discipline with respect to vehicular and pedestrian traffic under his control so as to avoid interference with the safety of stevedoring work.

PART C.—*The contracting stevedore or stevedoring department.*

1. To maintain all gear, equipment, tools, and work spaces under his control in safe working conditions.

2. To promulgate and enforce rules which shall require those immediately in charge of stevedoring operations to report to their superior any unsafe condition affecting the safe performance of the stevedoring work.

SECTION II.—*Preparation and Rigging*

PART A.—*Safe condition and maintenance of all winches, hatch covers, ship's gear and equipment, decks, docks, and structures.*

1. Special attention, during any inspection, should be given to the following:

(a) Winches, tools, loose keys, loose lever pins, falls not securely fastened to drums, and any other defects.

(b) Shackle pins on topping lift and cargo blocks should be checked to see if pins have worked loose. Shackle pins should be secured with seizing wire or key pins.

(c) Flooring of decks, docks, gang-planks, and passageways should be examined for defects.

(d) Cargo booms should have approved capacity plainly marked in a conspicuous manner and place, preferably at the heel of the boom. In the absence of such marking, the ship owner shall supply the stevedore with a statement as to the capacity of the boom.

2. When decks, gangways, ladders, docks, or other passageways are slippery due to ice, oil, grease, or other materials, an adequate supply of salt, sand, or cinders should be provided and used to prevent slipping and falling. If it is impractical to use these anti-slip materials, safety lines should be rigged and a warning sign should be conspicuously placed nearby "Danger, Slippery Deck," and the condition corrected as soon as possible.

3. Look about before passing working hatches.

4. Suitable protection should be placed near all open manholes.

5. All hatch covers and fore and aft and thwart ship beams shall, insofar as they are not interchangeable, be kept plainly marked to indicate the deck and hatch to which they belong and their position therein.

6. Deflectors shall be used on openings from ships discharging waste water or matter interfering with the operations or affecting the health of longshoremen.

7. Where temporary stage is to be used for the purpose of discharging cargo by the use of wheelbarrow, it should be equipped with side railings.

8. When working cargo over a deck load, a safe walkway should be provided for the hatch tender from rail to coaming.

9. Where deck loads are to be carried, pennants should be secured to the ship's side that would reach above the highest deck load for the purpose of making fast the derrick guys. This will do away with the necessity of men going down over the side to adjust guys. Such pennants may be used in lashing the deck load.

10. Overhead flange on side-port gangway and hatch-door openings should be provided with head bumper or safety cushions at least 2 inches thick and to extend across the entire door opening.

PART B.—*Provisions for boarding and leaving the vessel.*

1. When a ship is lying at a dock there shall be provided at all times a safe means of going to and from the ship.

2. Water or steam hoses should not be laid on or across gangways. Brackets or other suitable means should be provided for hanging hose on the side of gangways to prevent tripping hazards to persons using them.

3. All persons going to and from the ship must use the gangplanks or ladders provided. "Short-cuts" over side via cargo slings, save-alls, moving conveyors, etc., are prohibited.

4. When working a barge, scow, or raft alongside ship, a pilot's (Jacob's) ladder or its equivalent, properly secured, shall be provided and used for each separate unit of operation.

5. When a ship, boat, or other vessel is alongside any other ship, boat, or other vessel, and persons are required to pass from one to the other, a safe means of passage shall be provided.

6. No person shall ride a draft or cargo hook, or be hoisted from dock to ship, or into hold, or vice versa, by ship's gear, except in the event of an accident.

7. Jumping to and from any moving barge, scow, tug, or lighter should be strictly prohibited.

PART C.—*Provision of adequate light and ventilation.*

1. Adequate illumination should be provided to afford safe passage on the gangplanks and ladders.
2. No person shall be permitted to enter a ship's hold unless sufficient hatches are removed to give adequate natural light, or artificial illumination is provided.
3. Entering any dark compartments, hatches, buildings, boxcars, or other places without safe and proper illumination shall be prohibited. The use of matches or open lights shall be forbidden.
4. All lights aboard ship should be provided with substantial metal guards or cages.
5. Lighting wires and fixtures shall be installed so as to be free from contact with drafts, loads, running gear, or other moving equipment.
6. Periodical inspection should be made of all electrical installation, particular attention being given to connections, insulation, location of wiring and fixtures, methods of suspension, etc.
7. Ship's decks and holds where cargo is being handled at night should be adequately illuminated.
8. Warehouses requiring the use of an extension light system due to the lack of sufficient illumination should provide brackets or other means of support for the cable to give clearance to tractors. At no time should this cable be permitted to lie on the ground and tractors run over it as this may cause shock or other serious personal injury to workers.

PART D.—*Berthing and shifting vessels.*

1. Prior to docking a vessel at any pier having a narrow string piece, the pier door or doors around area of regular mooring ballards or cleats should be opened so that men handling heavy lines can stand within pier.
2. Men should keep clear of the bight of a line and should not stand in or on coil.
3. Mooring lines should be secured to bitts, not capstan or drum ends.
4. Men should stand to one side—not straddle a line when stopping it.
5. Men should not be permitted to stand on the side of a covered barge when same is being shifted. They shall stand on the bow or stern deck with all parts of their bodies inside the deck rail.
6. When the box type of barge is being shifted, men shall be prohibited from crossing over hatch covers or walking across beams of open hatches.
7. Cargo falls or ships hoisting gear should not be used to move barges, scows, or lighters or railroad cars.
8. All men assigned to the shifting of a barge, scow, or lighter shall stand on the inboard side of the bitts, cleats, or ballard when making lines fast and always face the line of direction of the strain.

PART E.—*Laying out and installing equipment and gear.*

1. Care should be taken to see that the fall lines of one derrick do not rub on the standing gear of other derricks or equipment.
2. The fall should be of a length to provide three full turns on the drum when the cargo hook has reached the farthest point of travel.
3. The ends of the fall should be fastened securely to the drum.
4. Whenever possible, the fall should be wound on the drum of the winch so that the lever will have the same direction of operation as the load being handled.
5. The winch operator should be so located as to be protected from swinging loads or drafts.
6. When winch drums are located so as to expose winch driver to the bight of the fall, a fairleader should be provided to prevent the winch driver from being injured by bight of fall.
7. Appropriate measures shall be taken to prevent exhaust steam and, so far as practicable, live steam to any winch, from obscuring any part of the working place at which a worker is employed.
8. Boom guys and gin blocks should be secured by shackles.
9. Cargo booms should be lowered to the deck for changing gear or making repairs. When it is impossible to lower boom to deck and a man must go aloft, a boatswain's chair should be used and hoisted aloft by hand power only.
10. Where the derrick post is low it is important to avoid topping the boom too high, as it will put undue strain on the boom and the topping lift.
11. When topping or lowering a boom is necessary, suitable stoppers should be used to prevent falling of the boom. When ship is equipped with wire purchases the ship should furnish a sufficient number of chain stoppers to permit of

safely shifting the derrick-topping lift. There should be at least one stopper for each hatch.

12. All splices on wire bridles shall have a cover of marline, rubber hose, or other suitable protection for men's hands.

