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ACCIDENTS IN FACTORIES AND ELSEWHERE.

By Katharine Pearson Woods.

There are two opinions in regard to the ethics of factory management. Some represent the operative as oppressed and sacrificed by the evil environment of the factory, others represent the employers as philanthropists, whose untiring care and devotion to the interests of his employés are repaid by unthrift, insubordination, and beer.

The investigation of which the following pages contain a report was not undertaken with the expectation of discovering either of these views to be correct; but the modification of such ideas on the subject as tended rather to the first view than the second was very marked, and the result was increased hopefulness. It is true that in some factories and workshops the conditions are very unfortunate and undesirable; but with the thorough elimination of tenement-house manufacture, and the perfecting of the existing system of factory inspection by the State, they may be expected to improve even more rapidly in the future than they have done in the past. With this assurance we may be very fairly content, only remembering with all constancy our ultimate aim

and object: the securing of absolutely safe and healthful environment for those who make up the main body of our people, and whose deterioration, mental, moral, or physical, means the lowered vitality and decreased efficiency of the American nation. It is not as philanthropists, but as patriots, that we should strive to amend whatever is amiss.

The inquiry on which this paper is based was begun in October, 1893, and continued until the end of July, 1894, in the cities of Boston and Philadelphia, by means of a personal inspection of factories and workshops. To these I gained admission through the courtesy of the factory inspectors and that of the proprietors of the works inspected. In almost every case I was accompanied by an inspector, who, while himself possessing the right of admission, was invariably careful to ask permission for me to accompany him, and in not a single instance was this permission refused, while in most cases the superintendent, or whoever acted as guide, seemed interested in the investigation, and anxious to further it. I hold myself personally indebted to Chief Wade, in Massachusetts, for his kindness in this regard, and also for the use of his official library, containing many volumes unobtainable elsewhere.

In addition to personal inspection of factories, and study of records of other work done along the line of my investigation, I visited, while in Philadelphia, several offices of accident insurance companies, and there obtained the information on that subject, which will be found in this report. The investigation included all the sanitary conditions of the trades inspected, but was somewhat handicapped by the financial crisis of 1893–94, many factories having suspended work, or else running short-handed or on half time. But while this must be remembered as modifying the results of the investigation, they are by no means thereby invalidated. On the contrary, longer hours and an increase in the number of workers would simply mean an intensification of bad conditions, and a lowering of such as I found fairly good.

The proportion of accidents in the several trades has been roughly estimated for the purpose of classification as good or bad risks by the accident insurance companies. Outside of this, no scientific classification has been even attempted. It is a subject upon which employers are not disposed to be communicative, and an opposite disposition on the part of an employé is usually requited by dismissal. It is therefore a subject to be approached from several points, and somewhat cautiously. The first step in my investigation was to endeavor to ascertain the ratio of fatal accidents to the total number, irrespective of occupation. From an examination of 1000 cases taken from the books of the Pennsylvania Hospital I find the deaths not more than 50, or 5 per cent. As will be seen from the subjoined tables, the ratio of fatal accidents to the whole number reported by the factory inspectors is more than twice as great, but in one of the occupations considered most dangerous by the insurance agents the ratio is 1 in 62, or a little less than 2 per cent. This should be remembered as qualifying the classification subjoined, for the point of view of an insurance man is not the severity but the frequency with which accidents occur. The manufacture of buttons, for example, is considered dangerous, but a button-maker can hardly injure himself more seriously than by crushing his fingers; but as this incapacitates him for work, perhaps for several weeks, and sometimes involves the loss of the hand, he is considered a bad risk.

I call the classification a rough one because the gentleman from whom it was obtained informed me that he proposed to improve it, and that he is now collecting statistics for that purpose. A sufficient number (20,000 cases) cannot be collected under four or five years.

It will be observed that the fifth and sixth classes are only semi-insurable,— that is to say, the company will not write policies for persons engaged in them. But if persons insured under other classes should be accidentally injured while temporarily engaged in one of the dangerous occupations, he may receive the sick or death benefits assigned to that class.

