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WOMEN WORKERS AND THE HEALTH OF THE NATION



Address given by

Miss A. M. ANDERSON, C.B.E.

H.M. Principal Lady Inspector of Factories, on December 5th, 1917, at the
Royal Institute of Public Health

The Hon. WALDORF ASTOR, M.P., in the Chair

“The life of the Universe depends entirely on the fruition of personal individuality.”—TARDE

[Reprinted from “The Journal of State Medicine,” July, 1918]



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WOMEN WORKERS AND THE HEALTH OF
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Miss A. M. ANDERSON, C.B.E.

H.M. Principal Lady Inspector of Factories.

A Lecture delivered in The Royal Institute of Public Health.

It is not generally realized that even before the War industrial employment of women claimed by far the largest part of women occupied outside their homes, not even excepting domestic service. I am glad, however, that the increase of such employment, from approximately two million before the War to approximately three million now (and still increasing) and the many new features of the employment, have brought this whole question of women's employment into the fuller public consideration that it needed.

It is primarily of the bearing on National Health of that newly enlarged and quickened industrial life of woman with which I am necessarily most familiar that I have to speak. The generous breadth of the subject allows me, however, a wide margin into which I will first enter in an endeavour to attain a right orientation of outlook on women's industrial contribution to the life and service of the nation.

If *Health* be, as the Greeks evidently felt it to be, wholeness and soundness of body and mind, not only a state of freedom from disease, as *to heal* is to make whole—both pointing to fuller life—working women by their enhanced war-time contribution to the productivity, and thus to the means of wealth and power of the nation, have given us new potential sources of health and life. It is part of my subject to estimate how far they themselves, through that direct national contribution, and their new experiences, may have gained on the whole in health in the wide sense indicated.

I take it that the "Health of the Nation" is something greater even than the main objects of modern Sanitary Science, State Medicine, or Science and Art of Public Health, as hitherto visualized. In the nineteenth century the great foundations of State Preventive Medicine as a better substitute for much previously imperfect cure of disease were hewn, and the main lines were laid of Factory Law, and administration for securing national, standard conditions of health and safety in manufacturing industry. The impelling motive in both was partly humanitarian, partly a dawning recog-

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dition of the truth that the health and well-being of all will be adversely affected by sickness, injury, disease in any. Perhaps the task of the future will appear as we embark in the years to come on a wider field of thought, in learning that health or wholeness of the people lies in the sum of their fuller, individual personal life. A French thinker has said that "The life of the Universe depends entirely on the fruition of personal individuality." Probably, we cannot reach its springs until we can get down to sounder foundations for the homes of all the people, where personal life begins, and also take into consideration not only right organization of working conditions but also associated use of leisure, of which working women have known far too little in the past that we are now leaving behind.

In the meantime, it is evident that an "act of faith" is necessary for discussion of larger health aspects of the industrial and domestic life of working women. The fruit of activities to secure their health must depend so much on whether we attain true foundations of peace, international and civil, in this generation. Their character must depend on whether or not we have to adjust production, distribution and consumption, so as to leave the largest amount available for offensive and defensive organization that is consistent with maintaining our men and women with a sufficient margin of health and energy to continue effectively at their productive output.

It is clear, for example, that the attitude towards what constitutes *optimum* ordinary limits of hours of work in factories will vary according to the immediate necessary aim of production. If the aim has to be (a) *to produce the maximum output in quantity and quality* over a number of months or even years without loss of physical fitness of the workers, the hours will probably be longer than if the aim is (b) *to produce such an output in quantity and quality as will conduce to the all-round fitness of the workers in mind and body* as well as to the *interests of the community in best production*. That is quite apart from the moral and material effect of the *kind* of production on which the workers are likely to be engaged.

The former aim is inevitable during war and in repairing the destructive effects of war. The latter can only come to full and true development on a foundation of peace, although happily we can begin to aim at it even while war and its effects last.

If we are to be honest in facing facts I do not see how we can avoid acting on the assumption that the most strenuous industrial, agricultural and commercial activities lie for long before us as the indispensable condition of any decent standard of living for all our people. The ultimate spiritual goal of the national production no doubt dominates and inspires the whole present great effort. It is not only that "thrice armed" is she as well as he that hath the "quarrel just." The question now is not whether we shall lose or save our health and lives—many of the best must lose them anyhow—but how can we best expend them to save the health of the world? On ultimate issues women cannot be denied their share of that kind of expenditure; as martyrologies, and the story of the little nations in this issue, show. The incongruity that we think might be seen and injury expected does not always appear, for example, on our finding a housewife and mother absent from home and family alternate weeks of day and night shifts, in shell and fuse making, or even only by day in, say, forging bullet-proof steel plates at the furnace, or in mixing and turning oxide at the purifiers in gas works, or on finding a girl of 18, with a peach bloom complexion and a smile on her lips, hammering copper bands on to a 48-lb. shell that others will later fill with shrapnel or high explosives. These and other strange things are transmuted as we gaze at them. They go with the heroic sacrifice of youth and developed manhood, at sea, on land and in the air. Such contradictions of preconceived notions of fact and what constitutes fitness are paralleled by two passages that fell under my eyes in one morning recently: first, in a newly published work on "Health and the State." "The deadly effect of urbanization, particularly its hurtfulness to the organs of respiration in both young and old, possess a profound biological significance. . . . Man is not biologically adapted to life in towns." Second, from the *Times* Correspondent in Gaza, writing on November 11, "The Londoners had many opportunities, and made the most of them. A distinguished officer who has seen nearly three years of war in France and watched every movement of the London County Territorials said: 'These Cockneys are the best men in the world. Their spirits are simply wonderful; I do not think any division ever went into a big show with a higher *moral*. Discipline was absolutely perfect, physique and courage alike magnificent. The Cockney makes the perfect soldier,' and," added the journalist, "whether the men came