13. The boom guys and preventers should be kept as far away from the heel of the boom as possible, but not past the line of the fall. No set-up should be made that will automatically make the boom top up.

14. Guys, preventers, and other lines should each be fastened to a separate cleat or ring bolt.

PART F.—*Opening or closing hatches.*

1. Bridle slings, which shall be furnished by the vessel, should be used for handling large hatch covers, beams, and strongbacks. Lanyards or tag lines of sufficient length should be fastened near the shackles or toggles so that longshoremen can walk around the open hatch and hold the load from swinging.

2. Men shall not be allowed to walk out on hatch beams or strongbacks to place slings, or to cross hatch.

3. All beams or strongbacks which will not hoist out with the usual strain, because of being jammed, should be taken out under the supervision of a ship's officer.

4. When work is finished or temporarily suspended in one hatch, that hatch cover should be replaced or the open hatchway should be properly guarded.

5. When longshoremen are working through an opening of one section in a hatch, the remaining beams that are left in should be properly secured.

6. When hatch covers or strongbacks are off, they should be piled or placed on deck in such a position as not to interfere with gangwaymen or others working or walking on deck of vessel. When hatch covers are piled near open hatches, with coamings, covers should be kept reasonably below the top of the coaming.

7. 'Tween deck hatch covers should be stowed at a safe distance from coaming to prevent them from being thrown into hold by a draft swinging under coamings.

8. When gangwaymen make a flooring of hatch covers between the coaming and sides of the vessel they should place them so as to leave no space between the hatch covers and prevent a tripping hazard.

9. Any hatch covers or strongbacks which cannot be properly placed, or are otherwise found defective, should be reported by the longshoremen to foremen who should immediately advise proper officer of ship.

10. Hatch covers that are placed over beams resting on deck should be properly blocked to prevent them from moving.

11. Beams used for hatch coverings shall have suitable gear for removing and replacing them, of such a character as to render it unnecessary for workers to go upon them for the purpose of adjusting such gear.

12. Adequate handgrips should be provided on all hatch covers.

13. Longshoremen should not be permitted to handle slingloads in the 'tween decks being worked unless strongbacks and hatch covers are in place and properly fitted, and if a section of covers is left off, then the strongbacks should be properly secured and, if practical, lifelines rigged to prevent men from stepping off into the open space.

14. Hatch coverings shall not be used in the construction of cargo stages or for any other purpose which may expose them to damage.

PART G.—*Transportation of men by boat or vehicle.*

1. All boats owned, operated, or chartered for transporting employees shall be licensed in accordance with all laws governing the Steamboat Inspection Service, Department of Commerce, and United States Government.

2. Adequate and safe means of boarding and leaving the transporting vessel shall be provided and all employees checked before going aboard and rechecked when debarking.

3. Vehicles transporting workmen shall be operated in a safe and careful manner and shall not exceed speed limits as prescribed by law.

4. Tools, materials, equipment, etc., and persons are not to be transported in the same vehicle unless all tools, materials, equipment, etc., are properly secured against movement.

5. Drivers' seats shall not contain more than the number of persons permitted by law.

PART H.—*General.*

1. All passageways on decks or between decks should be kept clear of slings, trays, pieces of dunnage, etc.

2. Employees shall not be permitted to throw dunnage, gear, or equipment into holds of vessels or from the ship to the dock or vice versa.
3. Life rings for the rescue of employees fallen overboard should be maintained at easily accessible and conspicuously marked points.
4. If tools, materials, appliances, or any gear are at any time found to be out of repair, defective, or in any way unsafe, employees shall report this to the foreman in charge of the work immediately.
5. All defective equipment should be laid aside and collected daily and turned in. The use of such equipment should be prohibited until repairs have been completed.
6. Gear or equipment not in use should not be left lying around decks of ship or dock.
7. When necessary, trucking planks should be lashed in place. Lashings to be secured to the pier or boat as occasions require. Where necessary ring bolts shall be located on both sides of each door opening so as to properly secure trucking planks.

Section III.—*Freight Handling*

Note: This section is intended to cover only rules specially applicable to the work outlined under this general heading. Other sections, particularly IV and V, should be referred to for other rules also applicable to freight handling.

Part A.—*Loading or unloading railroad cars.*

1. Race pieces or other suitable access to railroad cars should be provided and should be secure, to avoid dropping; for instance, by means of drilling a hole near the corner of each plate and dropping a bolt through the hole.
2. Car doors should be pulled open, not pushed, so as to eliminate the possibility of men being struck by material falling out of car.
3. Employees should be prohibited from crawling or climbing under, over, or through railroad cars when passing to or from their places of work. Regular passageways should be used.
4. Employees assigned to work in railroad cars should stand outside car when drafts of long heavy or awkward cargo are being hoisted or lowered.
5. Where boxcars are being loaded abreast of the vessel, a substantial landing stage should be provided.
6. When boxcars are spotted abreast one another at each hatch, requiring the use of steel plates (race pieces), these plates shall be so constructed that they can be securely fastened at the four corners, as provided for in paragraph 1. Where wooden skids are used, they shall be securely lashed.

Part B.—*General.*

1. Precautions should be taken when trucking over broken, uneven, raised, or depressed surfaces.
2. Broken cargo should be recoopered before being made up into draft.
3. Employees shall stand clear of moving railroad cars and at no time shall they be permitted to remain aboard while the cars are being shifted.
4. Cargo falls or booms shall not be used to move railroad cars on docks. When shifting cars with other gear and equipment, all employees other than those assigned to shifting operations shall be made to stand clear. No employee shall stand between the stringpiece and the ship's side when cars are being moved.

Section IV.—*Making up and Breaking Down Drafts, Tiering and Stowing Cargoes*

Part A.—*Distribution, team work, and operating practices of men.*

1. Two men shall be assigned on a log boom at night. Where two hatches are working from the same log boom in good daylight, or where suitable passage from one boom to the other is provided, then it will be permissible to operate with one man on each. Lines made fast on deck and hanging overside to water's edge for lifelines shall be furnished by the ship.
2. Coal and bulk cargo trimmers shall be checked in and out of the hold, to avoid the loss of men who might become trapped.
3. Men breaking down cargo should not turn their backs to the tiers if any pieces in the tiers are overhanging, or the tiers themselves are leaning.
4. Particular attention should be given to the number of men assigned to making up drafts in the square of a hatch where circumstances limit the working area.

PART B.—*Making up and breaking down drafts.*

1. Cargo shall be loaded so that no piece can fall from the draft.

2. Men should not make up drafts under or in the path of moving loads or drafts.

PART C.—*Tiering and stowing.*

1. Cargoes which are likely to shift or roll shall be secured or blocked.

2. Dangerously tiered cargo shall be properly supported.

3. All cargo stowed in pier by stevedores, truckmen, etc., should be tiered in such manner to prevent the tier from collapsing.

4. Cargo stowed in 'tween or shelter decks, or any upper cargo compartment, should be secure before loading or discharging the compartment below.

5. Conveyors or escalators used for high tiering should be equipped with guards to prevent employees from leaning over top of tier to grasp container or bag before it reaches the top of the escalator.

