

PART SECOND

THE WORLD'S EXPERIENCE UPON WHICH THE LEGISLATION LIMITING THE HOURS OF LABOR FOR WOMEN IS BASED

I. THE DANGERS OF LONG HOURS

A. Causes

(1) PHYSICAL DIFFERENCES BETWEEN MEN AND WOMEN

The dangers of long hours for women arise from their special physical organization taken in connection with the strain incident to factory and similar work.

Long hours of labor are dangerous for women primarily because of their special physical organization. In structure and function women are differentiated from men. Besides these anatomical and physiological differences, physicians are agreed that women are fundamentally weaker than men in all that makes for endurance: in muscular strength, in nervous energy, in the powers of persistent attention and application. Overwork, therefore, which strains endurance to the utmost, is more disastrous to the health of women than of men, and entails upon them more lasting injury.

Report of Select Committee on Shops Early Closing Bill, British House of Commons, 1895.

Dr. Percy Kidd, physician in Brompton and London Hospitals:

The most common effect I have noticed of the long hours is general deterioration of health; very general symptoms which we medi-

cally attribute to over-action, and debility of the nervous system; that includes a great deal more than what is called nervous disease, such as indigestion, constipation, a general slackness, and a great many other indefinite symptoms.

Are those symptoms more marked in women than in men?

I think they are much more marked in women. I should say one sees a great many more women of this class than men; but I have seen precisely the same symptoms in men, I should not say in the same proportion, because one has not been able to make anything like a statistical inquiry. There are other symptoms, but I mention those as being the most common. Another symptom especially among women is anaemia, bloodlessness or pallor, that I have no doubt is connected with long hours indoors. (Page 215.)

Report of Committee on Early Closing of Shops Bill, British House of Lords, 1901.

Sir W. MacComac, President of the Royal College of Surgeons:

Would you draw a distinction between the evil resulting to women and the evil resulting to men?

You see men have undoubtedly a greater degree of physical capacity than women have. Men are capable of greater effort in various ways than women. If a like amount of physical toil and effort be imposed upon women, they suffer to a larger degree. (Page 219.)

Report of the Maine Bureau of Industrial and Labor Statistics, 1888.

Let me quote from Dr. Ely Van der Warker (1875):

Woman is badly constructed for the purposes of standing eight or ten hours upon her feet. I do not intend to bring into evidence the peculiar position and nature of the organs contained in the pelvis, but to call attention to the peculiar construction of the knee and the shallowness of the pelvis, and the delicate nature of the foot as part of a sustaining column. The knee joint of woman is a sexual characteristic. Viewed in front and extended, the joint is but a slight degree interrupts the gradual taper of the thigh into the leg. Viewed in a semi-flexed position, the joint forms a smooth ovate spheroid. The reason of this lies in the smallness of the patella in front, and the narrowness of the articular surfaces of the tibia and femur, and which in man form the lateral prominences, and thus is much more perfect as a sustaining column than that of a woman. The muscles

which keep the body fixed upon the thighs in the erect position labor under the disadvantage of shortness of purchase, owing to the short distance, compared to that of man, between the crest of the ilium and the great trochanter of the femur, thus giving to man a much larger purchase in the leverage existing between the trunk and the extremities. Comparatively the foot is less able to sustain weight than that of man, owing to its shortness and the more delicate formation of the tarsus and metatarsus. (Page 142.)

Report of the Massachusetts Bureau of Labor Statistics, 1875.

A "lady operator," many years in the business, informed us: "I have had hundreds of lady compositors in my employ, and they all exhibited, in a marked manner, both in the way they performed their work and in its results, the difference in physical ability between themselves and men. They cannot endure the prolonged close attention and confinement which is a great part of type-setting. I have few girls with me more than two or three years at a time; they must have vacations, and they break down in health rapidly. I know no reason why a girl could not set as much type as a man, if she were as strong to endure the demand on mind and body." (Page 96.)