from Bermondsey, Camberwell, Kennington, or belong to what was known as 'Class Corps' before the War, they will be regarded as London's 'Pride.' A thrilling account followed of their achievements. Yes, in spite of all our need of Preventive Medicine and Sanitary law and regulation for our environment, and insurance against sickness and disease, there is something spiritual at the back of all human life that counts, and decides eventually whether a race is fit to live or die, and whether it can evolve a kind of urbanization in which those spiritual qualities can survive and unfold. I do not say that our urbanization has been what it ought, or as healthy as it might be, but that in spite of its bad spots race qualities do survive. Our noble French Allies have a proverb, "Bon chien chasse de race," and our industrial women of the United Kingdom have filed up, rank after rank, into their places here behind the fighting lines, at every stage of this great War, making cloth, clothing, equipment, supplies of every conceivable kind, in enormous quantities, and taking the place of men in many special men's industries, besides their much praised contributions to making of munitions of war, and again later, in ship-building and marine engineering work. They have been ready to show by their energy, their adaptability, their sustained capacity for labour, that they too have held the higher racial endowments of endurance and initiative in trust. A Factory Inspector said in the first year of the War, 1914, "It is only by visiting the factories that one can realize the extent to which the equipment and comfort of the troops in the field depends on the work of the women at home, and the amount of overtime worked has only been possible without injurious effects because the workers have been so glad to help." Another, speaking of the absence of complaint of evidence of ill effect from long hours, said, "This may be partly due to the better standard of living that overtime money makes possible, but I think it is mainly due to the ideal for which the women are now working." That ideal will, we may trust, continue to stand them in good stead in the many and increasing demands that are bound to be made of them in these later stages of the War.

Much of the work, however, and some of the conditions, past and present, for the women, like the battle-front for the men, can only endure for just so long as is necessary to pay the price of stable peace, to win the security that the need for them shall not again come upon us.

Our main thoughts, then, in speaking of healthful conditions for working women are bent far forwards, towards the industry that is for constructive, creative, fruitful ends, not for the works and products that end in death and ultimately, if they continue, in destruction of civilized human life. Watchfulness is needed, and is being given, by the Government Departments concerned, for the problem of adjusting home and labour conditions to conservation of their health and vitality.

Meanwhile, new meanings and values are emerging in the great transformation of industry. Its social (as well as economic) significance, always known to the few, is now plain for all to see. And a lesson, very imperfectly learned by the majority through the fruits of the last great industrial revolution—that the well-being of the individual worker should not be a mere subordinate and insignificant charge on the fruits of industry—has now been strongly grasped in the earlier stages of this greater revolution. To factory inspectors, who have, for many years been slowly securing here and there by persuasion certain amenities of life in the factory, as a natural superstructure to the main legal requirements of ventilation, cleanliness, safety, reasonable temperature, standard working hours, &c., there is nothing more gratifying than to find these things now generally admitted to be obviously indispensable elements of well-being. I mean such things as comfortable, cleanly mess-rooms, with means of securing well warmed or cooked food for those who are distant from home or restaurant; rest rooms and surgeries equipped and staffed in great works for instant prevention of septic or other unnecessary injury through minor accidents or illness; provision of seats; provision of proper protective clothing for workers exposed to wet, excessive dust, acids, &c., and cloakrooms and washing appliances. None of these things were enforceable before the War, except in industries classed by Order of the Secretary of State as dangerous or injurious and subject to special regulations. They can now, by the Police, Factories, &c. (Miscellaneous Provisions) Act of 1916, be secured in any other class of factory where needed for the welfare of the workers, and from the beginning of that year were systematically called for by the Ministry of Munitions in all controlled and national factories.

Although war was formerly almost a synonym for disease and pestilence, we are told that preventive medicine has shown how to

make camps and War Front more immune from disease than a barracks in peace time. It seems possible that now, when the greatest of all wars has drawn nearly all industry directly or indirectly into its service, and awakened all men and women to the real significance of the value of life and health there, and also to the awfulness of the preventable annual slaughter of innocents in infancy, we may learn new ways of (a) making industrial work enhance the health of the nation—as well as find out how to effectually secure (b) adequate safeguards of maternity and infant welfare. These new lessons and new ways are being made thoroughly plain. The real test of ability and power in the nations will be, when peace comes, in the call not only to choose, but legislatively, administratively, and in all practical ways to *make good their choice* whether industrial production of all kinds in the future shall be pursued and organized in detail so as to enhance the life, i.e., the health, safety and happiness of all engaged in it—first and foremost—or whether those things shall be subordinate to material gain.

