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ROYAL MEEKER, Commissioner

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WOMEN IN INDUSTRY SERIES: NO. 11

EMPLOYMENT OF WOMEN AND
JUVENILES IN GREAT
BRITAIN DURING THE WAR

REPRINTS OF THE MEMORANDA
OF THE BRITISH HEALTH OF
MUNITION WORKERS COMMITTEE



APRIL, 1917

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PREFACE.

This bulletin is the third of a group of bulletins published by the Bureau of Labor Statistics of the United States Department of Labor, in compliance with the following resolution voted April 7, 1917, by the Council of National Defense:

That the complete reports of the committee appointed by the British Minister of Munitions to investigate conditions affecting the health and welfare of workers be edited so that the salient features thereof may be made applicable to the conditions pertaining in the United States, and printed in condensed form by the Department of Labor.

This bulletin reproduces in full all the official and quasi official documents listed in the table of contents except the report on the replacement of men by women during the war. The first article contained in this bulletin is a summary of a report of the British Association for the Advancement of Science appearing in the volume "Labor, Finance, and the War."

Two earlier bulletins (Bulletins 221 and 222) contained documents, official and unofficial, dealing with hours, fatigue, and health in British munition factories, and welfare work in British munition factories, together with some related material which has been considered of sufficient interest and importance to warrant reprinting or summarizing in bulletin form.

It is thought that these bulletins published at the request of the Council of National Defense will be of great service to the country, by giving wider circulation to the experiences of Great Britain, France, Canada, and other countries, in dealing with labor in the production of the largest quantity of munitions in the shortest space of time.

ROYAL MEEKER,
United States Commissioner of Labor Statistics.

BULLETIN OF THE U. S. BUREAU OF LABOR STATISTICS.

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INTRODUCTION.

The British Health of Munition Workers Committee was appointed in the middle of September, 1915, by the Minister of Munitions, with the concurrence of the Home Secretary, "to consider and advise on questions of industrial fatigue, hours of labor, and other matters affecting the personal health and physical efficiency of workers in munition factories and workshops."

The composition of the committee is as follows:

Sir George Newman, M. D. (chairman).

Sir Thomas Barlow, Bart., K. C. V. O., M. D., F. R. S.

G. Bellhouse, Factory Department, Home Office.

Prof. A. E. Boycott, M. D., F. R. S.

J. R. Clynes, M. P.

E. L. Collis, M. B., Factory Department, Home Office.

W. M. Fletcher, M. D., F. R. S., Secretary of Medical Research Committee.

Leonard E. Hill, M. B., F. R. S.

Samuel Osborn, J. P., Sheffield.

Miss R. E. Squire, Factory Department, Home Office.

Mrs. H. J. Tennant.

E. H. Pelham (secretary).

The committee took evidence in various industrial centers from employers, representatives of workers, and other interested persons, and made numerous special studies and investigations. In addition, members have visited a large number of factories and workshops and discussed matters with the management, with foremen, and with individual workers. With this information, and having the advantage of the special knowledge and experience already possessed by members of the committee, it has published, up to the present time (April, 1917), 15 memoranda dealing with one or more of the subjects intrusted to it.

As these memoranda are the work of a committee especially qualified by technical knowledge and special experience and as they contain many suggestions and recommendations made with the purpose of securing maximum output over a period of months, or even years, and at the same time safeguarding the health and physical efficiency of the workers, it is believed that their reproduction at this time may be of value in a similar way to industry and labor in this country. The memoranda have therefore been arranged in three groups, the related subjects being brought together, and are reprinted as bulletins of the United States Bureau of Labor Statistics under the following titles:

(The list here given contains only the memoranda of the Health of Munition Workers Committee. Each of the bulletins, however, includes also other official and nonofficial material dealing with related subjects. The contents of Bulletins 221 and 222 are given in full at the end of this bulletin.)

BULLETIN NO. 221, HOURS, FATIGUE, AND HEALTH IN BRITISH MUNITION FACTORIES.

Sunday Labor (Memorandum No. 1). November, 1915. 6 pp. [Cd. 8132.]

(Summarized in Monthly Review of the U. S. Bureau of Labor Statistics, May, 1916, pp. 66, 67.)

Hours of Work (Memorandum No. 5). January, 1916. 9 pp. [Cd. 8186.]

(Summarized in Monthly Review, June, 1916, pp. 77-79.)

Statistical Information Concerning Output in Relation to Hours of Work (Memorandum No. 12). (Report by H. M. Vernon, M. D.) August, 1916. 11 pp. [Cd. 8344.]

(Summarized in Monthly Review, December, 1916, pp. 105-119.)