Report of the Nebraska Bureau of Labor and Industrial Statistics, 1901-1902.

They (women) are unable, by reason of their physical limitations, to endure the same hours of exhaustive labor as may be endured by adult males. Certain kinds of work which may be performed by men without injury to their health would wreck the constitution and destroy the health of women, and render them incapable of bearing their share of the burdens of the family and the home. The State must be accorded the right to guard and protect women as a class against such a condition, and the law in question to that extent conserves the public health and welfare. (Page 52.)

Hygiene of Occupations. By DR. THEODORE WEYL. Jena, 1894.

The investigations of Schuler and Burkhardt embracing 18,000 members of Swiss insurance against sickness (about 25 per cent of the Swiss factory workers and fifteen industries), show that factory work, even in a short period, produces very unfavorable effects upon the development of the body of young men. It is even more conspicuous in the case of women. Thus of 1000 men in the manufacture

of embroidery, 302 were sick to 392 women. In bleaching and dyeing, 279 men, 316 women; also in cotton spinning and weaving, the morbidity of women was much greater than of men.

Similarly the number of working days lost through illness was more among women than among men, being 6.47 among women to 6.25 among men.

With increasing years, both frequency and duration of illness increase. (Page 7.)

A second form of physical inferiority of women is their lessened refractoriness to external injurious conditions. All statistics dealing with the relative morbidity of men and women employed in factories justify the deduction that the greater number of days lost from work by women indicate that disease makes greater inroads upon them, and that in general industrial labor is more injurious to women than to men. (Page 86.)

Travail de Nuit des Femmes dans l'Industrie. Prof. ETIENNE BAUER. Jena, 1903.

From the point of view of hygiene the protection of wage-earning women cannot fail to have good effects in view of the greater morbidity of women. According to the statistics of the Krankenkassen of the German Empire there occurred in each case where the patient is a man 16.7 days of assistance rendered, or hospital treatment, and each case of sickness where the patient is a woman, 18.6 days, in the period 1888-1899. (Page xxxvii.)

Man and Woman. HAVELOCK ELLIS.

In strength as well as in rapidity and precision of movement women are inferior to men. This is not a conclusion that has ever been contested. It is in harmony with all the practical experience of life. It is perhaps also in harmony with the results of those investigators (Bibra, Pagliani, etc. Arch. per l'Antrop., Vol. VI, p. 173) who have found that, as in the blood of women, so also in their muscles, there is more water than in those of men. To a very great extent it is a certainty, a matter of difference in exercise and environment. It is probably, also, partly a matter of organic constitution. (Page 155.)

The motor superiority of men, and to some extent of males generally, is, it can scarcely be doubted, a deep-lying fact. It is related to what is most fundamental in men and in women, and to their whole psychic organization. (Page 156.)

There appears to be a general agreement that women are more docile and amenable to discipline; that they can do light work equally well; that they are steadier in some respects; but that, on the other hand, they are often absent on account of slight indisposition, and they break down sooner under strain. (Page 183.)

History of Factory Legislation. HUTCHINS and HARRISON. 1903.

Women are "not only much less free agents than men," but they are physically incapable of bearing a continuance of work for the same length of time as men, and a deterioration of their health is attended with far more injurious consequences to society. (Page 84.)

Report of the British Chief Inspector of Factories and Workshops, 1903, on the Thirteenth International Congress of Hygiene and Demography.

Dr. Trèves cited the case of a machine capable of giving 33,000 blows per diem, at which the men employed utilize on an average 18,000 to 20,000, while the women, less inured to fatigue and less capable of attention, utilize but 13,000.

Hygiene of Occupation in Reference Handbook of the Medical Sciences. GEORGE M. PRICE, M. D., *Medical Sanitary Inspector, Health Department of the City of New York.* Vol. VI.