There is nothing in the world more interesting than manufacturing industry if its conditions for the workers are good, and we need now (and probably shall long need), for it, all the women and girls who can be spared from other vital national activities. We also need for health of body and mind to develop their powers for skilled and responsible production and to give them those opportunities of industrial training in full measure that they have so badly needed in the past to develop their natural gifts. When all is being done that needs to be done, in these directions, in my belief we must never lose sight of the fundamental need of the nation from its women, their power to make and keep its home life sound and to guard the nurture of the race.

It may seem only a truism to affirm that a healthy, restful and recreative environment in the home precedes in importance even the importance of a healthy environment in the factory, and every kind of workplace; for overcoming industrial fatigue and for combating industrial alcoholism and for maintaining vigour and health in all their workers, not to speak of the utter dependence of infancy and childhood, for healthy, sane rearing, on a healthy home and maternal environment. Practically, I do not think one can reiterate too often that without someone free to act as house-

wife and look after home welfare of those who work all day outside the home, it cannot be healthy, restful nor recreative. This, as much as the health of the woman and girl herself, is at the root of the reason against persistent double employment both in running the home and earning the wage on which it is supported. As the Scandinavian proverb puts it: "A household without a housewife is like a lantern without light." The home keeper, at least equally with the wage earner, is a labourer worthy of her hire, and economic security for her occupation is a fundamental social need. Only if we firmly keep our hold on this domestic side of the national claim on women are we likely to rationally solve the questions of organization and administrative regulation of women's industrial life. Not only good housing, town and village planning, but local public health administration problems are involved, as well as factory and workshop structure. No right answer can be given to the new questions now insistently arising as to what shall be women's standard working *hours*? What shall be our aims in solving their *wage* problems? How far shall they be restricted from entering or continuing some of the heavier and more injurious occupations, unless that *domestic* basis of national welfare is held steadily in view? How the necessary economic security for the housewife and mother is to be attained is a complex problem, which I cannot pretend to solve in an afternoon, and I will only touch on some considerations that seem to me material. I think the problem, being complex, is one to be solved by various measures, not a single straight-cut new expedient, such, e.g., as "endowment of motherhood." Like many short-cuts, that expedient *may* lead into unsuspected morasses and pitfalls. I suggest that we might well look first to older principles never thoroughly explored and tested, by strengthening and supporting the responsibility of husbandhood and fatherhood for sustenance, as at least equally important with developing powers of motherhood for nurture of the family. Insecurity of regular family income from wages may be largely removed by wise development of unemployment insurance. Illness of the father can be met by adequate insurance, widowhood or desertion by State or municipal pensions or grants for the mothers who continue their first duty to their children. Extra needs at childbirth can be partly met by more liberal grants, as in Australia, and by adequate public health support of the services of midwives and home helps, during disablement and sickness of the mother.

The all-important matter for securing a healthy community and a healthy state organization is surely to recognize the natural, the divine, institution at the base of it all, in soundness and unity of home and family. Those are very significant figures that we find in an analysis given by Dr. Helen Wilson of *causes*, so far as women are concerned, of between six and seven hundred investigated cases of prostitution. By far the largest set of causes fell under the heading "home conditions," i.e., a bad or demoralizing home or lack of a home; next in importance came the heading "vanity and love of pleasure," which may for the greater part be attributable to something wrong in the home. "Low wages" and lack of employment accounted only for an insignificant fraction of the whole. Of those cases in whom the age could be ascertained, more than half started on the beginning of the wrong path before 18 years of age. Closer analysis was made of home conditions in a smaller number of cases and there it was found that only a quarter had a normal or satisfactory home.

Examination of home conditions of young offenders might furnish even stronger evidence, and strongest of all is the argument from infant and child mortality, for support and strengthening of the natural home, as superior to all institutional substitutes, and in favour of enlightened "mothering" as the best shelter and shield for early growth of health in a nation.

Whether it is for prevention of killing and maiming diseases, whether for saving infant and child life, and providing for the soundest population obtainable, whether for sustaining the strength of those who labour, or whether for securing the basic conditions of happiness and dignity of the people, the *primary occupation of women* as housewives and mothers calls for the first place in any treatise that may be written on "Working Women and the Health of the Nation."

I am merely alluding to notorious facts when I ask whether it can be said that in *housing* (and necessary domestic appliances for cooking, heating, lighting, washing) in *midwifery* care, in *pure milk supply*—to mention only some main elements in the situation—we have begun to equip the mass of mothers of the nation with the means necessary to enable them to fulfil their rôle? The Committee of Medical Research say in their report dated August, 1917, on "Mortalities of Birth, Infancy, Childhood," that "existing knowledge based on medical research is already almost a

generation ahead of effective administrative action. Rapid removal of the known factors in the attack of improper environment upon young life would, quite apart from the urgent humanitarian claim for it, greatly aid the progress of further research into the effects of the less known factors which have still to be removed when their nature can be more fully revealed."

