

diseases. The nervous disturbances due to toxic influences will be treated later.

*The Fatigue Neuroses.*—These neuroses, also called "functional impotences," are directly due to various occupations. They manifest themselves in loss of motor, sometimes of sensory, power in some organs or groups of muscles; this loss being due to the continuous, prolonged, and excessive use of the same. Causes which predispose to these neuroses are weakness of the nervous system, alcoholism, excessive use of tobacco, mental anxiety, and trouble. According to Oliver<sup>3</sup> the primary seat of the disorder is situated in the cortex of the brain, and he adds that "altered nutrition of the defective muscular movements; and that the spasm is only the initial fact in the illness." The most common fatigue neuroses are "writer's cramp" or "scrivener's palsy," telegrapher's spasm, as well as the spasms which occur in typesetters, milkers, hammermen, piano players, violin players, etc.

*Eye Diseases.*—The eyes frequently suffer from effects of occupation. Injury to the eyes may come from a too prolonged close application and straining; from exposure to excessive light or heat; from various dusts; from gases and poisons; from burns and accidents.

Overuse and close application and overstrain produce pain, asthenopia, myopia, presbyopia, and other changes in refraction. Clerks, copyists, engravers, draughtsmen, watchmakers, proof-readers, etc., are those who overstrain their eyes.

Certain occupations which compel very close application with accompanying constrained positions cause *nystagmus*. This disorder of the eyes is chiefly due to the constrained position which some laborers are compelled to assume during their work, and is very frequent in coal miners, five per cent. (according to some authorities, ten per cent.) of whom are afflicted with it; although workers in other trades, such as compositors, metal rollers, etc., are sometimes affected. The comparative frequency of nystagmus among coal miners is due to the unnatural positions assumed by them when undercutting in coal seams, lying on their sides, and straining the eyes in order to follow the pick.

Exposure to excessive light and heat is frequent among certain trades, as those of silver finishers, burnishers, furnace-workers, glass-blowers, electric welders, etc. In some of these occupations, notably in electric welding, the temperature may reach 3,000° F. and over. Conjunctivitis, hyperemia, hyperaesthesia of the retina are common among this class of workers. Glass-blowers were said to be subject to cataract formations. Those who work in dusty trades very often suffer mechanical injuries to their eyes, owing to accidental and frequently unavoidable entrance of gritty, sharp dust particles into the eyes.

The effects of certain gases, fumes, and poisons on the eyes are well known, and cannot be gone into here. All strong irritants will affect the eyes and produce various diseases in them. Certain toxic substances cause various amblyopias.

Burns and accidental injuries are very common in many industries. Of 18,644 accidents to 25,000 workers, nearly 1,000 were injuries to the eye.<sup>3</sup>

*Dermatoses.*—Many affections of the skin are directly due to certain conditions in occupations. Thus, the skin is liable to scalds and burns, to the mechanical action of various dusts, to the action of poisons, of irritating gases. Constant pressure and friction will also cause abrasions or callosities. The dermatoses vary in their extent and severity from a simple erythema, to vesicles, pustules, and ulcerations. Occupational eczema is frequent. Scalds and burns are very frequent in some occupations. Dust, mixed with perspiration, will form crusts, which irritate the epidermis, causing itching and erythema, and leading to subsequent infection and more serious lesions. Flax workers very commonly suffer from severe eczema of the hands and fingers. Lead, arsenic, and other poisons produce severe skin affections. Certain workers who

are obliged to scrape hides with their fingers suffer from a form of disease of the nails, called "furrier's nails."

The constant friction and pressure on circumscribed places of skin produce thickenings, callosities, and bursæ. These vary in location according to the special character of the work and the parts of body exposed to the pressure and friction. The hand and fingers are the most frequent places of callosities, the knees and olecranon the most frequent places for bursæ.

*Cardiac and circulatory diseases* owe their origin among workers to excessive strain and muscular effort, the lifting of heavy weights, the strain at too arduous tasks, excessive variations in temperature, etc. Cardiac hypertrophy and dilatation are frequent among athletes, professional pugilists, gymnasts, etc. Disorders of the circulation also depend on alcoholism.

*Diseases of the digestive tract*, unless caused directly by absorption of certain poisons, like lead, arsenic, etc., are mostly due not to the occupation, but to the poor hygienic conditions under which so many of the workers are compelled to live.

Of the *surgical* diseases, apart from wounds, fractures, and dislocations, occupations may cause hernias, varicose veins, aneurisms, etc.