PART D.—*Use of cotton hooks, jacks, or other hand tools.*

1. Stevedores' hand hooks when not in use should be put in some safe place and should not be placed where they may be stepped on or sat upon or hung up where vibration may shake them down.

2. Hooks should not be placed in belly of bag in breaking down or tiering up cargo.

PART E.—*General.*

1. Dunnage should not be broken over a man's knee or by jumping on same; a saw should be provided and used for cutting dunnage.

2. Loose dunnage should not be permitted to be left in square of hatch or in the path of draft being dragged or landed. It should be laid as needed or picked up as uncovered.

3. Uprights for deck cargo should be lashed to the superstructure until they can be removed.

4. Where temporary staging is used in connection with stowing of cargo, such staging should be substantially built, securely fastened and with suitable flooring of adequate width.

5. Men should not be permitted to walk on hatch coamings, deck rails, etc.

6. Men should not slide down ropes but should use the ladders provided.

7. Defective or broken crates or cases should be called to the attention of foremen so that employees shall not be injured by protruding nails or metal straps.

8. Ship's crew shall not be permitted to work in the rigging over the heads of men working in the hold, or deck or on the dock.

9. Cargo shall not be stowed to prevent a safe handhold or foothold on ladders. Stiff leg portable or some other suitable ladders, securely lashed, shall be provided where it is impossible to use the permanent hold ladders.

10. Where electric trimmers are used for bulk cargo, the electric conductor should be disconnected before lowering into hold of ship; then, with current shut off, the conductor should be secured to the trimmer. The current should be cut off the trimmer before disconnecting the conductor and the conductor removed before hoisting the trimmer. The thought to keep in mind is to keep the conductor in good shape, free from chafing, and in every way possible prevent open spark in the ever-present dust of bulk-cargo operations.

11. Ladders should be provided for men getting down from high tiers in terminals or on lighters. Jumping or climbing down on protruding pieces of lumber from tiers should be strictly prohibited.

SECTION V.—*Hoisting and Landing Drafts*

PART A.—*Signalling.*

1. Gangwaymen or anyone occupying a similar position, should not give signal to hoist or lower any draft unless properly slung.

2. Hatch tenders and gangwaymen should be instructed not to give signal for hoisting or lowering a draft until all men are clear of the draft.

3. Winch operators should be definitely instructed that they must take signals only from one properly authorized and designated signalman.

4. Where work can be safely performed, it is understood that nothing in the aforementioned recommendations are to be construed as making it necessary that a definite person be employed as signalman, hatch tender, or gangwayman.

PART B.—*General.*

1. When drafts are to be landed in the wings, employees should be instructed to push and not pull the draft.
2. Hooks on end of fall lines should not be swung from man to man prior to hooking up or after draft has been released. The hook should be passed from man to man or carried out to the square of the hatch.
3. Drafts of lumber, dunnage, pipe, or cargo of similar character should be hoisted with a bridle sling whenever practical, to prevent short or unbound pieces falling out of draft.
4. Crane operators should exercise care in moving or hoisting any load in bridle slings until load is properly centered.
5. Longshoremen should not be permitted to land drafts on broken or defective hatch covers or on hatch covers not properly supported. When necessary, a skid or some other protection should be used to prevent damage to 'tween deck covers.
6. Bales of cotton, wool, cork, gunny bags, or other similar articles shall not be hoisted by single hooks attached to the bands or fastenings of such bales. Double hooks shall be used at all times.
7. No person shall be permitted to stand between the load and fixed objects, such as stanchions, or other cargo, and when using a bull line to move cargo, stand out of the bight and clear of the throw of the load and hook.
8. Longshoremen landing drafts of steel rails, bundles of steel, pipe, etc., should not place their hands on the draft. A rope lanyard should be thrown around it and used to assist in landing the draft.
9. Drafts landed in net slings should be dumped slowly to prevent cargo from breaking out suddenly and striking the men standing in the clear.
10. Longshoremen should not be permitted to reach upward for a descending load.
11. Drafts should be lowered to within landing distance before longshoremen take hold of them for landing.
12. When draft is being landed, men should keep their feet well away from under. When guiding a draft they should keep in a safe position to avoid being struck by it.
13. Gangwaymen should be instructed that all drafts dragged from the wings are to be stopped in rest position under the head of the boom before being hoisted.
14. A safe and secure place should be provided for the hatch tender to work. There should be no temporary obstructions in his path from the hatch to the ship's side.
15. In hoisting lump coal or similar bulk cargo in baskets, tubs, etc., containers should not be filled above the rim.
16. A draft shall not be lifted with a chain that has a kink in it. The chain shall be straightened before the lift is made.
17. Winchman must not be permitted to sit while operating, unless seats are made of good strong lumber and securely lashed.
18. No winch driver should leave his winch while steam is on, but should first shut the steam off at the valve ahead of the throttle.
19. When sending empty board slings with fixed ears, in or out of the ship, on edge, the spreader hooks should be inserted from the outside so that the board can move up and down on the shank of the hook instead of the horn. This will prevent losing the board off the hooks.

SECTION VI.—*Special Rules for Dangerous Cargo*

PART A.—*Explosives and inflammables.*

1. The handling of all explosive cargoes or merchandise should be done in accordance with the established codes and rules of the Federal, State, and local governing Boards of Underwriters.
2. All men engaged in the handling, hoisting, stowing, and supervision of explosive, combustible, and inflammable merchandise as well as all others on ships engaged in such traffic, should be prohibited from smoking and should be required to rid their persons of all matches or other flame-producing equipment, before entering upon the work.
3. In all instances where explosive or combustible merchandise or cargo is being handled in any way, open lights should not be permitted in or about the ship, docks, or wharves and only approved lights and equipment of explosion-proof design should be used.
4. In the loading of explosive merchandise in packaged form where chutes are used, the chutes should be constructed only of wood and all fastenings thereon

should be of wooden pins or dowelings or pegs. If metal fastenings are used, they should be countersunk.

5. The bottoms of chutes should be provided with a stuffed mattress 4 feet wide, 6 feet long, and not less than 4 inches thick.

6. In chuting packaged explosives, care should be exercised to see that the angle of descent of chute is such as to prevent excessive shock or bumping of packages and men should be warned not to allow cases or packages to be so bumped or shaken.

7. In the tiering of packaged explosives, every possible care should be taken to prevent the dropping of cases and packages and means taken to prevent all shocks.

PART B.—*Caustic and corrosive, noxious and irritating materials.*

1. In handling soda ash, sodium carbonate in bags, the men shall be furnished by the contractor with suitable overalls, socks, and gloves. At the completion of each period of work, the men are to be compelled to wash the exposed parts of their body with 2 percent solution of acetic acid. The protective clothing must be laundered after each wearing.

2. Longshoremen shall wear (*a*) approved goggles when handling cargo liable to injure or irritate the eyes; (*b*) respirators of an approved type when handling cargo liable to injure or irritate the respiratory passages and lungs. When goggles and respirators are required, they shall be provided by employer.