The following is the table of Indemnities for the six classes of occupations: —

Benefits.	Class.					
	I.	II.	III.	IV.	V.	VI.
Death by accident.....	$5,000	$4,000	$3,000	$2,000	$1,000.00	$500
Loss two limbs.....	5,000	4,000	3,000	2,000	1,000.00	500
Loss one limb or two eyes..	2,500	2,000	1,500	1,000	500.00	250
Loss one eye.....	650	300	200	150	100.00	75
Permanent total disability	2,500	2,000	1,500	1,000	500.00	250
Weekly indemnity not to exceed 52 weeks.....	25	20	15	10	7.50	5

CLASSIFICATION OF DANGEROUS OCCUPATIONS.

NOTE.— Proprietors of factories and mercantile establishments whose duties are supervising or office work only — except when engaged about dangerous machinery, molten metal or explosives — are insurable in the first class.

CLASS I.

Accountant.
Actor or actress.
Actuary.
Adjuster.
Agent.
Apothecary.
Architect (office duty only).
Army or navy officer (not in service).
Artist.
Assayer.
Assessor.
Attorney.
Auctioneer.
Auditor.
Author.
Autographer.
Baker (supervising).
Bank clerk or officer.
Boiler manufacturer (supervising or office work only).
Book-keeper.
Boot and shoe dealer (office work).
Broker.
Cashier.
Cattle dealer (office work).
Civil engineer.
Clergyman.
Clerk (office or counter or travelling).
Coal operator or dealer.
Coffee-house keeper (not saloon).
Commission merchant (supervising).
Concert singer.
Confectioner.
Consulting engineer (office).
Contractor (office).
Copyist.
Corporation officers.
Cotton sampler.
Dentist.
Dramatic agent.
Draughtsman.
Druggist.
Editor or reporter.
Farmer (supervising or not working).
Florists, city.
Gauger, U. S. Revenue Service.
General manager.
General master mechanic, office duty.
General superintendent.
Grocer, superintending, or not handling heavy packages.
Hotel keeper or clerk, city, not tending bar or stables.
Ice merchant, office.
Insurance man.
Jeweler, working in store.
Launderer or laundress, office.
Lawyer.
Lecturer.
Librarian.

CLASS I.—*Continued.*

Letter carrier.
Marshall, U. S.
Mechanical engineer.
Milliner.
Music teacher.
Nurse.
Organ tuner.
Pawn broker.
Phonographer.
Physician.
Postmaster or clerk.
President, bank or corporation.
Printer, type-setter.
Publisher.
Sculptor.
Secretary.
Sexton, church, not grave-digger.
Sheriff, city.
Stationer.
Stenographer.
Tailor, merchant.
Telephone inspector.
Typewriter.
Undertaker.
Wig maker.

CLASS II.

Army and navy officer, in barracks.
Artificial flower maker.
Barber, proprietor.
Billiard saloon keeper.
Book-binder.
Builder and contractor, supervising.
Chemist, laboratory work.
Cloak-maker.
Clock-maker.
Clerk in hardware store, not handling heavy goods or explosives.
Clerk on river steamer.
Clerk, shipping and delivering goods.
Commission merchant.
Contractor for railroads or public works, supervising only.
Cotton weigher.
Cotton or woollen mill overseer.
Cutter, shirts and clothing, hand work.
Etcher.
Superintendent of fire alarm.
Flour inspectors.
Gauger, oil.
Gauger, store or warehouse.
Machinist, foreman.
Master builder, not working.
Merchant, grocery, delivering goods.
Merchant, general country store.
Naval architect or constructor, supervising.
Newspaper carrier.
Piano makers.
Painter, sign, in shop.
Fibre manufacturers, proprietor, superintending.
Fibre manufacturers, superintendent.
Gravity railroad employés, civil engineer.
" " " superintendent.
Superintendent iron and steel workers.
Lumber manufacturer, proprietor.
Miners, superintendent.
Oil men, superintendent, pipe line.
Contractor for building railroad.
Conductor, sleeping, hotel, or drawing-room car.
Superintendent of telegraph.
Train agent.
Train master.