Industrial Fatigue and its Causes (Memorandum No. 7). January, 1916. 11 pp. [Cd. 8213.]

(Summarized in Monthly Review, June, 1916, pp. 79-81.)

Sickness and Injury (Memorandum No. 10). January, 1916. 10 pp. [Cd. 8216.]

(Summarized in Monthly Review, June, 1916, pp. 88-90.)

Special Industrial Diseases (Memorandum No. 8). February, 1916. 8 pp. [Cd. 8214.]

(Summarized in Monthly Review, June, 1916, pp. 83-88.)

Ventilation and Lighting of Munition Factories and Workshops (Memorandum No. 9). January, 1916. 9 pp. [Cd. 8215.]

(Summarized in Monthly Review, June, 1916, pp. 81-83.)

The Effect of Industrial Conditions Upon Eyesight (Memorandum No. 15). October, 1916. 8 pp. [Cd. 8409.]

(Summarized in Monthly Review, April, 1917, pp. 538-540.)

BULLETIN NO. 222, WELFARE WORK IN BRITISH MUNITION FACTORIES.

Welfare Supervision (Memorandum No. 2). December, 1915.
7 pp. [Cd. 8151.]

(Summarized in Monthly Review, May, 1916, pp. 68, 69.)

Industrial Canteens (Memorandum No. 3). November, 1915.
7 pp. [Cd. 8133.]

(Summarized in Monthly Review, May, 1916, pp. 69, 70.)

Canteen Construction and Equipment (Memorandum No. 6).
(Appendix to No. 3.) January, 1916. 7 pp. and plates.
[Cd. 8199.]

(Summarized in Monthly Review, June, 1916, p. 91.)

Investigation of Workers' Food and Suggestions as to Dietary
(Memorandum No. 11). (Report by Leonard E. Hill, F. R. S.)
August, 1916. 11 pp. [Cd. 8370.]

(Summarized in Monthly Review, January, 1917, pp. 56, 57.)

Washing Facilities and Baths (Memorandum No. 14). August,
1916. 8 pp. [Cd. 8387.]

(Summarized in Monthly Review, January, 1917, pp. 150, 151.)

BULLETIN NO. 223, EMPLOYMENT OF WOMEN AND JUVENILES IN GREAT BRITAIN DURING THE WAR.

Employment of Women (Memorandum No. 4). January, 1916.
10 pp. [Cd. 8185.]

(Summarized in Monthly Review, June, 1916, pp. 74-76.)

Juvenile Employment (Memorandum No. 13). August, 1916.
8 pp. [Cd. 8362.]

(Summarized in Monthly Review, December, 1916, pp. 92-97.)

In the present bulletin there is first presented a summary of the more important suggestions and recommendations of the committee. This is followed by a comprehensive statement relating to the replacement of men by women in industry in Great Britain, which summarizes detailed reports from various trades, based upon investigations made in London, Birmingham, Glasgow, and other centers, conducted in 1915 and 1916 under the direction of the British Association for the Advancement of Science, and published by that association in the volume entitled, "Labor, finance, and the war," A. W. Kirkaldy, editor.

A statement is also given regarding the extension of employment of women in Great Britain down to October, 1916, taken from the Board of Trade Labor Gazette for January, 1917. Another statement refers to the migration of women's labor through the employment exchanges, and is taken from the Board of Trade Labor Gazette for March, 1917. A reprint is also given of the several orders relating

to the employment and remuneration of women, made by the Ministry of Munitions in pursuance of section 6 of the Munitions of War (Amendment) Act of 1916. In addition the report made in December, 1915, to the British Ministry of Munitions, by the mission appointed by the director general of recruiting for munitions work, on the "Output of Munitions in France," is reproduced in full. The bulletin concludes with a statement of the nature and functions of juvenile employment committees in Great Britain, taken from the Board of Trade Labor Gazette for February, 1917.

SUMMARY OF THE COMMITTEE'S CONCLUSIONS.

In its study of *Employment of women* in munition factories (Memorandum No. 4), the committee considered five matters which, apart from questions of wages, concern the health and industrial output of the workers: (1) The period of employment (including night work, length of hours, overtime, etc.); (2) rest pauses and provisions of meals; (3) sanitary conditions of the factory; (4) physical condition of women workers; and (5) questions of management and supervision. Recognizing that the night work of women in factories, after almost a century of disuse, has of necessity been revived by the war, the committee directed its efforts to the consideration of those safeguards which would reduce its risks to the minimum. Evidence of the merits of continuous work as against weekly, fortnightly, or monthly change of shifts being somewhat conflicting, the committee concluded that the matter is one which must be largely dealt with locally on social considerations. It was stated by some managers and foremen that the last few hours of a 12-hour night shift yield little output, and inspection by the committee indicated the relative failure of these hours. The employment of women at night calls for particular care and supervision and adequate pauses for rest and meals are indispensable.