In many industries . . . 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, anæmia, chlorosis, and lack of tone in most women who are compelled to work in factories and in 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 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. Schuler found 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. Abrams (Oliver: "Dangerous Trades") found that out of 138 lead-poisoning cases in Newcastle, where the number of men and women workers was about the same, there were ninety-four cases among the women and forty-one among the men. She also found that out of the twenty-three deaths from plumbism in the years 1889-1892, twenty-two were women and only one was a man. The women were all between seventeen and thirty years of age. These figures are substantiated by Hirt, Arlidge, C. Paul, Tardien, 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 very young. Arlidge 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 pelves. Herkner 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 pelves.

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 dysmenorrhœa and flexion of the uterus are well known affections of working girls. (Page 321.)

(2) THE NEW STRAIN IN MANUFACTURE

Such being their physical endowment, women are affected to a far greater degree than men by the growing strain of modern industry. Machinery is increasingly speeded up, the number of machines tended by individual workers grows larger, processes become more and more complex as more operations are performed simultaneously. All these changes involve correspondingly greater physical strain upon the worker.

Reports of Medical Commissioners on the Health of Factory Operatives. Parliamentary Papers, 1833, Vol. XXI.

The first and most influential of all disadvantages of factory work is the indispensable, undeviating necessity of forcing both their mental and bodily exertions to keep exact pace with the motions of machinery propelled by unceasing, unvarying power. (Page 72.)

Factory and Workshop Act Commission, 1875. British Sessional Papers, 1876.

We have already referred more than once to the unremitting and monotonous character of all labor at a machine driven by steam. If the day's work of a housemaid or even of a charwoman be closely looked at and compared with that of an ordinary mill hand in a card room or spinning room, it will be seen that the former, though occasionally making greater muscular efforts than are ever exacted from the latter, is yet continually changing both her occupation and her posture, and has very frequent intervals of rest. Work at a machine has inevitably a treadmill character about it; each step may be easy, but it must be performed at the exact moment under pain of consequences. In hand work and house work there is a certain freedom of doing or of leaving undone. Mill (*i. e.* machine) work must be done as if by clockwork. . . . The people are tied as it were to machinery moving at a great speed in certain operations; again it has been alleged that the state of the atmosphere is very unhealthy, and the temperature at a great height, and from the employment of machinery the speed has been so much increased, that the wear and tear, not merely of the body but of the mind also, of the operatives were too great for them to bear.

Report of the Maine Bureau of Industrial and Labor Statistics, 1892.

The constant nervous tension from continued exertion in a modern factory or workshop, for a period of ten hours, is a severe strain upon the physical system. Work is not done in the old, slow way, and, in nearly all industries, by the present methods, from two to four times the quantity of product is turned out in the ten hours. How much faster is the operative compelled to work, and how much greater is the strain, to accomplish this amount of work, in comparison with the old twelve-hour method. (Page 11.)

The Effect of Machinery on Wages. London, 1892.

The power of machinery is from one point of view too great and continuous — machines breathing fire and smoke, those slaves of iron and steel, as Cournot calls them, can go on night and day at high pressure. Hence results the tendency of machinery to add enormously to the toil of the laborers by increasing the day's labor both in length and intensity. Trades-unions often object to piece-work because, to use a rowing phrase, the best men set too fast a stroke for the comfort of the average workman, but the strength of the strongest is as water compared with the strength of machinery. This objection to machines has been forcibly stated by Chevalier: "Machinery imposes on man a crushing task. Feeble appendage of a mighty force, a tiny engine bound to an engine of immense power, the workman must bow to its attractions, give way to the rapidity of its movements, follow it in its incessant pace — in a word, he must turn, twist, and toil just as much as the untiring machinery pleases." (Pages 62, 63.)