CLASS III.

Architect, supervising construction.
Armorer.
Awning or tent maker.
Baker, driving wagon or working.
Barber, journeyman, on steamboat.
Bicyclist, teacher or exhibitor.
Bill poster.
Blacksmith, working, not horse shoer.
Bleacher.
Blind, door, and sash maker, not using circular saw.
Boarding-house keeper.
Boatman.
Boot and shoe maker, hand work.
Britannia-ware maker.
Broker in cattle and horses.
Butcher, market or stall.
Carpenter and joiner, not using circular saw.
Carriage painter.
Cider manufacturer.
Cigar maker.
Coachman, not hostler.
Confectioner, working.
Constable.
Cook, professional.
Copperplate printer.
Corset maker.

CLASS III.—*Continued.*

Cotton packer or presser.
Driver of horse car or light delivery wagon.
Drover, not tending cattle in transit.
Electrotyper.
Engraver on steel work, stone, etc.
Expressman, city.
Fire marshall.
Flax dressers.
Florists, country.
Freight agent at station, not coupling or switching.
Fresco painter.
Furrier.
Galoon, gimp, and tassel makers.
Gardener.
Gas meter inspector.
Gilder.
Glove cutter or stitcher.
Goldsmith, beater, refiner, or worker.
Hardware dealer, handling heavy goods.
Hat and cap maker.
Horse dealer, not trainer.
Hotel keeper or clerk, country.
Insane keeper, or attendant of.
Inspector of Indian agencies.
Ivory for bone turners or cutters.
Janitors.
Jeweler, working in factory.
Lace maker.
Lapidary.
Lithographer.
Locksmith.
Machinist.
Mail service, on railroads.
Marble cutter.
Metal refiner.
Model maker.
Nurseryman, working.
Paper hanging.
Picture frame worker, not using circular saw.
Pistol maker or gunsmith.
Planter.
Pressman, printer.
Print works operative.
Spectacle maker.
Spinner, silk or thread mill.
Tailor, working.
Taxidermist.
Teacher in school.
Telegraph operator.
Tinner, not roofer.
Upholsterer.

CLASS IV.

Agricultural implement maker.
Ale and beer manufacturers.
Analytical chemist.
Artificial limb maker.
Baggage master at station.
Bag maker.
Basket maker, splitter and weaver.
Beef handler, in warehouse.
Bell hanger.
Boiler inspector.
Bolt maker.
Bone and ivory workers.
Boot and shoe maker, machine work.
Brass finisher or polisher.
Brick and tile maker.
Brush and broom maker.
Butcher.
Button maker, bone or ivory.
Cabinet maker, not using circular saw.
Canal dock employés.
Candle maker.
Captain or mate of river, sound, or tug boat.
Carpenter or joiner.
Carpet-bag maker.
Carpet weaver or layer.
Carriage maker.
Cement and clay-pipe maker.
Chair maker.
Cheese maker.
Coffee roaster or packer.
Coffin maker.
Condensed milk factory employé.
Coppersmith.
Cordage and rope maker.
Core maker.
Cork cutter.
Cotton dyer or printer.
Cotton or woollen mill operative.
Cracker maker.
Creamery worker.
Currier.
Cutlery forger, finisher, gatherer, etc.
Cutter, boots, shoes, and clothing.
Dairyman.
Die engraver.
Electroplater.
Elevator man.
Embosser.
Embroidery stamper.
Emery, cloth and paper maker.
Enameler.