Conditions of housing and of transit to and from work are mentioned as contributing to the fatigue of the workers, for "where home conditions are bad, as they frequently are, where a long working day is aggravated by long hours of traveling, and where, in addition, housing accommodation is inadequate, family life is defaced beyond recognition." There should be in the matter of hours of labor for women little conflict between the interests of the home and the interests of munitions, for the hours which conduce most to a satisfactory home life and to health conduce most to output. Long hours, particularly when they are worked during the night, are perhaps the chief factors in fatigue, and it is held that in the interest of output and health alike they should be restricted within proper limits, that there should be suitable pauses for rest during the working period, and that there should be adequate cessation from work at each week end in addition to periodic holidays.

The three systems of employment most commonly adopted for women in munition factories were found to be one shift of 13 to 14 hours (the overtime system), two shifts of 12 hours, and three shifts of 8 hours. The last system appears to yield the best results in the

long run, for "the strain of night work, indeed strain generally, is sensibly diminished, greater vigor and work is maintained throughout the shift, less time is lost by unpunctuality or illness, and there is less liability to accident." The flagging output which appears to characterize the last hours of a 12-hour night shift seems similarly characteristic of the last hours of overtime during the day, and it is stated that the disadvantages of the overtime system are being increasingly recognized by employers. This seems to have been forced upon some by the resultant fatigue, illness, and bad time keeping (failure to work full time) of the workers, and upon others by some accidental shortening of the day which has shown that the loss of hours has carried with it no diminution in output. The adoption of the three-shift system, without overtime, is recommended wherever a sufficient supply of labor is available.

Declaring that pauses, well distributed and adapted in length to the needs of women workers, are of the highest value in averting breakdown and in giving an impetus to output, the committee is of the opinion that a portion of Saturday and the whole of Sunday should be available for rest, and that the periodic factory holiday should not, on any account, be omitted. The advantages of well-managed industrial canteens in convenient proximity to workshops are emphasized, and facilities, especially during the night, for rest in cases of fainting and other temporary illness are urged. Considerable importance is attached to the necessity of maintaining the sanitary condition of the factory, including adequate wash rooms and toilet facilities, for "the effect upon the health and energy of women and girls which results from clean, bright, and airy work-rooms, well warmed in winter, can hardly be exaggerated. Cleanliness and good order contribute to increased output as well as to the discipline and morale of the factory." On the ground that the nature of a woman's work should be determined with due regard to its effect on her immediate and future health, it is suggested that inattention in this regard may cause, or at least accentuate, certain ailments and forms of physical disability to which women are liable, among which are noted (1) disturbances of digestion, (2) anemia, (3) headaches, (4) nervous exhaustion, (5) muscular pain and weakness, flat-foot, etc., (6) derangement of special physiological functions. To detect minor ailments and incipient or actual disease, provision for the examination by a medical woman of all applicants for employment is recommended.

In view of abundant evidence of the necessity of wise and suitable arrangements for the management and supervision of women's labor, the committee concluded that there is hardly a condition of greater importance than this in respect both of smooth working and of maximum output, and therefore recommended that in all cases where

women are employed consideration be given by the management to the appointment of forewomen, nurses, and welfare supervisors whose position and status should be properly assured and whose duties should be prescribed.

Memorandum No. 13 relates to *Juvenile employment*. This is one of the war problems confronting the British Ministry of Munitions, not so much in textile trades, where under the Factory and Workshops Act the employment of children has been regulated for many years, but more particularly in certain nontextile processes, including the manufacture of percussion caps and cartridges and in other occupations incident to the manufacture of war supplies. According to this memorandum, the committee regards it as extremely important that the nation, at a time when war is destroying so much of its manhood, should guard the rising generation not only against immediate breakdown but also against the imposition of strains which may stunt future growth and development. Although signs of immediate breakdown are not generally apparent, the committee quotes from the annual report for 1915 of the chief inspector of factories to indicate the evil effects of long hours of work by day or night.

Conditions outside the factories, it is admitted, contribute to the fatigue of juvenile workers, and it has to be remembered that boys and girls need sufficient reserve energy not only for the maintenance of health but for growth. "Even under normal conditions there is some danger of juvenile employment adversely affecting physique, and this danger is materially increased by the present conditions of employment."