3. The handling of all chemical cargoes or merchandise should be done in accordance with the established codes and rules of the Federal, State, and local governing boards of underwriters.

PART C.—*Handling of rails.*

1. All rails loaded aboard barges or lighters should be stowed and not dumped. Scantlings should be placed between each tier.

2. Rail forks should be furnished and used by all employees working on lighters or in the holds of vessels.

3. Short regular rail chain slings should be used when hoisting.

4. Employees landing drafts of rails in the holds of vessels should not attempt to land draft before placing a lanyard around end of draft to prevent spreading. At no time should employees place their hands on a draft of rails before lanyard has been secured to the end of the draft.

5. Until such times as a smooth floor surface has been established in the stowing of rails, a shovel or a similar instrument should be used for riding end of draft back from first landing position until it reaches lowering position on scantling where chain sling is to be removed.

PART D.—*General.*

1. In unloading ore, undermining or walling should not be permitted.

2. Before men are permitted to enter or work in stowage spaces or ships' tanks in which explosive, poisonous, noxious, dusty or gaseous cargoes have been carried, such spaces should first be thoroughly ventilated and made gas free.

SECTION VII.—*Motor Vehicle and Hand Truck Operations*

PART A.—*Traffic planning.*

1. When practical, a system of one way traffic or circular traffic should be established for dock trucking.

2. When practical, regular traffic gangways should be established.

3. All vehicles should follow designated traffic lanes.

4. Watchmen should be given designated areas and held responsible for keeping gangways open.

PART B.—*Hooking on, loading, and unloading.*

1. When making a coupling between trucks, care should be exercised to see that hands or other portions of the body will not be caught in the operation.

2. Cargo should be loaded on hand trucks in a safe manner.

PART C.—*Transporting.*

1. Tractors, tractor cranes, burden trucks, and hand trucks should be operated in a safe and careful manner, and tractors should be slowed down or come to a halt when there is a possibility of injuring an employee.

2. Fall of tractor cranes, when without load, should be secured.

3. Trailers should be checked when heavy pieces of cargo are being loaded or unloaded when there is a possibility of rolling.

PART D.—*General.*

1. No employees not engaged in the regular line of duty shall be permitted to ride on tractors, trailers.
2. Switch shall be pulled out before connecting or disconnecting batteries of electric tractors to the charging board.
3. Warning signs should be posted indicating vehicles' speed to be limited to 5 miles per hour, on premises, and watchman instructed to enforce these instructions.
4. All gear and equipment not in use or in motion shall be kept clear of traffic gangways.
5. All tractors shall be equipped with efficient brakes and warning devices, which should be kept in good working order. Operators of tractors and cranes shall test the brakes and steering gear, etc., before starting work. All cranes shall be equipped with a rear vision mirror.
6. The frames of all hand trucks should be so constructed that small objects will not fall through.
7. Where gas-fueled tractors are permitted to work in confined areas lacking free circulation of air, some practical system should be installed to eliminate carbon monoxide poisoning.
8. When gas-fueled tractors are being refueled, ignition switch should be kept off.
9. Refueling of gas tractors, etc., should be done before starting operations for the day, in other words at morning and in lunch-hour periods.
10. All refueling of gas tractors, etc., should only be done at some designated point, preferably outside of the pier shed.
11. In lieu of permanent or portable gas pumps, only approved safety type cans with flexible nozzles should be used for refilling gas tanks.

SECTION VIII.—*First Aid and Hygiene*

PART A.—*First aid.*

1. Notices shall be exhibited in prominent positions at every dock, wharf, or quay, by each employer using it, stating:

(a) The position of the first-aid kit, and the name of the person in charge thereof.

(b) Name, address, and telephone number of company's physician, and hospital.

2. An approved first-aid kit shall be maintained on each dock. As far as possible, someone employed around the dock should be trained in first aid in order that immediate assistance may be given.

PART B.—*General.*

1. At all places where men are employed, good drinking water in covered clean utensils or devices shall be conveniently available.
2. At least one conveniently accessible toilet, either on board the vessel, or on the wharf or other place where the vessel is moored, shall be available at all times for the use of every person engaged in the operations. Such toilets shall be kept clean and in good order.

SECTION IX.—*Investigating and Reporting Accidents*

PART A.—*Notifying supervisors and authorities.*

1. An injury of any kind, irrespective of its severity, shall be reported immediately to the foreman, by the injured person if he is physically able to do so. If the injured person is physically unable to report the injury, then it shall be reported by any person in possession of the facts. The foreman shall see that the injured party is given immediate first-aid treatment.

PART B.—*Fact finding.*

1. Upon the occurrence of a personal injury the foreman or man in charge shall investigate and determine the cause of the accident.

PART C.—*Reporting and recording.*

1. The pertinent facts of accident occurrence shall be recorded on a suitable form for purposes of analysis and prevention.
2. Accident facts shall be analyzed and summarized at periodical intervals so as to develop trends and major causes and remedies.

SECTION X.—*General*

PART A.—*Safe wearing apparel.*

1. Gloves that are suitable and in good condition should be worn by longshoremen handling undressed lumber, metal sheets, or any other rough-edged or sharp material.
2. Longshoremen should wear good, stout shoes, without holes in soles, and preferably with reinforced toe caps, but without rubber heels.

PART B.—*Mechanical safeguards.*

1. All winch working parts exposed to workmen and gear must be properly guarded and all exposed steam and exhaust pipes, as well as other hot surfaces, must be protected.
2. The pin of all shackles should be so secured that it would be impossible to work out.
3. All projecting set screws on moving parts should be removed or countersunk or headless set screws should be used. No part of the set screw should project above the surface.
4. Dangerous portions of docks shall be properly fenced until repairs are made.
5. All ladders shall be kept in good repair and in a safe condition.

PART C.—*General safe practice.*

1. Smoking should not be allowed aboard ship in the vicinity of open hatches, on the dock, or in the warehouse.
2. Any employee under the influence of alcohol or other drugs shall not be allowed to remain on the job.
3. When necessary to move suspended loads, or trucks and dollies by hand, employees should push rather than pull them.
4. Longshoremen should use leg and thigh muscles instead of back muscles when lifting and proceed to lift from a squatting instead of a bending position.
5. Any cargo found to be broken shall be set aside a safe distance away from the working area so the cooper or designated cargo man can repair without danger to himself or fellow workers.
6. When repairing cases of rubber, tea, or other commodities bound with tin or steel strapping, the cooper shall use a glove while holding down the strapping to be nailed.
7. Noise of chipping on outside of hull or on the deck above, while men are working below creates a real hazard in that it prevents the men working in the hold from hearing the signals of the hatch tender. If possible, such work should not be carried on while ship is being loaded or unloaded.
8. Men should not be sent into holds or compartments that have been fumigated until permission is given by the fumigation authorities.
9. Tools, equipment, or materials should not be carried by hand when climbing or descending a ladder. Hands should be free for grasping side rails.
10. Employees after checking out at the end of a work period shall not be permitted to return to the vessel or to the dock without permission of the Superintendent.