CLASS IV.—*Continued.*

Envelope maker.
Farmer.
Felt maker.
Gas fitter.
Gas works employés.
Glazier.
Glover.
Glue and mucilage maker.
Grindstone maker.
Gunsmith.
Hollow woodenware makers.
India rubber factory employé.
Ink maker.
Japanner.
Knitting mill operative.
Lead workers.
Looking-glass maker.
Malleable iron workers.
Mason, brick or stone.
Mattress maker.
Metal spinner or presser.
Millwright.
Pencil maker.
Plasterer.
Pump maker.
Rosin, tar, and turpentine makers.
Rule or level makers.
Saddler.
Sailmaker.
Salamander breaker.
Steel pen makers.
Spool turner.
Spring maker.
Starch maker.
Straw worker.
Talc miller.
Tallow chandler.
Thread maker.
Tobacco factory operative.
Type founder.
Umbrella maker.
Veterinary surgeon.

CLASSES V AND VI.

Acid works employés.
Artesian well borer.
Axe grinder or maker.
Band sawyer.
Barb wire worker.
Bargeman. 6.
Bark peeler.
Brass founder.
Bridge builder, putting up.
Buzz planer or sawyer. 6.
Canal boatman. 6.
Celluloid worker.
Chain maker.
Charcoal burner.
Cider-man or snapper.
Circular sawyer. 6.
Coal heaver. 6.
Coke drawer or charger.
Cutlery forger, hot drop.
Cutlery grinder or polisher.
Engineer or fireman of river, lake, sound, or tug boat.
Firemen.
Fishermen.
Gang sawyer.
Hide and skin workers.
Indian agent.
Moulding machine worker. 6.
Nail maker.
Roofer.
Pulp mills employé.
Scythe maker.
Shingle makers. 5 and 6, according to nature of the work.
Slater.
Slate quarrier. 6.
Soap boiler.
Spindle maker.
Spindle grinder.
Stove makers and workers.
Tack maker.
Telegraph builder or repairer.
Thresher, with machine.
Varnish maker.
Well digger. 6.
Vitriol manufacturer. 6.
Wire makers.

The following occupations are all included under Classes IV, V, and VI, according to the kind of work pursued by the employé, except that office work sometimes entitles him to insurance in a higher class: —

Electric light employés. Only in V and VI.
Fibre manufacturers.
File makers.
Furniture factory employés.
Glass works employés.
Gravity railroad employés. Only in V and VI.
Glucose works employés.
Horse railroad employés.
Iron and steel works. Only in V and VI.
Lumbermen.
Miners, coal, gold, silver, quartz, or copper.
Oil men.
Quartz mill employés.
Railroad employés.

NOT INSURABLE.

Acrobatic performers.
Aeronaut.
Army officer in field service.
Base ball player, professional.
Captain or mate of coasting or sea-going vessel.
Cartridge maker.
Circus rider.
Submarine diver.
Engineer or fireman, sea-going vessel.
Firework maker.
Fisherman. Insurable for death only.
Percussion-cap maker.
Pilot, outside.
Powder maker.
Sailor.

In 1890 and 1891 nearly all the accidents from a certain factory in Philadelphia, engaged in the manufacture of locomotives, were carried to the German Hospital, and an examination of these gave results indicated in the table below. There is, however, an hiatus of about a year, caused by the loss of one of the books of the hospital. In this examination I had the co-operation of a gentlemen who was, at the time mentioned, one of the hospital staff. He was of the opinion that while the books may not record all the accidents at these works for that time, as some may possibly have been sent to other hospitals, or in the hurry of receiving them may not have been properly recorded, yet they represent a very fair proportion of them, and give us a fairly accurate idea of the number and gravity of the accidents in a locomotive factory.

DIAGNOSIS OF INJURY.