Opportunity for recreation is regarded as highly important and that portion of the report of the chief inspector of factories which states that requests for Saturday afternoon work have become less common and that there seems to be a more general recognition of the advantage of the week-end rest is commended. "Recreation is necessary not only for the physical well-being of the boys and girls but also as a healthy relief from the monotony of work."

The prevalence of night work prompted the committee to give some attention to the question of sleep, and it was found that many of the children workers were suffering curtailment of this important means of recuperation.

The exigencies of war have led the secretary of state to relax the restrictions governing the employment of boys and girls under 18 years of age, as provided in the Factory and Workshops Act, 1901. Under that act such children may be employed 60 hours a week, and, subject to some exceptions in the case of boys, all night work and Sunday work is prohibited, as also is overtime. The memorandum notes, however, that the weekly hours have frequently been increased

to 67; night work has been common; Sunday work has also been allowed.

An extension of weekly hours beyond 60 can be obtained only by increasing the length of the working day or by reducing the week-end rest; and since the committee believes that the strain thus imposed would not be justified except in rare instances, it strongly recommends that every effort should be made to restrict the employment of all boys under 16 within the limits of 60 hours, even at the cost of some inconvenience to male labor. As to the employment of girls, it is stated that at a number of factories the three-shift system has been introduced, and in works where this has not been found practicable the weekly hours have frequently been kept below 60.

The committee does not recommend a prohibition of the extension of daily hours of labor beyond the 12 (8 on Saturdays) provided in the Factory and Workshops Act, but suggests that such extension, if the weekly hours are limited to 60, must be made by a corresponding reduction in the hours of work on Saturday or on other days of the week, thus providing an opportunity for exercise in the open air which might not otherwise be available. Sudden emergencies in factory operation may demand an extension of the hours beyond 12, and such an extension, it is believed, will not do harm, provided (*a*) that maximum weekly hours already recommended are not exceeded and that (*b*) overtime employment is concentrated on not more than three evenings in any week and, so far as possible, not on consecutive evenings.

Comparatively little work is performed by children on Sunday, according to the memorandum, and the argument in favor of the elimination of Sunday work, as set forth in its Memorandum No. 1 on "Sunday labor," is emphasized. As to night work, attention is called to serious objections to it as outlined in the memoranda on "Employment of women" and "Hours of work," and it is stated that "girls under 18 and boys under 16 should only be employed at night if other labor can not be obtained. Wherever possible it should be stopped." Working for a continuous period of as much as five hours (the maximum legal period) without a break, even though brief, to afford opportunity for rest and recovery from fatigue and the monotony of work and for refreshment is deprecated. In addition to the ordinary holidays, boys and girls are likely to benefit greatly by occasional opportunities for a holiday of longer duration.

Welfare supervision of girls seems to have received more attention than such work among boys, but a tendency of employers to regard the health of boys with greater consideration is noted. If fatigue, sickness, or home troubles cause boys to leave work after a few days of employment, it becomes necessary to ascertain the reasons underlying discontent, and for this purpose the welfare department of the

Ministry of Munitions has recommended the deputizing of a welfare supervisor to study the problem and outlines his duties as follows:

1. To become acquainted with all boys when first employed, to be present at the medical examination by the factory surgeon, to note any matters needing attention, to arrange for the reexamination of special cases.
2. To visit cases of sickness and to investigate other causes of irregular attendance and of complaints in regard to work.
3. To receive complaints made by boys and their parents and to dispose of misunderstandings.
4. To be consulted before any boy is dismissed.
5. To watch the conditions of housing and transit and the facilities for obtaining food.
6. To supervise and promote arrangements for saving.
7. To seek facilities for recreation and to organize their use. In one case, quoted by a witness, an excellent recreation ground was provided by a firm, but was at present unused, largely owing to the lack of anyone to organize its use.

It is believed important to provide means for instructing the children in the best methods of performing their work, and also in its aim and purpose, in order to stimulate interest and relieve monotony as well as to make them proficient.

The necessity for adequate canteen facilities, whereby good food may be obtained and eaten under restful conditions, is emphasized.

In order that the high wages commonly earned by boys and girls under present conditions may not encourage undue indulgence, extravagance, and thriftlessness, the committee urges that means be adopted to induce the children to save a portion of their earnings, the collection of deposits being placed in the hands of the welfare supervisor or some other person who through his acquaintance with the boy and his home can advise him as to the amount which may properly be put by from one week to another. This memorandum by the Health of Munition Workers Committee does not indicate the extent of juvenile labor either in normal times or as a result of the unusual demands for employment of children created by the war. Such information, so far as available, is included in the annual report of the chief medical officer of the board of education for 1915, who states that under normal conditions about 450,000 children pass out of the elementary schools annually at or about the age of 14, and that this figure appears to have been far exceeded during 1915 and since. This report suggests that approximately 45,000 children, ranging in age from 12 to 15 years, in excess of the normal number permanently left school for employment during the year 1915, and that the extent of juvenile employment existing to-day is probably much greater than during the year reviewed. Moreover, this figure, it is explained, refers almost exclusively to those legally entitled to leave school and does not include the large number of children normally liable to attend school but excused for longer or shorter peri-

ods by local education authorities for agricultural and other employment, nor does it include half-timers.