PART D.—*Systematic safety organization.*

The observance of the safe practice rules in this code requires that they be known and understood, that there be agreement as to their value and practicality, and that the effort to prevent accidents be continuous. Interest and desire to achieve results must be aroused and maintained. Systematic effort as indicated by some practical form of "safety organization" is highly beneficial in accomplishing satisfactory results.

Pacific Coast Marine Safety Code [1]

Stevedoring Operations on Board Ship

SECTION 1. *Scope, Purpose, Exceptions, and Definitions*

Scope.

RULE 1. This code applies to all cargo handling and stevedoring operations aboard ship and covers all operations, persons, employees, employers, and vessels

[1] Developed under the sponsorship of the Pacific Coast Marine Associations' Accident Prevention Bureau, 1929-1934.

included under the Federal Longshoremen's and Harbor Workers' Compensation Act in the States of the Pacific Coast.

Purpose and exceptions.

RULE 2. The purpose of this code is to provide reasonable minimum requirements for safety of life, limb, and health. In cases of practical difficulty or unnecessary hardship an employer may make exceptions from the literal requirements of this code, or permit the use of other devices or methods, but only when it is clearly evident that equivalent protection is provided. Any exceptions for an employer shall be referred first to his District Code Committee; if the proposed exception is approved by his committee, it shall be forwarded to the general chairman of the Pacific Coast Safety Code Committee, who shall take a referendum vote by mail of the entire Code Committee. Special port or district rules can be adopted by the Code Committee by means of the same procedure provided for employer "exceptions" above.

Where an exception for any company is made to a given rule, according to stipulated conditions, it is not necessary that each company petitioning thereafter be given formal consent by vote of the entire Code Committee, but such exception may be granted within any district if it meets the approval of the District Code Committee and the general chairman.

Mandatory and advisory requirements.

RULE 3. The word "shall" is to be understood as mandatory and the word "should" as advisory.

Definitions.—(a) *General.*

RULE 101. The term "Commission" means the United States Employees' Compensation Commission.

RULE 102. The term "Deputy Commissioner" means the Deputy Commissioner of the United States Employees' Compensation Commission having jurisdiction in respect of an injury or death.

RULE 103A. The term "Code Committee" refers to a standing committee which is hereby created to consist of 13 members as follows: Three each, chosen from both employers and employees as far as possible, from the following districts: (1) Washington ports; (2) Oregon, including Columbia River ports; (3) San Francisco Bay, and (4) Los Angeles Harbor District and San Diego, and a general chairman to be elected by the Committee. The function of this Committee shall include the approval of a final draft of this code, and the approval of subsequent exceptions or amendments, and of any proposed port rules.

RULE 103B. The term "District Code Committee" refers to a committee to be chosen from the districts prescribed in Rule 103A, consisting of three members to be chosen from employers and employees as far as possible.

RULE 104. The term "State" includes a Territory.

RULE 105. The term "person" means an individual, partnership, corporation, or association.

RULE 106. The term "employer" means an employer, any of whose employees are employed in maritime employment, in whole or in part, upon the navigable waters of the United States.

RULE 107. The term "operations and stevedoring operations" means the operation of loading, unloading, moving or handling cargo, ship's stores, gear, etc., in, on, or out of any ship and all activities incidental thereto at any port, dock, wharf, pier, jetty, harbor, river, canal, or any other place, and included under the jurisdiction of the Federal Longshoremen's and Harbor Workers' Compensation Act.

Rule 108. The term "vessel" means any floating structure used in navigation, or for transporting commerce, upon the navigable waters of the United States.

RULE 109. The term "cargo" as defined for the purpose of this code includes all goods or merchandise transported by vessel and also all ship's stores, gear, etc., which may be moved in, on, or out of any vessel.

RULE 110. The term "contracting stevedore" means the person, firm, or corporation, contracting with the ship owner or his agents, to carry on stevedoring operations as defined herein; or any person, firm, or corporation engaged in stevedoring operations.

RULE 111. The term "general foreman" means the person employed to supervise the stevedoring operations.

RULE 112. The term "gang foreman" means the person employed to supervise a gang of longshoremen in the stevedoring operations.

RULE 113. The term "hatch tender" or "gangwayman" means the person employed to supervise all the hoisting and lowering operations of handling cargo.

RULE 114. The term "gang" means a group of longshoremen working as a unit in the stevedoring operations.

RULE 115. The term "longshoreman" means any person who is employed for the purpose of loading or unloading or handling cargo or in other operations as defined herein.

Definitions.—(b) *Working places and gear.*

RULE 116. The term "boom guy" means the device, consisting of pennants and tackles, attached to the head of the boom or derrick and used for keeping the boom in position for working cargo.

RULE 117. The term "bridle" means a device consisting of a ring or shackle from which are suspended two or more pennants of rope, wire, or chain, to the ends of which are attached hooks, shackles, or toggles.

RULE 118. The term "bull line or bull rope" means an auxiliary rope or fall worked from a winch and roved through lead or snatch blocks or chocks to move cargo or other objects.

RULE 119. The term "deck" means the horizontal plating, planking, or floor covering the transverse beams of a vessel.

RULE 120. The term "dunnage" means the material used in stowage for protecting cargo.

RULE 121. The term "fall or cargo fall" means the cable used to hoist cargo.

RULE 122. The term "gangway or gangplank" means the device used for persons passing from the wharf or dock to the ship or vessel and vice versa.

RULE 123. The term "hatch" means the opening in a deck through which cargo, fuel, etc., is passed.

RULE 124. The term "hatch cover" or "hatch plank" means the device placed on hatch beams or strongbacks and coamings to cover a hatch.

RULE 125. The term "hatch way" means the square of the hatch from the top deck to the hold.

RULE 126. The terms "hatch beam fore and after, and strongback" mean the devices used for supporting the hatch covers to close the hatch.

RULE 127. The term "Jacob's ladder" means the device consisting of two parallel pieces of rope or wire joined together at intervals by crosspieces of rope, wire, or wood, the whole ladder being flexible.

RULE 128. The term "ladder" means an appliance or device consisting of two parallel pieces of wood or metal joined together at intervals by crosspieces called rounds.

RULE 129. The term "lead block" means the device consisting of a grooved sheave encased by a shell used to change the direction of the lead or line.

RULE 130. The term "machinery" means the contrivances or machines, such as conveyors, motors, capstans, winches, windlasses, tractors, jitneys, etc., used in the operations.

RULE 131. The term "passageway" means a path or clear space other than a gang way or ladder through which persons or cargo are to be passed or moved.

RULE 132. The terms "pennant or pendant" mean the piece of wire or rope to which tackles, etc., are attached or suspended to shorten the length of the tackle and to cut down unnecessary amount of rope otherwise used in said tackle.

Rule 133. The term "preventer guy" means the device consisting of a temporary auxiliary rope or wire attached to the head of the boom or derrick to relieve the boom guy of excessive strain in handling heavy drafts of cargo.

RULE 134. The term "shackle" means a U-shaped device of iron or steel with a pin through the ends used to secure the ends of guys, falls, topping lifts, etc., to ringbolts or cleats.

RULE 135. The term "ship's gear" means the devices used in the operations, such as booms, derricks, falls, guys, slings, etc., and supplied and carried by the vessel for the purpose of working cargo.