	Number of Cases.
Lacerated, incised, or contused wounds,	30
Fractures,	9
Contusions,	9
Crushings,	8
Sprains,	4
Abscess,	1
Dislocations,	1
	62

Character and Location of Injury.	Number of Cases.
Fracture of skull,	2
Other injuries to head and face,	7
Injuries to body, thighs, and shoulders,	9
Injuries to legs and arms,	11
Injuries to hands and feet,	30
Other injuries,	3
	62
Deaths,	1
Amputations,	3
Admitted to hospital for treatment,	6
Dismissed after treatment,	52
	62

During the time represented by these tables the works were running on full time and full handed. At the time of my investigation (the summer of 1894) there was less work to be had, and, consequently, the men were not, as it was expressed to me, "crowded into the machinery," and there were fewer accidents. The conditions have, however, been greatly modified since 1890–91, and the sanitary condition, in the factory report, is marked "Good."

The accident reports of the factory inspectors of Pennsylvania for 1892 and 1893 show the following figures: —

	1892.	1893.
Total number of accidents	246	319
Fatal	24	46
Serious	97	154
Less serious	125	120
Due to carelessness of victim	27	33

"The increase in the total number of accidents reported is misleading," says Chief Watchorn in his report, "and is due to the increased efficiency of the department. It is not that more accidents have occurred, but that the inspectors have been able to get hold of more." We must, however, qualify this assertion by a reference to the *kind* of accidents reported. It is comparatively easy to keep a slight accident from the knowledge of the inspector, but much more difficult, if not

impossible, to keep from him a fatal accident. Now, we find in our table that the fatal accidents were in one year only one-tenth of the whole number; but in 1893 they were more than one-seventh. The same relative increase is observable in the "Serious Accidents," while the "Less Serious" show a diminution which is absolute as well as relative. Therefore we are obliged to conclude that in this year there was an increase in the number of serious and fatal accidents, though it is undoubtedly true also that the department are getting a better hold of their work each year. In June, 1894, a fatal accident was reported from a factory in Philadelphia, and when the inspector visited the ground he found that a less serious accident had taken place about a fortnight before which had not been reported. And the testimony from all quarters goes to prove that accidents are not reported except under compulsion, and that an employé who tells of one that has occurred is practically sure of his discharge.

It will be observed that about one-tenth of the accidents in each year are ascribed to the carelessness of the victim. There is no doubt that this factor plays a large part in the matter. Human nature gets accustomed to danger, and uses dangerous machines without proper respect for their powers. Moreover, the tendency of public opinion among workingmen is to despise a man who takes precautions, perhaps even to call him cowardly, until he is killed or injured, when he is stigmatized as reckless. An accident which occurred not long ago in Philadelphia, in the very factory from which we have had so many cases, will exemplify this. Four men had been working inside of a boiler rivetting the plates and using benzine as a lubricator. They left their work at the dinner hour, and, returning afterward, took it for granted that the fumes of the benzine had entirely dissipated, and entered the boiler with a lighted candle. The consequence was an explosion with fatal results. Another instance is of a boy working at a machine moved by a belt, or shaft, as it is called. The shaft was covered in several feet up from the ground,

but the boy, who was more interested in a conversation with one of his mates than in his work, leaned over to adjust his machine with one hand while the other rested on the body of the machine, and in this position he was caught by the shafting and his arm torn from his body. Another case is that of a man who was working on piece work and wanted to start his machine up in the morning a little ahead of time. Instead of applying to the machinist, whose business it was, to put on the belt for him, he climbed on a ladder to put it on himself; but some part of his garments caught in a projecting screw and he was carried around with the belt and so frightfully mangled that death would have been a relief. The inspector ordered the screw removed, but to my thinking there was no reason to do so. It was far above the reach of even a tall man, and was not supposed to be meddled with by anyone but the skilled machinist, who ought to know enough not to put himself in the way of getting hurt.

But with all these qualifications we must, nevertheless, not blame the workingman too much for carelessness. The testimony goes to show that there is an element of greed on the part of the employer which forces the men to work under dangerous conditions rather than take proper precautions, which involve expenditure of money; and, also, that fellow employés will accuse a dead man of carelessness rather than risk their own dismissal by impeaching the employer.