In great convulsions of human society, such as that in which we stand, those peoples and nations will no doubt endure who possess the most healthy, intelligent, true-hearted married mothers, and those will lead whose mothers have not only these qualities, but also are best educated, best equipped, and most generously supported by the nation and its manhood with the necessary economic means for rearing healthy citizens.

If we judge by numbers only, it would appear from the Registrar-General's recent statements that generous allowances and pensions to wives and widows of soldiers in part may account for the relatively favourable position among belligerent peoples in birth-rate, so far, that this country holds.

"Working" woman includes, of course, the working homemaker as well as the wage-paid woman worker outside the home. Few indeed of the latter are free from a substantial share of personal service in the home. Thus the problem of standard hours for women in industry is a crucial question for statesmanship.

Hours.—Before the War it was a commonplace in Factory Inspectors' Reports that the strain was too great of the legal limit of a normal twelve hours' day of absence from home (ten and a half hours net for work and sixty weekly maximum) apart from overtime, added to the home duties of most women and in many cases long distance travelling, and that the two together lay at the back of the increasing complaints that the legal limit of their hours was too long. One example may suffice. In 1913 an accident to a hand gas ironer in a laundry was recorded. "She was," said the inspector, "a middle-aged woman living alone." Six weeks before the Factory Inspector's visit, "she had fainted at her work and in falling she had pulled the iron on her hand; that and the metal tube had severely burned both hand and arm and she was quite incapacitated. She left home 5.15 a.m., walked 2½ miles to the factory, stood the whole day at her work, and at 6 p.m., sometimes, with overtime, later, started to walk home again, and then had to prepare her meal, mend, and do her housework. This case is only

typical of thousands of women workers. . . . Her case is not so hard as many, for in addition to their own needs, a married woman or widow with children has also to see to the needs of the family, meals, washing and mending, and the hundred and one other duties that are required to keep a home going."

In touching on hours of work in war industries and comparing them with pre-war experience, it is desirable to state categorically, that there has been *no abrogation* of the Factory Acts during the War, only an adaptation (under powers given to the Home Office in the Acts) of the legal limits, to meet the national emergency. It is just through that elasticity of adaptation, that power of experimentation given by Parliament to a Government Department with nearly a century of administrative experience in this field of factory law, to meet the sudden strain of war, that there has been given us the chance of getting a wisely drawn factory law for peace-time needs. The variety of experiments made (in consultation with needs of various munitions supply departments) in spells, periods, shifts, pauses, could hardly have been made in an old industrial country like Great Britain, that had begun to fall in regulation of hours into a good many stereotyped ways, in so short a time, without this tremendous crisis.

In the first year of war the contrasts that arose in hours of labour were no less great than in changes of occupation for girls and women. In the first seven months of 1914, while we still all thought we had peace before us, the movement from the side of workers and many employers was in non-textile works towards a lessening of hours generally to something well within the maximum limit allowed by the Factory Acts. Then came suddenly for women and girls a breathless pause of unemployment, threatening in some cases to become absolute, followed quickly by overwhelming demands for enormous immediate output of supplies to equip His Majesty's Forces as they rapidly grew beyond previously imaginable dimensions. Time was of the essence of the manufacturing position, thought for best hours for a long steady output could not then enter, and the only limits that in the national interest could be imposed were for protection from an overstrain that might lead to breakdown of the invaluable workers already qualified for the necessary work. Incessantly flowing emergency orders to relax the law in individual factories to those limits were issued by the Home Office, under Section 150 of the Factory Act, 1901, extended by Defence of the Realm Regulations.

The last four months of 1914, and a large part of 1915-1916, were spent by the Factory Inspectorate in the endeavour first to enforce these orders, and secondly, to aid in getting them standardized, with certain welfare conditions attached, to meet the needs of main groups of industries. Many cases occurred of exceptionally long hours worked without legal sanction at all, but steadily these were brought under better control, and the more so because of the recognition by intelligent manufacturers that unlimited hours could not in the long run be worked without detriment to output by encroaching on workers' reserve energies. Complaints from workers themselves rapidly decreased, the women were willing for all they could do. There was a helpful provision in all the orders that it should not be made a "condition" of a worker's employment that she should work overtime. Alternating night and day shifts (double twelve-hour or treble eight-hour) early began, both for fullest possible utilization of existing industrial plant and for rapid absorption of unemployed labour. The extraordinary development of munitions supply that came in 1915-1916 carried all this experimentation in hours rapidly into wide fields. Only when that munitions supply reached its necessary heights, and had absorbed well on to 900,000 women and girl workers in supplement to its men and boy workers, numbering between two and three million, could systematic efforts begin for reducing permissible hours to new limits that were consistent with the long steady output that the rate of progress of the War showed to be inevitable. Though night shifts could not be, nor can be, dispensed with, already two ameliorations have been achieved: (a) Return, for all but exceptional emergencies of sudden output and necessary repairs, to the principle of *Sunday rest*, and (b) exclusion, in the majority of works, from *night work*, of girl labour, under 16 years, and boy labour under 14 years. These were among the first fruits of the scientific inquiries, and reports of the Health of Munition Workers' Committee, in addition to the great impetus given by them to development by both the Home Office and the Ministry of Munitions of the conditions within the factories classed as "welfare." Women's weekly and daily total hours in the stress of these times, long and fatiguing as they were, rarely rose, apart from special aberrations in which successful prosecutions by factory inspectors repeatedly followed, to the extreme levels commonly reached by men munition workers, and as in the earlier stages of