*Infectious Diseases.*—There are a number of maladies which are frequently observed in certain occupations,—maladies which are due to infection by pathogenic organisms that happen to cling to the materials of work. All forms of microbes can be at times found in various substances and materials handled by workers. Thus, the microbes of scarlet fever or of typhoid fever may cling to the materials handled by the tailor; gardeners, who are obliged to handle earth, are more liable to contract tetanus; the men who care for horses are almost the only ones who become infected with glanders; the tunnel workmen are specially liable to anchylostomiasis, the wool workers to anthrax, etc. The infection by the last two has been regarded as closely connected with the occupation, although they can hardly be regarded as occupation diseases.

*Anthrax.*—This is a disease of cattle, induced by the action of the bacillus anthracis. As it forms the subject of an extended article in Vol. I. of this HANDBOOK, it is not necessary that I should enter into any further details in this place.

*Anchylostomiasis* (maladie des tunnels).—This is an infective disease from which many workers in tunnels of Belgium, Switzerland, Australia, and other places have been found suffering. In one pit in the province of Liège from fifty to sixty-nine per cent. of all workers, and in a Hungarian pit eighty per cent. of all workers, were affected. This malady, of which a pernicious anemia is the most characteristic sequel, is caused by a minute parasite which fixes itself in the upper part of the small intestine by a number of hooklets and sucks the blood. The disease has been found in others beside tunnel workers. The infective parasite is found in the excreta, from which the infection recurs. Defective sanitary arrangement in the places of work and the lack of care and hygienic supervision are the causes of the spread of this disease, which will disappear whenever better hygienic conditions are established in tunnels.

Of the other industrial diseases, it remains to mention caisson disease and several minor affections, such as "shoddy fever," "glass-blower's mouth," "stamp-licker's tongue," etc.

*Caisson Disease.*—This term is applied to a group of symptoms the pathology of which is obscure, and which are met with in workers in compressed-air chambers in sinking mines, in excavating for piers for bridges, and in building foundations in boggy soil for large structures. The danger to the workers seems to be greater on going out of the compressed-air chamber into the decompression room than on entering or working in compressed air. The usual symptoms of the disease are vertigo, buzzing in the ears, vomiting, muscular pain, numbness in the legs, unconsciousness, followed, not rarely, by sudden death. The danger is greater the greater the air

pressure and the quicker the entrance of the worker from the compressed air into the decompression chamber; also when the workers are compelled to climb stairs and undergo cardiac and muscular strain soon after coming out of the compressed-air chamber. Oliver<sup>3</sup> thinks that caisson disease is due to increased solution of gases in the blood and sudden liberation of them. Others regard the symptoms as due to the increase in carbonic acid. Not all workers exposed to compressed air suffer equally, and there are some who entirely escape harm. In the building of the St. Louis bridge, where the pressure was sometimes as high as from four to six times the normal, there were twelve fatal cases. In the building of the Brooklyn Bridge the fatality was less.

"Shoddy fever" is an influenza-like infection which is met with in workers in rags and shoddy garments. It is due probably to infection with some bacterial organism.

"Glass-blower's mouth" is a swelling of the parotid gland extending from the angle of the mouth to below the ears, and is met with in glass-blowers.

"Stamp-licker's tongue" is a stomatitis sometimes met with in those who lick labels and stamps, and is due to infection.

#### THE FACTORS OF OCCUPATION.

The relative increase in the mortality and the greater frequency of disease in certain occupations are in a great part due to the complex group of phenomena which we call occupation, and which is composed of a number of factors, each of which has its own special bearing upon life and health. The primary factors of occupation are: the worker, the place of work, the conditions of work, and the processes of work. These primary factors are composed of several minor factors, each of which may play an important rôle in the causation of sickness and may influence the duration of life. A more or less detailed analysis of each factor is necessary to the understanding of the *modus operandi* of industrial influence on health.