RULE 136. The term "sling" means a device made of rope, wire, canvas, chains, boards, or other material used to hold cargo for the purpose of hoisting it.

RULE 137. The term "sling load or draft" means that part of the cargo held by the sling.

RULE 138. The term "stevedoring gear" means the devices used and furnished by the stevedoring contractor.

RULE 139. The term "stowage" means the proper placing of cargo on or in vessels.

RULE 140. The term "topping lift" means the wire or rope attached to the boom head and mast or Samson post or other fixed object by means of which the boom or derrick is raised, lowered, or suspended.

RULE 141. The term "'tween deck or 'tween decks" means an intermediate deck situated between the main deck and the hold.

RULE 142. The term "set-up" means the manner in which the entire standing and running gear is rigged for one gang to work cargo.

SECTION 2. *Responsibilities and Duties Under the Code*

RULE 201. The vessel, its owner, master, and officer in charge shall be severally and jointly responsible for the safe condition of the ship's gear and equipment, and for the competency of any ship's officer or member of the crew who may engage in operations covered by this code. They shall provide, so far as the same shall be under their control, a safe working place upon the vessel for all operations carried on upon it.

RULE 202. The contracting stevedore is responsible for the proper and safe condition of all stevedoring gear supplied by it, and for the competency of foremen and other persons supplied by it in charge of operations.

RULE 203. The duties of the general foreman are: To see that all gear is in apparent good safe working condition during the stevedoring operations. He is in charge of all stowage and handling of cargo. He should see that stevedoring operations are carried on in a safe manner. Where conditions warrant, and he is not in immediate touch with his superior officers, he should stop work if necessary to avoid accidents.

RULE 204. The duties of the gang foreman are: To be in direct charge of his gang, to supervise all the stevedoring operations in connection therewith, and to see that all work is done in a safe manner. He shall report promptly to the general foreman any defect in the gear or any unsafe working condition. In the event that the gang foreman or hatch tender, upon discovery of defective gear, should find it impossible to get in touch immediately with the general foreman, he shall himself stop work, if necessary, until the general foreman shall have had opportunity to pass upon the situation.

RULE 205. The duties of the hatch tender or gangwayman are: He should be familiar with the deck stevedoring operations and be capable of rigging booms, derricks, and other deck gear for the proper hoisting or moving of cargo.

Before commencing to hoist cargo, he should, in conjunction with the gang foreman, see that the boom topping lifts and boom guys are properly secured and the save-all made fast; that pins in shackles on all cargo gear are properly fastened; that the space from the hatch coamings to the ship's side is clear for working cargo and the hatch beams, strongbacks, fore and afters, and hatch covers which are removed, stowed on deck in a safe, orderly manner; and inspect generally, as far as possible, all running gear for any defect or unsafe working condition.

He shall see that the cargo is properly slung before being hoisted and shall control the movements of slingloads or drafts by positive signals to the winch driver. He should keep the slingload or draft in sight when being moved, and warn all persons in danger of being injured by the movement of cargo. Whenever operations are suspended or terminated, he shall see that the hatch covers are on, or safety lines are stretched around hatch coamings, and rope stretched across side rail opening or side rails properly shipped, if the appliances are supplied by the vessel, or unless the duty has been assumed by the vessel. He shall be held responsible, together with the gang foreman, for the safety of the men during the operations.

RULE 206. The duties of the winch driver are: To see before starting hoisting operations that the winch is free from water, that the cargo fall is in good order and properly secured to the winch drum, and that the winch is in good order, reporting any defects to the gang foreman. He shall take signals only from the hatch tender, if a hatch tender is used, for the operation of the winch, and shall at all times operate the winch or winches in a safe manner. If the winches are not properly oiled, he shall report same to his foreman. When leaving winch unattended, he shall see that the power is turned off.

RULE 207. The duties of the longshoremen, in addition to those presented elsewhere in this code, shall be to use the safety devices provided, to practice the safety methods prescribed, and to cooperate in all that makes for safety.

SECTION 3. *General Safety Rules*

RULE 301. All gears and friction drives, wherever located, should be completely encased. Where, in the case of gears, this is impracticable, a band guard should be provided with side flanges extending inward beyond the root of the teeth.

RULE 302. Where there is a spoke hazard, the spokes should always be covered on exposed side.

RULE 303. All sprocket wheels, wherever located, should be completely encased.

RULE 304. All projecting set screws on moving parts should be removed, or countersunk, or headless set screw should be used. No part of the set screw should project above the surface.

RULE 305. Shaft keys, unless enclosed by the housing of the machine, should be flush or protected with cylindrical safety sleeves, or completely enclosed.

RULE 306. Shields or screens should be provided which will prevent contact with crank, connecting rod, valve rod, steam jam cylinder, or other moving parts.

RULE 307. Removal of existing protective appliances during stevedoring operations is strictly prohibited.

RULE 308. If tools, materials, appliances, or any gear are at any time found to be out of repair, defective, or in any way unsafe, employees shall report the same immediately to the person in charge of the work.

RULE 309. Where an edge of cargo or of a landing platform is exposed and there is danger of falls of persons, the edge should be guarded by a life line.

RULE 310. Winches, conveyors, belts, and all driving gear may be lubricated while in motion only when this can be done by means of suitable contrivances, without danger.

RULE 311. Lubricating and oiling while a machine is in motion may be done only by persons authorized to do so.

RULE 312. Cleaning of machine parts may be done only while the machine is not in motion.

RULE 313. Transferred to and made a part of RULE 525.

RULE 314. Employees shall do everything possible to prevent fires. Smoking is prohibited.

RULE 315. Entering dark holds, decks, or compartments without a light is prohibited. (See RULES 410 and 411).

RULE 316. Naked lights are prohibited in stevedoring operations aboard ship. (See RULES 410 and 411.)

RULE 317. No one shall be allowed to turn to or remain on the job if under the influence of intoxicating liquors.

SECTION 4. *General Working Conditions*

Reporting of injuries.

RULE 401. An injury of any kind, irrespective of its severity, shall be reported immediately to the foreman, or man in charge, by the injured person if he is physically able (if the injured person is physically unable to report the injury, then it shall be reported by any person in possession of the facts.) The foreman, or man in charge, shall see that the injured party is given immediate first-aid treatment and that the injury is reported promptly to the employer.

First aid.

RULE 402. An approved first-aid kit shall always be immediately available when and where operations are being carried on. The first-aid kit shall be in charge of, and maintained fully stocked by a designated attendant who shall be trained to render first aid to the injured. The first-aid attendant should always be available to give immediate assistance. One or more stretchers shall be available at places where operations are being carried on, to be furnished by the vessel or by the dock operators.

RULE 403. At each major port there shall be provided by some appropriate port organization, facilities for the formation of a first-aid corps, and for the training of persons employed who wish to qualify to render first aid.

RULE 404. Notices shall be exhibited in prominent positions at every dock, or wharf, stating:

(a) The position of the first-aid kit, and the name of the person in charge thereof.
(b) The telephone number of emergency hospital or ambulance service.
(c) Name, address, and telephone number of company's physician and hospital.