the War employment of forewomen and women superintendents had not extended (as it happily is now doing), they too, were generally spared the excessive overstrain that fell on foremen and managers. There has been, and is, evidence of absenteeism and poor time-keeping in certain cases in factories where the long double twelve-hour shift system of alternate weeks of night and day obtain, that makes it highly probable that accumulating fatigue and overstrain have been partly averted by a natural tendency among women to take an occasional day or half-day off. There is not yet a sufficient body of records and facts to draw firm conclusions; still stray lights upon general occurrence of sickness among munition workers suggest that, for whatever reason—it may be better wages and better food, or increased care of workers and lessening of excessive hours—sickness among the women is not increasing but rather diminishing.

I understand that there is evidence before the Health of Munition Workers Committee that sickness benefit, for women as well as men, is lessening. An almoner's records in a large general hospital in a munition area in six months showed not more than thirty women and girl munition workers attending as out-patients.

There is now a serious movement towards drawing-in to limits of hours better adapted for effective maintenance of output; supported by the researches (begun before the War) of Professor Stanley Kent for the Home Office, by Dr. Vernon, Professor Loveday, and others for the Health of Munition Workers Committee, by inquiries into the economic effects of Industrial Fatigue for the British Association and by general growth of public interest in industrial efficiency and welfare. It is remarkable how this movement vindicates the position reached under the Factory Acts just before the War. During some years before 1914 the sixty-hour week and ten and a half hour daily limit for the non-textile factories (fifty-four and ten respectively for textile) was becoming recognized more as a maximum than as a standard limit, and in practice shorter hours, varying with the demands and conditions of various processes, widely obtained and were becoming customary. In the early rush of autumn, 1914, "a well known wholesale clothier employing 1,000 women on Government contracts gave it as his considered opinion that the full 8 a.m. to 8 p.m. period allowed under the Factory Act is sufficient, and any work beyond this is quite useless; it exhausts the worker and does not pay." Development of precise

scientific research into fatigue and output has rapidly come just when it may ripen and support conclusions drawn by official departmental experience, and may lead to entirely fresh legislative and administrative methods of regulating hours of labour. It must not be forgotten that it was only in the last few years before the War that women (alone among adults in this country as contrasted with France, affected by legal restriction of industrial hours of labour) had begun to effectually express their own views on this matter. Without their enfranchisement probably any satisfactory progress must have been further delayed. At this turning point, reinforced by their enfranchisement, comes the important war-time scientific discovery, that best output may be obtained by a judicious process of gradually shortening hours of labour. This is a real addition to the humanitarian impulse at the back of the factory legislation of last century and a basis for substantial progress, even though much detail has yet to be worked out as to the approximate limits and rhythm of pauses needed in industries and processes presenting different kinds and degrees of heaviness or strain.

The position as regards regulative control of *dangerous and injurious trades and processes* stood at the outbreak of war in complete contrast to the almost stagnant condition of legislation for hours of labour. Just when a new stage was opening for new risks as well as for new experiments, we held the great advantage secured by long scientific work, medical, chemical, engineering and administrative from 1891 to 1914, carried out in twenty-four groups of special rules and regulations framed under the Factory Acts, for as many different kinds of dangerous and injurious occupations. From 1896 onwards this work had the great advantage of being under the distinguished direction of Sir Arthur Whitelegge, K.C.B., M.D., the Chief Inspector of Factories, whose regrettable ill-health has led to his recent retirement. There has been markedly successful reduction of industrial poisoning achieved during that period, most striking in certain trades, whitelead and potteries, exposing to risks of plumbism. The TOTAL INDUSTRIAL PLUMBISM in 1900 was 1,058 ⁽³⁸⁾; in 1914, 445 ⁽²⁸⁾. In *white lead* manufacture in 1900 there were 358 ⁽⁶⁾ cases; in 1914, 29 ⁽¹⁾. In *china and earthenware* factories or *potteries*, there were in 1900, 200 ⁽⁸⁾ cases; in 1914, 27 ⁽⁶⁾.¹ The work was built up not only (as in other industrial

¹ The small figures in brackets indicate fatal cases.