More definite information as to agricultural employment appears to have been gathered, indicating that on May 31, 1916, not less than 15,000 children were excused for the purpose of whole-time employment alone. A tendency to excuse for employment children under 12 is noted, and the report states that it is very doubtful whether children under 12 thus excused will ever return to school. That children have withdrawn from school since the outbreak of the war at an earlier age than that contemplated by the attendance laws appears evident, in the opinion of the chief medical officer. In this situation the children would seem to be exposed to conditions of strain detrimental to physical welfare, and as a means to conserve their health the following recommendations are presented as essential:

1. Careful examination of children leaving school.
2. Similar examination of those applying for labor certificates.
3. Medical supervision of children employed out of school hours.
4. Coordination of school medical work with juvenile employment committees.

This latter recommendation is believed to be important because if carried out children may be directed to occupations suitable to their mental and physical capacities. This point has been emphasized in the excerpt above quoted from the memorandum of the Health of Munition Workers Committee.

REPLACEMENT OF MEN BY WOMEN IN INDUSTRY IN GREAT BRITAIN.

Comprehensive studies of the effects of the war upon industrial conditions in Great Britain have been carried on under the direction of the British Association for the Advancement of Science. Two reports have so far been published. The second, with the title "Labor, Finance, and the War,"¹ contains a chapter upon the replacement of men by women during the war, down to the spring of 1916. This chapter presents detailed reports for the various trades covered, based upon investigations made in London, Birmingham, Glasgow, and other centers. As regards the character and scope of these investigations, the report says:

They do not claim to give, in any instance, an exhaustive account of the industry; but, as far as possible, representative centers and firms have been selected, and the information, so far as it goes, is believed to be accurate and illustrative of the conditions prevailing in the trades and industries in question.

As the object of the inquiry was to reveal the nature and extent of the replacement of men by women, those industries have been selected in which such replacement has been found to be frequent or of a significant nature. Consequently, engineering and metals are most exhaustively treated. For the same reason, the cotton industry is omitted, but one small report on textiles in Glasgow is included to illustrate the effect on the industry of the competition of munitions. In "nonindustrial" occupations clerical work, distributive trades, and transport have been the most fruitful fields of inquiry.

The detailed reports referred to are presented below in summary form. For the most part, the wording of the original has been closely followed.

THE INCREASE IN THE EMPLOYMENT OF WOMEN.

Over half a million women were added to the ranks of labor between the outbreak of war and the spring of 1916. Other changes, more important than the mere addition to numbers, have also taken place. Alterations in demand and the shortage of men have brought about transference of women from process to process and from industry to industry, with the result that over half a million women are now directly replacing men.

In July, 1914, the number of occupied women in the United Kingdom was 5,020,000. In mid-April, 1916, the number had risen to 5,490,000. This was an increase in 21 months of war of 470,000. This is about five times the normal peace-time increase, which for such a period would have been only about 94,830.

¹ Labor, Finance, and the War, edited by A. W. Kirkaldy. Published by authority of the Council of the British Association for the Advancement of Science. London (1916).

This accelerated rate of increase is not due entirely to the recruiting of additional women into industry—i. e., of women entering industry for the first time. Probably fewer women have married; certainly fewer women have retired from industry on marriage, and many former workers who had retired from industry have returned for the period of the war.

The normal increase of occupied females in peace times is not, of course, proportionately distributed over all industries. In the intercensal period 1901–1911 there had been an actual decrease in the number of females in domestic service, agriculture, and clothing. The decline in domestic service and agriculture continued during the war, and there has also been a decline in the number of females in the printing and allied trades, due to scarcity of paper and general slackness in that industry. On the other hand, there has been a fresh influx of women into the clothing trades as a result of increased Government orders for clothing.

In all other groups of industry the war has increased the employment of women. The increase has been greatest in what may be called the “nonindustrial” occupations, banking and finance leading, with an increase of 242.7 per cent, as compared with 1914, and transport next, with 168.7 per cent. Among the strictly “industrial” occupations the group of metal industries shows the greatest increase in the employment of females, 88 per cent, with the chemical group closely following with an increase of 84 per cent over the 1914 figures. The other industrial groups show a relatively low rate of increase, the advance for all “industrial” occupations being only 13.2 per cent.