**THE WORKER.**—The primary state of health, the hereditary "physiological wealth," the physical normal development of all organs of the worker, are fundamental elements in all subsequent influences of occupations on health. Some occupations can be followed only by the very strong and exceptionally robust, while others attract the weakling and the feeble only. The susceptibility of the worker to the injurious elements of his trade and his relative predisposition to succumb to the noxious elements or processes of occupation will greatly depend on his primary condition of health before entering the trade which he has chosen as his life profession. The greater the capital of health the worker takes with himself when starting on his vocation, the greater will be his resistance to the dangerous features of his work; the weaker the worker, the more surely will he be affected by any and all detrimental elements. A perfect eyesight, hearing, and other physical faculties are therefore absolutely paramount conditions of normal occupation. But not less than these are also the habits and the care the worker takes of his life and health while at work. Carelessness in the handling of machinery will result in accidents to limb and life; personal uncleanliness in mine, factory, and shop will be followed by the relatively sooner ingress into the system of deleterious dusts, etc. Similarly, the worker will be affected by too great addition to alcohol. The excessive heat or cold, the relatively great dryness or too great humidity of the place of work, the foul and dusty atmosphere, the difficult tasks, the arduous labor, the strain and tension of machine work, the worry and fear of the relentless mechanical powers, and the thousand and one demands on the muscular and nervous functions of workers all tend to the creation of a special need and a craving for some stimulating and bracing drug, which is furnished by the ever-present and readily obtainable alcoholic beverages. The use, however, of alcohol leads very often to its abuse, and the excessive drinking of alcoholic liquors is bound, sooner or later,

to produce pathological changes, and injuriously to influence the health of the worker. The state of the blood-vessels in alcoholics, and their relatively greater susceptibility to pneumonia and other acute diseases, as well as to chronic digestive and liver troubles, are well known. There are several special trades which are known by their tendency to favor alcoholism in the workers. Brewers, bakers, drivers, innkeepers, bartenders, glass-workers, workers in the iron and steel industry are notoriously addicted to alcohol.

*Sex and Age.*—In many industries child and female labor is very largely employed; and the effect of work on them is very detrimental to health. The injurious influences of female labor are due to the following factors: (1) The comparative physical weakness of the female organism; (2) the greater predisposition to harmful and poisonous elements in the trades; (3) the periodical semi-pathological state of health of women; (4) the effect of labor on the reproductive organs; and (5) the effects on the offspring. As the muscular organism of woman is less developed than that of man, it is evident that those industrial occupations which require intense, constant, and prolonged muscular efforts must become highly detrimental to their health. This is shown in the general debility, anemia, chlorosis, and lack of tone in most women who are compelled to work in factories and shops for long periods.

The increased susceptibility of women to industrial poisons and to diseases, has been demonstrated by a great number of observers. The female organism, especially when young, offers very little resistance to the inroads of disease and to the various dangerous elements of certain trades. Hirt<sup>5</sup> says, "it must be conceded that certain trades affect women a great deal more injuriously than men," and he mentions, among others, the effects of lead, mercury, phosphorus, and other poisons. Even where there are no special noxious elements, work may produce, as already mentioned, harmful effects on the health of women; but when to the general effects of industrial occupation are added the dangers of dust, fumes, and gases, we find that the female organism succumbs very readily, as compared with that of the male. Shuler<sup>6</sup> found that the frequency of sickness in females, under eighteen, as compared with that of men of the same age, is as 174 to 100. Miss Mary E. Abrahams<sup>7</sup> found that out of 138 lead-poisoning cases in Newcastle, where the number of men and women workers was about the same, there were 94 cases among the women to 41 among the men. She also found that out of the 23 deaths from plumbism, in the years 1889-1892, 22 were women and only 1 was a man. The women were all between seventeen and thirty years of age. These figures are substantiated by Hirt, Arlidge, C. Paul, Tardieu, and others. The predisposition of women in industrial occupations to disease in general is greater than it is in men, as was proven by Hirt in his statistics of tuberculosis among workers. The effect of work on the physical development of women was found to be very detrimental, especially when they were young. Arlidge<sup>9</sup> says that in those who from their youth work in high temperatures, the bones and joints are imperfectly developed, and that they are liable to female deformities and to narrow pelvis. Herkner<sup>9</sup> found in his studies of Belgian female workers that girls who are engaged in mines suffered from deformed joints, from deformities of the spinal column, and from narrow pelvis.

It has been estimated that out of every one hundred days women are in a semi-pathological state of health for from fourteen to sixteen days. The natural congestion of the pelvic organs during menstruation is augmented and favored by work on sewing-machines and other industrial occupations necessitating the constant use of the lower part of the body. Work during these periods tends to induce chronic congestion of the uterus and appendages, and dysmenorrhea and flexion of the uterus are well-known affections of working girls.

The effect of work on the offspring is known to be injurious in female workers. Abortion is very frequent



among female workers, especially when they work in certain dangerous trades. Of one thousand pregnancies among lead workers, reported by Tardieu,<sup>3</sup> six hundred and nine ended in abortions. Arlidge also found the percentage of abortions among female workers in the pottery trade very large.