In Massachusetts the machinery in use is fairly well protected, though even in Massachusetts the standard is lower than it is in England. For example, a dynamo, such as we find in use in the power-house of an electrical car company, is in England always protected by a wire netting. In this country not only are the dynamos unprotected, but the wires within the power-house, which line the roof above our heads as we pass through, are generally not insulated, so far as I have been able to learn, and accidents are frequent among the workmen who have to do with them. Out of doors most of the wires are supposed to be insulated, except the centre

wire, on which the trolley rod runs. But the insulation is not always complete, and many fires and other accidents are the result.

A source of danger to the general public, as well as the employés, is found in the character of the men employed as motormen and conductors, very few of whom have any but the crudest ideas of electricity. A line in Boston, when work was first begun, compelled all conductors and motormen to serve an apprenticeship in the machine shops, but press of business and, doubtless, questions of economy prevented the continuance of this most excellent practice. It is doubtful whether the present practice is, in fact, economical, as the untrained electricians destroy the property of the company by their ignorant handling, as well as endanger the lives of passengers. From our table we find that electricians are classed V and VI with the exception of "telegraphers not working."

The question of insurance for workingmen is a most interesting one. The *Report of the Commissioner of Labor for 1892* shows that fifteen states have passed laws relating to the liability of the employer for injuries to his employés. Some of these merely relate to railroads, others to mines. The Massachusetts law is by far the best. The main point on which that State is now seeking to improve her code on this subject might be imitated by every State in the Union. This is *compelling an employer* to prove negligence on the part of the employé. In the department of manufactures this already obtains, but even in Massachusetts railroad employés are still compelled to prove an employer careless in order to obtain damages.

The first result of any labor legislation has always been some movement on the part of the employer which more than recoups him against the supposed heavy losses which he had previously pitied himself for sustaining under the measure under consideration, and the outgrowth of the employers' liability laws has been the employers' liability insurance com-

panies, which insure the employer against lawsuits for damages on the part of employés. As examples of them I may give the Employers' Liability Assurance Corporation, London, England, the oldest of all, having been incorporated October, 1880; The Employers' Mutual Indemnity Company, Philadelphia; and The Guarantors, Philadelphia. The last named have been in business only about a year. These companies insure the employer direct, and not the employé. Their returns do not give us any clue to the actual number of accidents, although every accident occurring in the factory is reported to them with far greater care than to the factory inspectors, from whom, as we have seen, there is a tendency to keep it if possible. But accidents which do not threaten a law suit are not noticed in any way. I cannot find that a record of any kind is kept of them. Such accidents may be very serious. The boiler explosion mentioned above, for example, was so clearly the result of carelessness that it would not have interested them at all. But with these deductions from their value some figures from their reports for 1893 may be interesting. They refer only to business done in Philadelphia.

EMPLOYERS' MUTUAL INDEMNITY CO.

	Number.	Amount.
Policies or certificates in force December 31, 1892,	57	$965,000.00
Policies or certificates written in 1893,	111	1,825,000.00
Total,	168	$2,790,000.00
Losses and claims on policies and certificates incurred and paid during 1893,	24	$1,875.00

It is interesting to note that in this statement the losses are exactly one-seventh of the risks.

THE GUARANTORS.

	Risks.	Premiums.
In force on the 31st of December, 1892,	$3,974,000.00	$37,471.92
Written or renewed during the year,	10,304,946.00	217,446.48
Total,	$14,278,946.00	$254,918.40
Deduct those expired,	3,851,500.00	29,796.35
Net amount in force December 31, 1892,	$10,447,446.00	$225,122.05

Losses incurred during the year, $17,484.67.

In this case the number of policies issued is not given, but if the average amount for which a policy is written be the same as in the case just cited the number of policies would not exceed ninety-one or two.

EMPLOYERS' LIABILITY ASSURANCE CORPORATION.
United States Branch.
Business in the State of Pennsylvania during the year.