THE REPLACEMENT OF MEN BY WOMEN.

The number of women replacing men in various occupations is larger than the number (470,000) given above as representing the total increase in the employment of women since the war began, as many women have been transferred from their normal occupations to do men’s work. As a result of these two factors, it is estimated that in April, 1916, there were 523,000 women directly replacing men and 737,000 replacing men either directly or indirectly. This has involved changes in the relative numbers of men and women engaged in different occupations.

Even in normal times such changes have taken place to a noticeable degree. A comparative study of the figures in a series of census reports from 1861 to 1911 shows that in most groups of industries women have been increasing relatively to men. In a few, however, the proportion of men to women has risen. This is true of domestic service, transport, agriculture, metals, paper and printing, and dress.

It is not possible to carry on this comparison into 1916, but the weight of the evidence at hand leads to the belief that in all groups

of occupations, with the possible exception of printing, the number of women to each man has increased (or men to women decreased) since the beginning of the war. While in most cases this is simply a continuation of a tendency already in process before the war, the change in some instances has been remarkably abrupt. This point is brought out in the following table, which shows the number of women in different industries who are performing work in substitution of men and the number directly replacing men:

INDUSTRIAL POPULATION, BY SEX, JULY, 1914, AND INCREASE IN NUMBER OF FEMALE EMPLOYEES, FEMALES ON WORK IN SUBSTITUTION OF MALE WORKERS, AND NUMBER OF WOMEN DIRECTLY REPLACING MEN, DECEMBER, 1915, AND APRIL, 1916.¹

Occupational group.	Estimated industrial population, July, 1914.		Increase in females.		Estimated number of females on work in substitution of males.		Number of women directly replacing men.	
	Males.	Females.	December, 1915.	April, 1916.	December, 1915.	April, 1916.	December, 1915.	April, 1916.
Building.....	967,000	7,000	3,600	6,400	6,100	8,800	700	6,500
Mines and quarries.....	1,220,000	9,000	800	2,300	2,700	4,400	1,300	3,100
Metal trades.....	1,642,000	144,000	71,700	126,900	70,300	117,400	16,700	59,200
Chemical trades.....	160,000	40,000	19,400	33,600	9,600	16,200	7,700	15,600
Textile trades.....	608,000	851,000	29,700	27,800	57,600	73,400	23,000	35,500
Clothing.....	286,000	654,000	6,700	11,700	30,400	42,300	13,300	18,800
Food.....	350,000	170,000	31,700	30,900	29,500	35,000	21,300	32,500
Paper and printing.....	301,000	169,000	.....	2,900	22,500	23,600	7,300	11,700
Wood.....	282,000	39,000	7,400	13,200	11,400	17,400	4,600	10,000
Other.....	444,000	96,000	25,400	35,700	27,000	37,400	13,100	24,500
Total industrial occupations.....	6,300,000	2,180,000	196,500	287,500	267,100	375,900	109,000	217,400
Commercial.....	1,057,000	474,500	.....	181,000	.....	189,000	.....	168,000
Professional.....	174,000	68,500	.....	13,000	.....	16,000	.....	13,000
Banking and finance.....	179,000	9,500	.....	23,000	.....	25,000	.....	21,000
Public entertainments.....	181,000	172,000	.....	14,000	.....	32,000	.....	27,000
Transport.....	1,032,000	9,500	.....	16,000	.....	18,000	.....	17,000
Civil service.....	231,000	63,000	.....	29,000	.....	31,000	.....	29,000
Arsenals, dockyards, etc.	71,000	2,000	.....	13,000	.....	13,000	.....	13,000
Local government (including teachers).....	477,000	184,000	.....	21,000	.....	37,000	.....	18,000
Total nonindustrial occupations.....	3,402,000	983,000	.....	310,000	.....	361,000	.....	306,000
All occupations.....	9,702,000	3,163,000	.....	597,000	.....	736,900	.....	523,000

¹ The figures in this table are as given in the original report, but in some instances the totals are not the sums of the items given.

² Decrease.

1. ENGINEERING AND SHIPBUILDING TRADES—GLASGOW AND THE CLYDE DISTRICT.

Prior to the outbreak of the war the engineering and shipbuilding trades in this district were practically confined to male workers, the census figures of 1911 showing 219,000 males as against only 5,000 females, of whom more than 2,000 were in sewing-machine manufacture.