countries) on increasing research into various aspects of the practical problems of exhaust ventilation, and other safeguards, but on a completeness of medical statistics of actual cases of poisoning over the whole field of possible injury that so far as I know is unique and special to Great Britain. This was possible through Section 73 of the Consolidating Act of 1901 (repeating Section 29 of 1895), which laid the duty on every medical practitioner of reporting to the Chief Inspector the name and address and disease of every patient whom he is attending or called in to visit, and whom he believes to be suffering from lead, phosphorous, arsenical poisoning or anthrax—and any other disease required by Order of the Secretary of State—occurring in a factory or workshop. Having this body of knowledge and experience it was a comparatively simple matter, when serious new kinds of industrial poisoning arose in connection with rapid development of aircraft and explosive manufacture during the War, to apply the same methods of control. Cases of *toxic jaundice*, popularly known as "Dope poisoning," where they arose (a) in varnishing the wings of aeroplanes to make them impervious to moisture and air, by means of a varnish containing tetrachlorethane, and later, more numerous in (b) the manufacture and use of trinitrotoluene for high explosive, known as T.N.T., could thus be quickly studied and the causes regulated. For the interesting story of the efforts of the Factory Department, in conjunction with the Admiralty and War Office, to overcome the risks in aeroplane varnishing, reference may be made to Chapter XII by Dr. Legge in the Annual Report of the Chief Inspector of Factories for 1914. The ingredients there were ultimately changed. Again, in the case of T.N.T. poisoning, resulting in toxic jaundice, the Factory Department were able to supply the Ministry of Munitions and Explosives Supply Department with a sufficient body of evidence and the example of special regulations, to develop their own necessary safeguards in national and controlled factories. Every case of toxic jaundice is the subject of a report by a medical practitioner or certifying surgeon, or both, and a report by the occupier on this follows the investigation of circumstances and causes in the factory by the Factory Inspector (in the case of a woman, generally also at her home or lodging) the whole body of evidence being reviewed both by Dr. Legge, Medical Inspector at the Home Office, and by the medical officers at the Ministry of Munitions. In national, and in some larger controlled

works, there are specially appointed medical officers at the works. The means of preventive control and access to facts for medical research seem to be about as complete as possible, as may be seen in the Annual Report for 1916-1917 of the Medical Research Committee with its interesting references to experiments in laboratories and studies in factories.

The long and careful study that had been made by medical inspectors and certain certifying surgeons of various other special risks, for example, of dermatitis in many forms, chrome holes, &c., proved useful for the increased necessary control arising during the War in various metal works, tanneries, &c. A most important addition to powers for preventing or minimizing the effect of injuries and lesions in the factory, lies in the new Order of the Secretary of State, under the Act of 1916, having effect from December 1, 1917, for first-aid where twenty-five or more persons are employed, and for ambulance arrangements where 500 or more persons are employed, in *blast furnaces, copper mills, foundries and metal works*. Into all of these the War has brought women, and in metal works to a very large extent. The Order approximately confirms the increasing work of the factory inspectorate (especially since the passing of the Notice of Accidents Act in 1906) in encouraging the movement among large employers for prevention, by prompt first-aid, of the needlessly excessive amount of suffering from septic poisoning due to lack of care or proper dressing of what might have been slight or insignificant injury. The Order is likely to encourage further development of use of services of trained nurses in factory surgeries (already begun before 1914), and its requirements are of course capable of extension to many other industries when the demand for sterilized dressings and service of nurses is less gigantic than at present.

A word must be said about the presence now of women in certain hot, heavy, excessively dusty or dirty or humid and laborious trades and processes hitherto confined, or almost entirely confined, to men—e.g., sugar refining, oil and seed crushing, gas retort house work, paper making, glass making, cement making (see Home Office and Board of Trade Pamphlets). Very careful, detailed and precise records have been kept, with note of modifications and precautions, of women's service in these fields. In some of them, the necessarily continuous nature of the work makes night shifts inevitable, and for them the required and suitable

relaxations have been granted conditionally on provision for welfare. As regards most of them, question of their possibility for women did not arise until the present crisis—it was simply contrary to common sense and custom that women should be employed there. The pressing need of the nation altered the position. If the breaking through of custom should leave a risk of competitive employment of women in processes that in the long run may be injurious for them and, through their employment, for the nation, the Act which has provided for regulation and elimination of women from whitelead manufacture and certain pottery processes is still available, and I believe that single-minded application of the power of regulation for the national welfare will find a solution of the problems involved.

In factories in which manufacture of tin or terne plates is carried on (i.e., metal plates coated, against rust or corrosion, with tin or an alloy of tin and lead), women have for many years been employed in certain finishing departments, though it is a heavy and rough occupation. It is the first industry to be brought under a general Welfare Order by Section 7 of 1916, requiring certain simple protective provisions for health and well-being: (a) protective clothing against handling of plates dipped in acid (all persons); (b) suitable cloak-room accommodation, with means of drying wet clothes, and to be kept clean (women and girls); (c) suitable mess-room accommodation, sufficiently warmed during meals, and to be kept clean, with sufficient tables and chairs and means of warming food and boiling water, and washing appliances. The mess-room has to be under charge of a responsible person. Although the Order only took legal effect from December 1, 1917, it has aroused great interest among the manufacturers in many of the works in which it applies. The ground was well surveyed and prepared by the inspectors, who already find their ideas being carried out in the provision of homely, cheery rooms, with good open fires, chairs, tables, washing accommodation, including hot water laid on, &c.; and a good beginning has been made in one or two places in good superintendence, which ought to raise the standard of comfort in mess-rooms and canteens, for men as well as women, permanently in those rough works.