Amount of risks written,	$13,167,472.00
Amount of premiums received,	65,837.36
Amount of losses paid,	16,842.69
Amount of losses incurred,	13,497.69

In this table the gross number of losses is $30,340.38. Here also the number of policies is not given, but calculating as in the last case it is probably about 825.

We have, therefore, for the State of Pennsylvania, for these three companies alone, and without computing the amount paid to workingmen by other accident insurance companies, the following figures: —

LOSSES PAID DURING 1893.

Employers' Mutual Indemnity Company,	$1,875.35
Guarantors,	17,484.67
Employers' Liability Assurance Corporation,	30,340.36
Total,	$49,700.40

This amount was paid to employers to indemnify them for damages which they were compelled to pay to employés injured in their service and by their fault. It may be considered as by no means representing the amount which should have been paid for the same purpose, inasmuch as very many firms do not insure at all. The works from which we have quoted so many accidents do not insure themselves; there is an insurance feature among the men, but so few belong to it as to make it unimportant for statistical purposes.

It is interesting, before we leave the subject of insurance, to note the very different light in which it is regarded by the factory inspectors of Massachusetts and Pennsylvania. In the latter State the insurance companies are regarded with some suspicion; and there is a story told of an employer

who, being threatened with the terrors of the law on account of his unprotected machinery, replied that he did not care how many of his working people were injured, as he was fully insured. On the other hand, the Massachusetts inspectors say that they prefer to go through a factory just after the agent of an insurance company has inspected it, as it saves them all the trouble of issuing injunctions, etc., the agents having already made sure that the machinery is all well protected. The explanation seems to be that the more stringent the factory laws, the more easily can they be enforced. Massachusetts has had nearly fifteen years of factory inspection, and is growing accustomed to the idea that human life must be protected, even if it costs money to do it. In Pennsylvania the inspection system is some years younger, and even insurance agents cannot bring the employer up to the point of properly protected machinery all at once.

It only remains to give an account of some typical accidents that have come under my own observation, with their methods of prevention. They are, of course, of a slight nature; for as regards the more serious accidents, their character and the means of preventing them have been understood for many years, and, in fact, could never have been otherwise. Everyone knows and must know that a shaft coming up through the floor and revolving rapidly is dangerous to a careless passer-by, though it may be possible to avoid it; and as a general rule wheels and shafting should be boxed in to a sufficient height above the floor to protect the skirts of the women employés. The men are in less danger. Shafting also is met with, running horizontally through the room at such a height as to prevent even an ordinary-sized man from passing without stooping; and I saw a hat belonging to a factory inspector which was "stove in" in this way. The inspector said if he had been two inches taller the shaft would have taken the top of his head off. Such negligence as this is criminal; for even where it is essential to have the

shafting run at just that height and no other, it is not a difficult or costly matter to have it boxed in. Overcrowding of the machinery is another source of danger. I have been in factories, notably in jute works, where the alley between the rows of wheels and belts was so narrow that I paused a moment before entering upon it, and wished I had taken out an accident policy. At these machines only girls were employed. I may mention that the girls had not only skirts, but in one or two cases flowing sleeves. A model working dress for factory employés would be the divided skirt and a blouse, the sleeves of which should terminate at the elbow, where they might be gathered into a buttoned band. But working girls, as a rule, cannot afford to have separate working dresses; they must, or think they must, wear out their old dresses in the factory. And, if they could afford it, the next thing would be to persuade them that it was a prettier and more suitable, and in every way more becoming mode of doing things, than their present habit of tattered finery and curl-papers. Another skirt might be worn to and fro on the street and left in the dressing-room. The blouse could be made of flannel for the winter and of calico for the summer. This dress would make a woman's life as safe in a factory as a man's, as the skirt does not fly out as an ordinary skirt does, and if properly made is perfectly modest, and not very noticeable.