The following from the *Cotton Factory Times*, February, 1892, illustrates very forcibly the influence of machinery in setting too fast a pace: "We have frequently heard spinners in cotton mills talk about being worked up, and made such that they could neither enjoy food nor rest and their lives felt a burden to them, and after leaving the mills at night they can be seen wending their way to places where they can quench their thirst, and liquids take precedence over food, which the appetite does not call for when the human system is overworked and overheated and the mind greatly disturbed by the difficulties and hardships which surround the workmen in their employments. (Page 74.)

Effects of the Factory System. By ALLEN CLARKE. London, 1899.

Greater speed of improved machinery, whereby the work is increased six-fold, resulting in physical deterioration and mental worry. (Page 41.)

The toil is ceaseless; the machinery demands constant watching. . . . Their feet are never still; their hands are full of tasks; their eyes are always on the watch; they toil in an unending strain that is cruel on the nerves. (Page 49.)

And all these hours—ten hours a day—spinner and weaver are on their feet; no sitting down; no resting; one must keep up to the machinery though agonized with headache or troubled by any other complaint. While the engine runs the workers must stand. (Page 51.)

Report of the United States Industrial Commission, 1900.

Mrs. Robertson tells me that when she was a girl, to run one or two looms was as much as any woman would have tried. Now, in some instances, there are women running nine looms, and the looms have more than doubled or trebled their speed. This means more work and harder work. (Page 63.)

Report of the United States Industrial Commission, 1901.

It is brought out that in nearly all occupations an increasing strain and intensity of labor is required by modern methods of production. . . . The introduction of machinery and the division of labor have made it possible to increase greatly the speed of the individual workman. . . . The testimony of a representative of the Cotton Weavers' Association shows this increasing strain of work. He says:

"Anybody who works in the mills now knows it is not like what it was twenty-five or thirty years ago, because the speed of the machinery has been increased to such an extent, and they have to keep up with it." (Page 763.)

Even these cases where machinery has not increased the intensity of exertion, a long workday with the machine, especially where work is greatly specialized, in many cases reduces the grade of intelligence. The old handwork shops were schools of debate and discussion, and they are so at the present time where they survive in country districts;

but the factory imposes silence and discipline for all except the highest. Long workdays under such conditions tend to inertia and dissipation when the day's work is done. (Page 772.)

Dangerous Trades. By THOMAS OLIVER, M. A., M. D., F. R. C. P., Medical Expert on the White Lead, Dangerous Trades, Pottery, and Lucifer Match Committees of the Home Office. London, 1902.

The introduction of steam has revolutionized industry. . . . Machinery acts with unerring uniformity. At times so simple is its mechanism that a child can almost guide it, yet how exacting are its demands. While machinery has in some senses lightened the burden of human toil, it has not diminished fatigue in man. All through the hours of work in a factory the hum of the wheels never ceases. . . . While the machinery pursues its relentless course and is insensitive to fatigue, human beings are conscious, especially towards the end of the day, that the competition is unequal, for their muscles are becoming tired and their brains jaded. . . . Present-day factory labor is too much a competition of sensitive human nerve and muscle against insensitive iron, and yet, apart from an appropriate shortening of the hours of labor, it is difficult to see how this can be remedied. The greater the number of hours machinery runs per day the larger is the output for the manufacturer, but the feebler are the human limbs that guide it. To the machine time is nothing; to the human being each hour that passes beyond a well-defined limit means increasing fatigue and exhaustion. (Page 117.)

The Working Hours of Female Factory Hands. From the Reports of Factory Inspectors, collated in the Imperial Home Office. Berlin, 1905.

From Frankfurt am Oder it is reported that the insurance records for two textile mills show steady deterioration in the health of the women employed eleven hours a day. One reason for this is believed to be the speeding up of the machinery. Vigorous weavers stated repeatedly that the old, slow looms exhausted them less in twelve and thirteen hours than the swift new looms in eleven hours. The more intensive work requires better nourishment; but there is no adequate increase in wages to afford this improved food, and the eleven-hour day of more rapid work is presumably responsible for the deteriorated health. (Page 119.)