As far as the effect of female work on infant mortality is concerned, it has been shown to be detrimental. The rate of infantile mortality among mirror workers is, according to Hirt, sixty-five per cent. Tardieu and C. Paul found, among lead workers, an infant mortality of forty per cent. According to Greenhow, the "infantile mortality is due to the unwholesome influence to which infants are exposed in the manufacturing town by the industrial employment of married women."<sup>3</sup> Traces of lead, phosphorus, copper, aniline, etc., have been found in the amniotic fluid.

What has been said about the influence of industry on young women can, in some degree, be applied to child labor in general. The effects of industrial occupation on children can be summed up as follows: injury to the weak organism; the stunting or arrest of growth and physical development; the production of deformities in bone, joints, and spinal column; a dulling of mental faculties; the acquirement of a predisposition to moral obliquity; a lessening of the normal powers of vital resistance; a general deterioration of the constitution and a shortening of life by various diseases. Child labor, beyond all doubt, is the greatest curse of modern industry. The influence of child labor on the general health of the community has been demonstrated by the figures of Layet (quoted by Tracy<sup>10</sup>), which show that out of 10,000 conscripts from ten agricultural districts 4,029 were rejected, while in selected manufacturing districts the rejections for rickets and small stature reached 65 per cent. of the whole number of conscripts.

**THE PLACE OF WORK.**—The place where work is done bears an important relation to the health of the workers. Work is performed either indoors or outdoors; the former being pursued in factories, workshops, and homes. It was Dr. Guy who classified all occupations into two primary divisions—"indoor" and "outdoor," and proved that the latter were much healthier.

There are, however, some special occupations which can be classed among dangerous trades. I refer to *mining* and *tunnel work*, which are dangerous to life, limb, and health by reason of the nature of the work, and also on account of the conditions under which they are carried on. The harmful conditions in mining and tunnel work are the following: absence of natural light, foul air, great heat, increased air pressure, too great humidity, dangers of the lifts, of haulage, and of the winding machinery, etc.; the use of explosives, the danger of cave-ins, falls of rocks, etc.; sudden inundations by water; danger of fires from the various gases; the constrained attitudes, the arduous toil, the tension, danger, and worry. All these conditions, apart from the processes of mining and the character of the ground, are potent factors in the great morbidity and high mortality rate among miners and tunnel workers. Surgical diseases are very frequent, owing to the great number of accidents; and among the general diseases favored by work underground are lumbago, rheumatism, diseases of the respiratory, digestive, and circulatory organs.

**Factories** are places where work is done by the aid of mechanical power; a *workshop* is a place where work is done without any mechanical power. Thus a tailor shop, where the sewing-machines are run by steam or electricity, is a factory; while one in which only foot and hand power are used is a workshop. The sanitary features of the work place, the lighting, ventilation, cleanliness, and the absence or presence of sanitary conveniences all affect the health of the workers. The proper light of workshops and factories is important to the eyesight as well as to the general health of the operatives. A dingy, dark workshop favors not only eye strain, but also general uncleanliness and ill health. The window area of the shop is also of consequence, as is also the na-

ture of the illuminant at night. The air in workshops and factories is usually very foul, owing to the overcrowding of the places and to the lack of proper ventilation. A person at work needs more fresh air than one at rest, because he consumes more oxygen and exhales more carbonic acid and organic impurities. The constant inhalation of foul air acts detrimentally on health, superinduces lack of tone, muscular debility, and anæmia, as well as a predisposition to respiratory diseases and tuberculous infection.

According to Roth<sup>11</sup> the worst workshops are those of shoemakers and tailors. In an investigation made by him it was found that many shoemakers' shops had 7 cubic m., some even less than 3 cubic m. of air space. He also reports that von Rozahegi found in printing shops 4.2 per 1,000 of carbonic acid. In some cotton factories the percentage of carbonic acid was found to be 0.15 per cent. The sanitary care taken of the premises is important, when we remember the large amounts of dust, waste material, and noxious elements which are to be found in workshops. The absence of a proper water supply, of a sufficient number of plumbing fixtures, wash-rooms and lunch rooms, and of bath and toilet accommodations is also an important factor in rendering the place of work unhealthy for the operatives.