In the jute factory, in one of the alleys which came under my attention, a set of exposed bobbins were protected (the invention of the factory inspector) by a shield resembling an oven door. They could not be permanently boxed in, as it was necessary to get at them to change the bobbins; and a movable door, such as is often used, was impossible, as there was not room enough for it to swing open. The inspector devised two doors, opening in the middle.

In a silversmith's I found a man who had had his hand very severely hurt under a hammer. The huge and ponderous machine used for stamping out the dies is worked by

hand, and, not being securely fastened, fell at an unexpected moment. The inspector suggested an iron hook such as is sometimes used to fasten window shutters. When the hammer is raised this hook is inserted in a small hole in the hammer itself. It seems a trifle, but has proved an efficient protection.

In the jute factory one department is given to making twine. After the ball is wound it passes through a machine which gives it that taper waist which all of us know so well in balls of twine. These machines are operated by boys; and as it is not in the nature of things for a boy to be careful, they are apt to have their fingers mashed by putting in the ball too far to one side or the other.

In the type foundry is a machine used for casting type, in which the metal to be cast is to be kept fluid by a little furnace underneath. It is projected into the mold by a pump, the spout of which is in front of the metal-pot. The mold is movable, and at every revolution of the crank it comes up to the spout, receives a charge of metal, and flies back with a fully-formed type in its bosom. The upper half of the mold lifts, "and out jumps a type as lively as a tadpole." So says the *American Printer*. In most of these machines the type cast is so small that there is no danger to be apprehended beyond a slight burn; but with those used to cast the large ornamental types for chapter heads, etc., the charge of metal is so large as to knock a man down if received point blank. In one of these, which fortunately was being used at the moment for a medium-size type, the metal became clogged in the melting-pot so that it did not flow freely into the mold. In consequence it was driven out, and took the caster full in the eyes. The melted metal sealed up his eyes, and had to be cut open. Fortunately, his sight was not seriously injured, though his eyelids bear the scar of the burn. To prevent the recurrence of the accident he screwed a flange of iron just over the vent, so as to catch and divert the metal; for the

clogging of the metal-pot is something that happens hourly. A similar precaution might be taken with advantage with all casting machines, for even a slight burn is worth guarding against, when it can be done at such slight cost.

A necessary point for reform is the condition of the cloak-rooms. In one case, that of the same jute works, I found the sanitary conditions very bad indeed, tending to typhoid fever and similar diseases. The toilet and cloak rooms were combined, and the girls had no other place to eat their lunch but in an atmosphere too foul to breathe with safety to health. It was also their only place to retire even for a moment to obtain relief from the noise of the machinery, which was so loud that it was almost impossible to speak so as to be heard by anyone standing close by. In most factories the girls are apt to eat their lunch in the cloak-room; and as this always adjoins the toilet-room, the result is bad unless the sanitary conditions are perfect.

In the case of the factory where these conditions obtain the inspector is correcting them as fast as she can, but it is a case where haste must be made slowly; and to make too many demands at once upon the manufacturer would simply involve the department in a succession of law suits, whereby any benefit to the employés would be indefinitely deferred. It has but little to do with the purpose of this report, but I wish to make a statement just here in relation to the factory inspectors, so far as my work has brought me in contact with them. They are frequently made the subjects of criticism, not only by laboring men, who supposed the creation of a department of factory inspection would at once end all the woes that labor is heir to, but by others interested in the welfare of working people. So far as I have seen, however, they are much like other people, only, as a class, better. Those with whom I have had dealings have appeared to me, without exception, honest, upright, and anxious to do their duty without fear or favor. Of course they may make mistakes and may err sometimes on the

side of making haste too slowly; but it should be remembered in their favor that they are tremendously overworked, and have a task on hand which ten times their number could scarcely perform as it should be done. A woman engaged in reform work in New York said, in reply to my question as to the inspectors of that city, that if there were three thousand of them, so that one could encamp at the door of each tenement house workshop, for example, they might possibly hope to accomplish what people expect of them. Therefore a very definite point to work for in the prevention of disease and accident among working people is *an increase in the number of factory inspectors.*