Since the war there has been a large influx of women. Apparently this represents additional labor and is not in substitution of men

who have enlisted, the number of males not having decreased. In the whole Clyde district, at the middle of June, 1916, some 18,500 women were employed in the metal trades. Of these, roughly, 12,000 were engaged in shell making and shell filling, 4,700 in sewing-machine manufacture for war purposes, and the remaining 1,800 in ship-building, general engineering, and miscellaneous metal trades (including scientific instrument manufacture).

It is in this latter group of 1,800 workers that the women have been deliberately introduced to work formerly done by men, under the "dilution" schemes agreed on by the Government, the employers, and the trade-unions. Existing plans call for the ultimate introduction of some 4,500 women. Most of this work is unskilled or only semiskilled.

The other women are for the most part not engaged in work done by men in this district prior to the war, but most of it, with the exception of shell filling, would have undoubtedly been regarded in prewar days as properly "men's" work.

Most of the women have come from the immediate locality where employed, very few from a distance. Thus the matter of their housing has not been serious. A large proportion were formerly unoccupied, about one-fifth being married, but most all of them are from working-class homes.

The higher wages offered in the metal trades have attracted women from other employments, and this has caused an appreciable shortage of labor in other industries, particularly in the textile trades.

WORK DONE BY WOMEN.

(1) *Shell factories*.—Women are engaged on all the processes in the production of shells after the rough forging, from the small "2-pounder" for antiaircraft guns, to the 8-inch H. E. projectile, which is the largest so far worked on by women in this district. The main operations done by women number between 20 and 30. Despite highly automatic machinery, a considerable amount of attention and skill and also of manual labor is required by the machine workers. For example, one woman rough-turned 100 shells, each weighing 32 pounds, in a 10-hour shift. This entailed lifting a shell in and out of the machine every six minutes and also the heavy labor of tightening up the chuck which grips the shell.

Work on shell fuses, such as capstan turning, boring, milling, screwing, drilling and tapping, fitting and assembling, is also done by women in the district, but not apparently to any appreciable extent.

Shell filling is carried on extensively by women. Little information on the detailed processes performed was obtained except that the work consisted in filling cartridges with cordite and NCT accessory processes, and assembling H. E. shells; but a considerable proportion of the work appears to be of a heavy laboring type. One unveri-

fied estimate gave 200 lifts up and 200 lifts down of a box of shells weighing about 120 pounds, between the floor and a table about 2 feet 6 inches in height, during a day of 8½ hours. The lifting is done by two packers to each box. Women are also employed in shell-filling factories outside the danger area in laboring and packing. The training period for all this work is short, usually one or two weeks.

(2) *General engineering*.—The dilution of labor in the engineering and shipbuilding trades has not been in operation to a sufficient extent to give more than a tentative indication of how far women will succeed in doing work hitherto done by men. Much of the work done by them so far is laboring of a kind hitherto and still done by laborers in all classes of engineering. This unskilled work is very varied and the training period is very short—a matter of a week or two. In the case of semiskilled and skilled work, which is, more strictly, “dilution” labor, the training period is naturally much longer, extending from two to four months. The policy generally adopted in these classes of work has been that of “upgrading,” i. e., the women start on the simplest class of work and gradually go on to a higher class. Women are at present working at drilling, tapping, milling, slotting, boring, planing and shaping machines, turning lathes, fitting (file and chisel), marking off, etc. Where the work is skilled, the operations are usually subdivided, and the women do the simplest work, and always under the supervision of skilled men. For example, in a machine-tool shop, women are scraping the beds of lathes and filing off the rough edges of gear boxes; but the men in each case finish the work, which in prewar days was entirely done by them. In this sense, the processes done by women are dissimilar to those done by skilled men. In semiskilled work, this does not hold true to the same extent, and many of the processes are done as formerly.

(3) *Scientific instrument making*.—Not many women are engaged in this branch of the metal trades. The processes done are machining, filing, scale engraving, polishing lenses, assembling, mounting, cleaning, inspecting, testing and adjusting, and work in the store. Much of this work is highly skilled, and requires very delicate handling. But, although in most processes the women are doing work hitherto done by skilled men, many of these processes have been subdivided. The women in all cases are doing the simpler forms of work and, in every case, under supervision of skilled men. The period of training in this class of work is about four months.

The following table shows the various operations performed by women in connection with the manufacture of shells and in engineering shops:

(a) WORK DONE BY WOMEN ON SHELLS.

On shell body.

1. Cutting off open end.
2. Centering.
3. Rough-turning.

4. Transfer marks body to base.
5. Rough face base leaving center.
6. Rough bore.
7. Finish bore.
8. Bore recess and finish face for nose.
9. Bore and tap for fixing screw.
10. Mill thread.

After nose fixed.