The effects of *home work*, or, as it is termed, "*sweatshop*" work, are due partly to the defective sanitary conditions of the homes where the work is done and partly to other causes. The special dangers of sweatshop work are the following: Increased tendency to child and female labor, the whole family commonly participating in the work; the constant breathing of a confined, foul atmosphere, without the beneficial changes of travel to and from outside places of work; living, cooking, and sleeping in the workroom; the tendency to prolonged and excessive work; the effects of dust, etc., on the children of the home worker; and the danger of infection by the material of work, as well as that of spreading infection from the homes of the workers into places to which the articles manufactured in these homes are sent. The health of sweatshop workers is below the average.

**CONDITIONS OF OCCUPATIONS.**—To describe here all the possible conditions of various industries and occupations and their effect on health is obviously impossible, and I shall therefore confine myself to a brief consideration of a few of them, and especially of the effects produced upon the workers by such factors as climate, light, air pressure, strain, mental worry, etc.

The healthfulness of *rural* occupations compared to those carried on in *cities* is attested by the lower comparative mortality of agricultural laborers, fishermen, and other outdoor workers, and is due to the abundant clean air, the active life, and the absence of the evils of overcrowded cities. *Active* occupations are healthier than *sedentary*, on account of the greater muscular activity, the more vigorous processes of metabolism, and the unconstrained positions of the workers. Those who are compelled to engage in prolonged sedentary work suffer from digestive disturbances, congestion of the portal circulation, deficient oxygenation, weakness of the muscular system, predisposition to respiratory diseases, and a general low vitality. Among the sedentary workers showing large mortality and morbidity are clerks, bookkeepers, literary persons, engravers, tailors, shoemakers, etc.

The evil effects of *exposure* to extremes in climate are attested by the many writers on life and industrial occupation in the tropics. Insolation, extreme muscular and nervous debility, predisposition to infectious diseases, etc., are some of the evils which are encountered in tropical countries. Soldiers, convict laborers, and others who are compelled to do arduous labor in hot climates are especially prone to become affected with these diseases, and their mortality is high. The effects of exposure to extreme cold and inclement weather, as well as those of exposure to extremely high temperatures, are well known. Boatmen, fishermen, drivers, motormen, and others are compelled to work in all kinds of weather,

and are prone to congestions of internal organs, respiratory diseases, rheumatism, and catarrhal affections. Bakers, cooks, blacksmiths, engineers, firemen, stokers, sugar refiners, furnace workers, electric welders, and others suffer from the effects of too high temperatures. Muscular exhaustions, thermic fever, muscular debility, respiratory diseases are some of the effects of a prolonged exposure to great heat. Andrew<sup>8</sup> reports the case of a child who had almost universal paralysis after exposure to great heat in the railroad cars; and several cases of insanity (firemen's frenzy) have also been reported, due to the same causes. Blacksmiths are exposed to direct radiant heat, and are predisposed to respiratory diseases. Oliver<sup>3</sup> says that a great many blacksmiths die from phthisis. He quotes Ogle's tables, showing that "out of 872 deaths of blacksmiths, 194 died of consumption, 183 of other lung diseases, 108 of diseases of heart and circulation, and 85 of diseases of the nervous system." In a number of industries the processes employed expose the men to extremely high temperatures; this is notably the case in the drying rooms of chemical works, in the furnace rooms of the glass and iron trades, in certain deep mines, etc.

Overstrong, radiant, and *glaring light* is met with in the iron and steel industries, in glass furnaces, in engine and forge rooms, and in electric welding, and is very injurious to the eyes and to the general health.

The excessive *relative humidity* of many places of work, while not a direct cause of disease, predisposes to rheumatism, catarrhal conditions, and congestions of the internal organs, and to diseases of the respiratory apparatus. H. Wolpert,<sup>12</sup> after an exhaustive investigation of the effect of various degrees of humidity on the health of workmen, came to the conclusion that "on the whole, the normal degree of relative humidity in a workroom is when there is no formation of perspiration"—a degree which is hardly obtainable in most industries. The trades in which the relative humidity is very great are, among others, mines and tunnels, all underground work, textile factories, where steam is introduced in the "sizing" rooms, bath-houses, etc.

Variations in the normal *pressure of the air* are indispensable conditions in several occupations. Aëronauts and mountain miners and climbers breathe rarefied air, and suffer on account of the lack of oxygen and diminution of air pressure. Divers, tunnel workers, caisson workers are exposed to an increased air pressure, and are liable to suffer from caisson disease, described above. Those who are subject to violent jarring and concussions in air, such as boiler-makers, blasters, and workers with explosives, are subject to deafness.