RULE 405. One or more life buoys for the rescue of drowning persons shall be maintained at each dock.

Clean drinking water.

RULE 406. At all places where operations are being carried on, good drinking water in covered clean utensils or devices shall be conveniently available.

Toilets.

RULE 407. At least one conveniently accessible toilet, either on board the vessel or on the wharf or other place where the vessel is moored, shall be available at all times for the use of every person engaged in the operations. Such toilets shall be kept clean and in good order.

Decks, floors, and passageways.

RULE 408. All decks, floors, and other places, where persons are engaged in the operations shall, as far as possible, be kept clean and free from dust, litter, and slipperiness. Grease, oils, etc., spilled where stevedoring operations are being carried on shall be immediately covered by sand or other suitable material.

RULE 409. Transferred to and made a part of RULE 408.

RULE 410. General foremen shall not permit operations on or in ship's decks, holds, or other places, unless adequately lighted. (See RULES 315, 316, 906 and 1009).

RULE 411. One or more lights shall be kept burning on the dock near the gangplank or other entrance to the ship after dark while ship is tied up to dock. (See RULES 315 and 316.)

RULE 412. Passageways on dock shall be kept clear from tackle end of ship's gear to shed, to give ample room for hooking or landing loads or drafts, except when working cars direct to or from ship.

RULE 413. Where men are to be required to work in a space below a deck where cargo is stowed, the said cargo in said deck shall be so stowed as to have clear space of 3 feet around hatch coaming of said deck for handling hatch covers.

RULE 413B (new). Where it becomes necessary to stow deck loads closer than 3 feet to a hatch coaming, life line shall be rigged for safety of men handling strongbacks and hatch covers.

Access to vessels.

RULE 414. When a ship is lying at a dock, there shall be provided at all times a safe means of going to and from the ship consisting of a gangplank or other equally adequate method. All persons going to and from the ship must use this equipment. "Short-cuts" over side, via cargo slings, save-alls, moving conveyors, etc., are prohibited.

RULE 415. Where a gangplank is reasonably practicable, a gangplank not less than 22 inches wide shall be provided and properly secured to the ship. Such gangplank shall be provided with a 2-rail railing on each side; such railing shall be not less than 3½ feet high; the upper and lower rails to consist of wood, taut ropes or chains, or other equally safe devices.

RULE 416. In other cases a ladder shall be provided which shall be of sound material, of adequate length, and properly secured to prevent slipping.

RULE 417. If a ship, boat, or other vessel is alongside any other ship, boat, or other vessel, and persons employed are required to pass from one to the other, a safe means of access shall be provided by the ship, boat, or other vessel which has the higher freeboard.

RULE 418. When working barge, scow, raft, or log boom alongside ship, a Jacob's ladder, or its equivalent, properly secured, shall be provided and used for each separate unit of operation.

Hold ladders.

RULE 419. Ladders shall be provided in all holds where employees are engaged in stevedoring operations. Where it is impracticable to use a ladder, an equivalent safe means of escape shall be provided.

RULE 420. Ship's ladders providing entrance to and exit from holds shall be kept in repair and in safe condition.

RULE 421. Hold ladders shall be kept clear, and no cargo stowed within 6 inches from inside rungs of ladders. If cargo is so stowed that it is not possible to use permanent hold ladders, portable ladders shall be provided and properly secured.

Winch operations.

RULE 422. A place provided for winch drivers to stand or sit shall be kept in good order and all means taken to prevent slipping and falling of seat of driver.

RULE 423. The ship's gear should be so rigged as to protect the winch driver against swinging loads.

RULE 424. All winches operating with a single lever shall be counterbalanced by a weight properly secured.

RULE 425. Extensions on operating levers of winches, of substantial material, where necessary, shall be furnished by the ship, and securely attached to the regular lever.

Noxious cargo.

RULE 426. Longshoremen shall wear (*a*) approved goggles when handling cargo liable to injure or irritate the eyes; (*b*) respirators of an approved type when handling cargo liable to injure or irritate the respiratory passages and lungs.

RULE 427. When such goggles and respirators are required, same shall be provided by employer.

RULE 428. Strict care should be exercised when entering holds that have been recently fumigated.

SECTION 5. *Safe Practices*

(A) *Preparations of hatch and decks for cargo-handling operations.*

RULE 501. No cargo shall be worked through a section of a hatch unless the strongback of section adjacent to uncovered portion of hatch is bolted to batch coamings, or otherwise secured or removed.

RULE 502. No cargo shall be hoisted from hatch until hatch covers and strongbacks are off and stowed clear of working gear, except such cargo as must be removed to clear beams.

RULE 503. Strongbacks and hatch covers shall be so stowed as not to interfere with a safe walkway for hatch tenders from rail to hatch coaming, and so that drafts or gear cannot tip same into hatches or over ship's side.

RULE 504. Foremen or hatch tenders shall personally supervise the taking off or placing of hatch covers, strongbacks, and beams. Booms shall not be raised or lowered except under the immediate supervision of the man in charge of gang.

RULE 505. When employees are below, they shall stand in the clear while strongbacks, hatch beams, and hatch covers are being taken out or put in place.

RULE 506. Sling loads or drafts of dunnage shall not be handled over the heads of longshoremen. Where practicable double slings should be used.

RULE 507. Where temporary deck stage is used for the purpose of loading or unloading ships, such stage shall be strongly built and securely fastened.

RULE 508. When it is necessary to work cargo on a skeleton deck, safe decking shall be provided unless the workmen can work safely from the cargo stowed below such skeleton deck.

RULE 509. Employees shall never ride strongbacks or beams; nor shall they unnecessarily walk or climb upon them while in place.

RULE 510.[1] When working cargo over a deck load a safe walkway shall be provided for the hatch tender from rail to coaming. When this is impracticable, two hatch tenders shall be used.

RULE 511.[1] Deck loads shall be so stowed as not to interfere with safe operation of winches or to permit loose material falling into hatches or overside.

(B) *Rigging of ship's gear for cargo-handling operations.*

RULE 512. Longshoremen should not be hoisted aloft except by hand power; booms should be lowered to deck for changing gear or making necessary repairs.

RULE 513. The winch fall should be so wound that the lever shall have the same direction of operation as the load being handled. Winches hereafter constructed shall be made so that they can be operated as above recommended.

RULE 514A. The boom guys and preventers should be kept as far away from the heel of the boom as possible, but not past the line of the fall. They shall be made fast so as to divide the strain on both. Preventers should be made fast around the head of the boom independent of all other fastenings. Booms shall always be so topped as to avoid undue strain on both boom and topping lift. (Special caution where samson or derrick post is low.) In all "set-ups" the dragging of one fall against the other without plenty of sag is positively dangerous and should be avoided.

RULE 514B (amended). When winch controls are located so as to expose winch driver to bight of the fall, an additional preventer shall be placed on the lead block at the heel of the boom. The preventer shall be no less than ⅝ inch wire cable and preferably ¾ or larger.