No doubt, more important still for maintenance of industrial health during and after the stress of war, even than regulative control of dangerous processes, has been the past work of chemists,

engineers, and administrators, in developing ordinary *general factory hygiene and structure*, ventilation, reasonable temperature, removal of excessive dust, good drainage and sanitary arrangements, requirements for sufficient air space and cleanliness. As important as general hygiene of environment is elimination of the unfit, e.g., means for excluding young workers under 16 from work too heavy for their strength, as well as the principle of excluding mothers from too early return to work after child-birth. All these things, provided for however imperfectly, have had their effect in maintaining the strength of the people. A quickened recognition of the dependence of output and efficiency on hygienic surroundings, primarily, and secondarily on other elements of personal welfare, has secured that the many new factories built during the War have on the whole embodied right structural conditions, as well as great improvements in lighting, lavatories, mess-rooms—although owing to shortage of materials and labour for construction, a good many old and adapted factories have lagged temporarily behind what is generally demanded and conceded as necessary for industrial hygiene. It is on both (a) a right and adequate foundation in this direction, and (b) a proper *nurture* of the potential worker, physical, moral, mental, before entering industry, that alone a thoroughly sound productivity and healthful industrial people can be built up. For one person exposed to special risks or injurious processes, there must be hundreds who would only be exposed to risks of ordinary defects in general hygiene of factory or home, or defects of transport, or lack of access to wholesome recreation—on all of which things normal, healthy recuperation of the worker from the healthy fatigue of work depend. An intensified “Welfare” culture in the individual factory may do something to partially remedy defects induced in those fundamental directions, but no really sound, broad personal welfare can be developed except on the substantial ground-work of maintenance of the laws of healthy environment and reasonable hours and rhythm of work and rest. It is almost certainly because the *main* battle was won on the field of hygiene in factory environment, and impartially pressed on all, that leading employers have for many years turned their attention to improvements to protect personal hygiene and welfare, and that workers have for long steadily appealed to the inspectors to get them decent messing conditions, washing appliances, protective clothing, seats, and the like, often assuming they might be enforced by law.

Here, in these two new fields of inside and outside welfare, ripe for further progress towards industrial health, the onrush of war, with its extraordinary dependence on industrial efficiency and rapid output, quickly forced the pace from 1915 onwards. Just as the soldier without good feeding, good clothing, drill, and training and ample equipment of weapons, however multiplied into millions, or however bravely led, could never win in this kind of war, so his coadjutor and supporter, the industrial and munition worker, would be nowhere without better feeding, better clothing, better training, and, in some respects, better appliances, than has been provided for in the past. And so the woman and girl worker, under-paid, under-fed, untrained, always burning the candle of her life at both ends, at home and in the works, as she has been in the past, now called for by the nation in hundreds of thousands, at last began to come into her heritage as a human being and a person with political status. And her general right and claim to have her conditions of work supervised by competent women, often urged, rarely obtained, is now conceded and growing. A good supervisor or forewoman is not, however, trained in a day, and it will be worse than useless to outrun the supply of good women. From the beginning of the new exceptional hours for women and young persons, the Home Office demanded and enforced a minimum provision for proper mess-room and cooking conditions, and safe guardianship of them by women's supervision at night. As I have already indicated, these precautions were more fully provided from 1916 onwards, legislatively and administratively, so far as means of welfare inside the factory were concerned. I need hardly dwell on the importance of the work done by the Canteen Committee of the Board of Control (Liquor Traffic) in co-ordinating and supplementing the work of individual employers and volunteer societies in enabling immense numbers of workers to obtain well-cooked food under decent conditions at reasonable cost. Stress may be laid on the experience of every factory inspector that while good food, well served, is evidently valued, there is a particular fine flavour that cannot be put in words that has a universal appeal to the factory worker in "homeliness" of surroundings, far beyond any appeal of spaciousness or fine fittings. Sometimes it is the Canteen Superintendent herself that personally gives that touch—shown in a factory where previous efforts at management by a Workers' Committee and by a contractor had alike failed. Then came this superintendent, a widow, a traveller, and a linguist, with-

out any industrial experience. She suited the taste of the women exactly, and the canteen became an immediate and continuing success. I have seen the same magic work in an old established factory adapted to munition making where the superintendent was a trained nurse, with a good judgment, as well as competence in catering. She managed to pervade the canteen with an atmosphere of freedom, peace, and contentment for men and women alike that was refreshing to enter. The canteen that has a homely appeal in itself apart from its management by a workers' committee may also be seen. Where all appeal fails the workers will simply continue to take their meals in the shop or shed, and I see no reason why they should not be free to do so if there are no poisonous or injurious material lying about and ventilation is good. The Order of the Secretary of State for provision of, and convenient access to, an adequate supply of wholesome drinking water at all times in all factories and workshops in which twenty-five or more persons are employed, which came into force on December 1, 1917, is another very important step forward. It is expressly required that all practicable steps shall be taken to preserve the water and vessels from contamination.