The *position* maintained while at work and the *attitude* which the worker is compelled to assume in each trade are not without effect on health. Salesmen and saleswomen in stores and shops and operatives in factories are frequently compelled to be on their feet all the time of work, and as a result the men suffer from varicose veins, and hemorrhoids, and the women from congestion in the pelvic organs. The bending and constrained attitude assumed by shoemakers, copyists, tailors, seamstresses, etc., cause defective development of the chest, deficient oxygenation of the blood, and predisposition to respiratory and other diseases. The constrained attitudes which coal miners are compelled to assume while "kirking" or undercutting the coal seams result in nystagmus, described above.

The *duration* of work is a potent factor in the effects of occupation on health. The normal physiological activity of the body functions is conducive to health and longevity; but the overuse and abuse of one or more organs or the whole body are bound to produce general ill health or special injuries. The standard of normal activity varies with each individual, as well as with the different kinds of labor and conditions under which it is carried on. The most correct standard will be that which is based on the sense of fatigue experienced by the worker; and we may assume that, under normal conditions, work becomes harmful when the worker feels greatly fatigued, and very injurious if the fatigue is

pushed to the point of exhaustion. When in a state of great functional activity our organs draw a relatively large supply of blood and produce, as well as eliminate, a greater proportion of waste matter, in the form of carbonic acid, urea, aqueous vapor, organic matter, etc. The result of overfatigue is a retention of waste matter and consequent auto-intoxication. Hence the injurious effects of too prolonged work and of a work-day of too great length.

The effects of the duration of work will, in part, depend on the *tension* and effort with which the work is done. When the work requires too great effort and is done under special tension, the worker will sooner reach the state of fatigue than he otherwise would. Carrying heavy loads and lifting great weights require special muscular strain, and may produce hernias, and cardiac dilatation; they also predispose to aneurisms, rupture of tendons and muscles, dislocations, etc. The excessive use of one muscle, organ, or group of muscles leads to their eventual injury. Thus, engravers, watchmakers, writers, tailors, etc., suffer from eye-strain; athletes, gymnasts, hammermen, etc., from hypertrophy of muscles and cardiac affections; speakers, preachers, exhorters, etc., from vocal strain.

The *pauses* in the workday have a great deal to do with the fatigue effect of occupation, for the reason that periodical rest is needed for all organs in a state of activity. It is a fact, that more work is accomplished with several pauses in the working day than when work is continued without pauses. After a prolonged rest, more may be performed in one hour than in several hours at the end of the working day; and the work of the latter part of the day is, as a rule, not so good as that done during the earlier part of the day. In some countries, notably in Russia, the workday lasts for from fourteen to sixteen hours, but there are several pauses and they are quite prolonged (the dinner pause lasting one hour and a half); as a result the workmen feel less fatigue than when the workday covers a period of nine hours, with only a half-hour's midday pause.

The practice of carrying on the work in mills and factories continuously, by means of a day shift and a night shift of workers, is harmful, first, by reason of the bad air that is to be found in a constantly occupied place, and, secondly, by the bad effects of night work on the general health. Night watchmen, clerks, and all those who are compelled habitually to work through the whole night and sleep during the day, are not, as a rule, in as good health as are the day workers.

A number of occupations are *hazardous* by exposure of the workers to the risks of accidents to life and limb. Roofers, painters engaged on the outside of buildings, bridge builders, etc., are liable to injury and death from falls. Furnace workers, chemical workers, etc., are exposed to the danger of burns. Miners, workers with explosives, etc., are liable to injury by the falling of rocks, by explosions, fires, etc. Factory and mill employees, working near or about machinery, are liable to injury from the engines, belts, running gear, cogs, shafts, etc. Altogether, many trades are pursued under conditions which are extremely dangerous to the worker.

There are a number of occupations which are characterized by the *mental worry* and nervous strain to which those engaged in them are subject. Thus, stock brokers, gamblers, merchants, superintendents, and heads of large industrial and commercial interests, etc., work under prolonged mental and nervous strain, and often break down in the midst of their work.

**Compensation.**—The wages received by the workers for their labor exercise great influence on their life and health. On the rate of compensation greatly depend the hygienic surroundings of the worker, his personal comfort, his habitation, his proper clothing, and the quality of his food. The physical health of the worker largely depends upon these factors, and they in turn depend on the rate of compensation. As a rule, working-men who get better wages live better, enjoy better hygienic surroundings, and are in better health. Continen-