RULE 515. Measures shall be taken to prevent steam from, or to, any crane, winch, or other appliance obscuring any part of the decks, gangways, stages, wharf, or other place, or otherwise hindering or injuring any person employed in the operations.

[1] Interpretations, RULES 510 and 511: "Special attention of all responsible for stowage of deck loads of lumber and logs is hereby called to the serious hazards which some of the present practices have created.

(C) *Handling of cargo and practices incident thereto.*

RULE 516. Riding cargo hook is prohibited; however, in emergencies, and under safe working conditions, specially prepared slings may be ridden in and out of the holds, under the order and direct supervision of the foreman.

RULE 517A. Sling loads shall not be held suspended over men's heads, either on dock or ship; standing or working under hanging loads is prohibited.

RULE 517B. Slings loads that are improperly slung shall not be hoisted.

RULE 518. No cargo shall be loaded or unloaded by a fall or sling at any intermediate deck unless either the hatch at that deck is safely covered, or a secure landing platform of a width not less than that of one section of hatch coverings, has been placed across the hatch.

RULE 519. Blocks, crow bars, chain slings, and other heavy equipment shall not be thrown from deck to ship's hold or from deck to dock.

RULE 520. While working cargo which may shift or roll on workman, the cargo shall be secured or blocked.

RULE 521. All cargo raised by hoisting gear shall always be carefully secured against falling or spreading. Where practicable double slings should be used on small lumber.

RULE 522. In hoisting lump coal or similar bulk cargo in baskets, tubs, etc., containers should not be filled above the rim.

RULE 523. When assisting to steady or land a load, longshoremen should not stand between the load and any fixed object, and shall *always face the load.* Loads shall not be lifted from cars or docks when men are standing between load and ship.

RULE 524. When using a bull line to move cargo, the longshoremen should stand out of the bight, and clear of the throw of the lead and hook.

RULE 525. A sling load or draft shall not be lifted with a chain having a kink in it. A chain shall not be shortened by wiring or tieing. Chains shall not be repaired, even temporarily, by bolting two links together or by the use of wire.

RULE 526. Each employer shall employ for every hatch or set of winches being operated a signal man, gangwayman, or hatch tender. (See also hatch tenders' duties, RULE 205.)

RULE 527. The riding of moving conveyors, other than of mechanical stevedores, escalators, or other devices especially designed for transportation of men, is strictly prohibited. Such special devices as are permissible for transporting men in and out of vessels, may be ridden only when the driver is at the controls and can stop the device.

RULE 528. Two men shall be required on a log boom for each unit of operation. Life lines shall be furnished hanging overside to water's edge.

RULE 529. Men trimming bulk cargo are to be checked in and out of the hold.

RULE 530. Electric trimmers used for bulk cargo containing explosive dust shall be disconnected from conductors before being lowered into hold of ship; the electric current shall be kept shut off while conductors are being secured to or disconnected from the trimmers.

RULE 531. When men are working in the square of the hatch, bales of cotton, wool, cork, gunny bags, or other similar articles shall not be hoisted by hooks attached to the bands or fastenings of such bales.

RULE 531B (amendment to RULE 802, and applicable to all ports). Where two gangs are working in the same hatch on different decks, a skid, preferably, or at least a net, should be rigged from lower strongback and securely fastened above over-hatch coamings so as to prevent the possibility of men or cargo from falling on men below.

RULE 531C (new). Where cargo is stowed on or in any deck above lower hold, such cargo shall be adequately secured to prevent it from falling on men working below the deck on which such cargo is stowed.

(D) *Preparation of hatch and deck at suspension of cargo handling.*

RULE 532. When work in a hatch is finished for the day, upper deck hatch covers or approved night hatches, shall be on, or safety lines stretched around the hatch coamings. (See RULE 205.) Manholes and other deck openings should be protected in a safe manner.

SECTION 6. *Ship's Gear*

RULE 601. All bridles for removing strongbacks or beams from hatch coamings shall be of sufficient length so that strongbacks can be hooked on without necessitating climbing out on them to do so; shackles or toggles are recommended in

place of hooks for handling strongbacks. Hand lines shall be attached of adequate length for use in preventing swinging of hatch beams and strongbacks.

RULE 602. All boom guys and gin blocks shall be secured by shackles.

RULE 603. When deck loads of lumber extend above the bulwarks, there should be a pennant of sufficient length to preclude sending a workman down ship's side to secure or relase the boom guy from the deck ring bolt.

RULE 604. The ship shall furnish a sufficient number of approved topping lift stoppers where necessary for safely shifting derrick topping lifts.

RULE 605. Cargo booms should be tested and have approved capacity plainly marked in a conspicuous manner and place, preferably at the heel of the boom.

RULE 606. Cargo falls or ship's hoisting gear shall not be used to move railroad cars on docks.

RULE 607. Hatch rollers shall be so constructed that they can be firmly attached or secured to hatch coamings.

RULE 608. Broken, split, or ill-fitting hatch covers shall at once be discarded or repaired. All hatch covers, and fore-and-aft and thwart-ship beams shall, insofar as they are not interchangeable, be kept plainly marked to indicate the deck and hatch to which they belong and their position therein, and a licensed ship's officer should be present and responsible for the proper covering and uncovering of all hatches. Sufficient hatch covers of proper dimensions to insure a tight cover for each deck shall be supplied at all times during operations.

RULE 609. Adequate handgrips shall be provided on all hatch covers, having regard to their size and weight. Handgrips shall not be secured by means of wood or lag screws; where bolts are used, ends of same shall be riveted.

RULE 610. Deflectors shall be used on openings from ships emitting waste water or matter interfering with the operations, or affecting the health of longshoremen.

RULE 611. Inspection of ship's cargo gear should be made by the ship's crew before gear is used for stevedoring operations. The crew should give all assistance possible to maintain properly ship's cargo gear while in use.

RULE 612 (new). Ship's cargo hoisting falls or whips shall not be used for mooring or shifting ship.

SECTION 7. *Stevedoring Gear*

RULE 701. Wire bridles shall have a covering of marline, rubber hose, or other suitable protection for men's hands over hook-splice.

RULE 702. Save-alls shall be stretched, hung, and safely secured to vessel and dock, in line with each hatch when general cargo is being worked.

RULE 703. If tools, materials, appliances, or any gear are at any time found to be out of repair, defective, or in any way unsafe, men shall report the same immediately to the person in charge of the work.

RULE 704. Stevedoring gear shall be carefully inspected by a designated and competent employee before being issued for use in stevedoring any ship. Any unsafe or doubtful gear shall be discarded, marked, and so placed that it cannot be used by longshoremen.

SECTION 8. *Special Port and District Rules* (*See Rule 2*)

Los Angeles Harbor.

RULE 801. While a ship is lying at a dock where fender logs are used, a save-all should be stretched under the accommodation ladder, or other means of access, in such a manner as to prevent a person from falling between the ship and dock.

RULE 802 (an addition to GRAY BOOK RULE 413). Where two gangs are working in the same hatch, and one gang is on a deck below the other gang, a life net or its equivalent should be used across the edge of the upper deck in such a manner as to prevent men or cargo from falling to the lower deck.