The call to women and girls to leave their homes and come in masses, either to build up industries in new townships or to already crowded city centres, or else to travel long distances daily to work, soon also compelled recognition of and action by the State in environmental and personal conditions *outside the factory*. Housing and lodgings, transport, means of access to reasonable recreation, personal care of sick and convalescent workers, were suddenly visualized in a new way as an essential factor in industrial hygiene. Thus when the appointment, by the Ministry of Labour, of the Central and Local Advisory Committees, representing the various Departments concerned, came for promotion of women's employment as substitutes, one of their duties was to look after this very matter of outside social welfare of people separated from their homes. The limitations of effort in these crowded localities, so long as funds were raised only by voluntary contributions, were soon realized, especially when the most active Committees began to enter into inter-civic discussions, on practical problems of housing, transit to and from work, development of means of recreation and club facilities, after-care of the sick worker, &c. Inevitably followed billeting legislation and definitely appointed outside

welfare officers under the Ministry of Munitions. These latter officers form a co-ordinating link between local voluntary opportunities and enthusiasm on the one hand, and a grant aiding Central Department on the other, at a time when extraordinary conditions call for Central State Aid for various matters such as clubs, convalescent homes, recreation, that in normal times are almost wholly matters for local enterprise, whether municipal or voluntary. An exceptional consideration is claimed for an important matter which does not precisely fit into any one particular part of my lecture—the increased care needed by and accorded to expectant mothers in munition factories as compared with normal factories. Special experiments have been made, with the aid of nurses and women superintendents, in the way of careful transfer to light and suitable subsidiary processes, and by outside personal aid and care. The heaviness of some of the munition processes or special risks from poisonous or explosive materials, as well as some increase in employment of mothers, have led to this new specialized care and attention. One hopes that employment of married women and expectant mothers will greatly decrease with return of normal industry; but the experiments point to the possibility of a carefully considered extension of Section 61 of the Factory Act to a longer prohibition of employment before and after child-birth, combined with compensating conditions for cases of need.

Wages of Women.—Strange though it may seem, at a first glance, that War has done so much as it has done to introduce large bodies of women to a new legal claim to a living, and thus healthy wage, one can see the appropriateness of it on a very little examination. There is no time left for me, even if I had the power, to examine the complex war-time regulations and the difficult question of peace-time measures for maintenance of women's wages at an adequate rate. I can only point to the unquestionable fact that before the War far larger numbers of our working women were under-fed, because under-paid, than is now the case during the greatest War the world has ever seen. And I must agree with Mr. Rowntree's assertions at an earlier lecture in this series that an adequate wage minimum level, beginning with unskilled labour, is the basis and foundation of health and welfare, and that it must be an individual, actual week-by-week adequacy, never a mere average.

The appropriateness of the improvement that war has brought to tens of thousands of women workers lies just in that fact with

which I began, that women have brought in this time of strain, as a body, an increased power of production to the resources of the nation. There is something gained that can never be lost: (1) in their own increased sense of power and self-respect; (2) in their proof of adaptability to processes new to them. A residuum is bound to remain after all places have been yielded up to the returning army which will permanently widen their field of labour and thus enhance their value absolutely and (if it must be) competitively. Some months ago Dr. Addison gave the minimum munitions time-rate for women as 22s., and the average as 25s. If we take pre-war average on Board of Trade figures, the average for women in factory industries exclusive of textiles (their premier trade) was 12s. 11d., and inclusive of those was 14s. 2d. It would be hazardous to say what the pre-war minimum was—often too low to keep body and soul together, and even then liable to deductions. One of the best pledges for an adequate healthy wage in the future lies, I think, in the fruitful experiments that have been made to meet the need for great numbers of new semi-skilled workers in the *industrial training with maintenance* that has been given not only for disabled pensioners, but in an entirely new way for women and girls. It may have, as a principle and practice, far-reaching consequences in building up munitions of peace as distinct from munitions of war industries, and has a manifest bearing on problems of unemployment. The greater national reserve of energy and skill and increased power of application and industry that ought to be available should go a long way, if right directing power is applied to industry, in securing the value and volume of production on which power to pay adequate wages largely rests.

Conclusion.—It is impossible within the compass of a single survey of so large a field as this just covered to bring out all of even the most important factors. I can only hope to contribute from my special experience a little light on the new lessons learned under stress of the national effort about the true conditions of healthful contribution by our working women to the life and welfare of the nation.

I hope I have made it clear that I think these lessons are of permanent worth. In spite of much fatigue and a good deal of evidently preventable strain, there does not seem to me to be any indication so far that the health of women has suffered on the whole from their contribution and increased efforts. And this may be

traced not only to extra care applied, and improved earnings and feeding, but also to the non-material factors of (1) consciously sharing in the national effort for a great cause ; (2) increased self-respect in finding in themselves unsuspected capabilities.

However hard they have worked, they have been spared—and wisely—some of the worst overstrain that fell to our industrial men, and this both relatively and absolutely.

If there should need to be a further considerable call on the woman power of the nation, I imagine that we have not yet come near our safe margin of reserve health and strength in women. We are, I believe, safe, if we go for additional recruits in the right directions, by drawing from unnecessary occupations of various kinds, and by finally calling on all “unoccupied,” who are really not occupied in serious maternal and active domestic duties, to contribute their full share.

I have only in the slightest and most indirect way touched on the relation of the *kind* of production aimed at to health and happiness of the nation. It is an immense subject of fundamental importance, but I can only say that I think it fundamental, and that for our people there can be no real permanent health and happiness that does not rest on elements of beauty in work and surroundings. I am for ever coming up against signs of the love of and hunger for that in our working people.