11. Finish, turn, and form outside of complete shell.
12. Weigh and mark excess weight.
13. Cut base for weight.
14. Groove and wave.
15. Recess for base plate.
16. Rivet base plate and skim base.
17. Turn copper band.

On nose preparatory to fixing.

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Cut off. 2. Rough bore. 3. Rough cup. | $\left\{ \begin{array}{l} 4. \text{ Finish, taper, bore, and face.} \\ 5. \text{ Turn and recess for screwing.} \\ 6. \text{ Rough form nose.} \end{array} \right.$ |
|--|---|

Examining in addition, and washing, polishing, and lacquering.

Fuses.

Capstan turning, boring, drilling, milling, and screwing; tapping brass work, marking, stamping, soldering, tinning, washing, and assembling.

Shell filling.

Filling cartridges with cordite and NCT, accessory processes, assembling H. E. shells, and packing and laboring inside and outside danger zone.

(b) WORK DONE BY WOMEN IN ENGINEERING SHOPS.

Aeroplane and balloon work.

Screwing, milling, and boring nuts and bolts. Screwing tie rods. Drilling and turning buckles and fork joints. Punching aeroplane parts. Vertical boring. Turning (turret and center lathes). Filing. Stretching and sewing canvas. Painting, solutioning, and varnishing. Balloon making.

General and electrical engineering shops.

Boring, drilling, slotting, planing, tapping, shaping, and milling machines. Automatic, turret, center, and chuck lathes. Buffing and grinding and gear-cutting machines. Hack saw. Hand filing. Scraping and bedding slides. Working at bench and surface table. Brass turning and finishing. Driving and following cranes. Core making. Iron and brass dressing. Hammermen's helpers. Boiler makers' helpers. Rivet heating. Armature winding. Tinning and commutator fitting. Boiler firing and light laboring. "Slap-up" painting and plate-edge machines.

Motor-car works.

Light turning, and turning and screwing on semi and fully automatic lathes. Laboring.

Shipyards.

Attending plate rolling and joggling machines. Backhanding angle irons. Flanging. Fitting, upholstering, and polishing. Drillers' and calkers' assistants. Plumbers' assistants. Platers' helpers. Rivet heaters. Holders-on. Crane driving. Catch girls. Firing plate furnace. General laboring (gathering scrap and cleaning up vessels in construction).

Tube works.

Cutting, screwing, and stamping small tubes; oiling and stacking tubes. Stove work. Testing tubes. Staving tubes.

Scientific instrument makers.

Machining, filing, scale engraving, polishing lenses, assembling, mounting, cleaning, inspecting, testing, adjusting, and store work.

SHOP ORGANIZATION.

Under normal conditions, with male workers only, shop organization in general engineering work is simple. The individual male engineer, skilled and semiskilled, is, as a rule, directly responsible to his foreman, who, in turn, is responsible for organization, as well as for discipline. Except on special work there is little inspection. Generally the setting up of machines and the grinding of tools are done by the men who work with them, although there are a few exceptions in the case of semiskilled men.

With the introduction of women there has been a decided change. In shell factories, general engineering shops, and scientific instrument shops, the women work in squads, which may number, according to the operation and the shop, from 2 or 3 to over 30. In the engineering shops the women sometimes form part of a mixed squad under a "charge" or "leading hand." In all cases they are supervised by men, usually skilled engineers, who teach them the work, set up the machines, and grind or supply the cutting tools. The supervisors, in turn, are under a foreman responsible for the organization of production and output. There is always also a woman superintendent, who is solely concerned with the discipline of the women.

Setting up machines and grinding tools.—The setting up of the machines is, without exception, the work of the supervisors, but occasionally, and particularly in those processes involving frequent tool setting, a woman will "set up" rather than stand idly waiting. Much the same is true with regard to the grinding of cutting tools, although in one national projectile factory the grinding of tools not required to be exact in size or shape is being done by women. There are also women working grinding machines, in which the tools are fixed automatically in the required positions, and hence little skill is involved.

Inspection.—In addition to official inspectors, there are in the shell factories women inspectors—or "viewers"—who gauge the work at various stages in order to get faults rectified, or if the fault

is irremediable, to scrap the work without wasting further time on it. Some of the workers complain that those inspectors who have no experience of the machining often fail to find the source of the error and blame the wrong operator.

Flying squads.—In at least two factories making 4.5-inch shells there is an organized group of workers hitherto strange to engineering shops in the district, each of whom has been taught every operation on the shell, who are prepared to fill the place of those off work for any reason. This group, called a "flying squad," consists of women workers, in one case in the proportion of 12 women to every 11 machines.

Laboring.—Light laboring work is largely performed by women, e. g., sweeping floors and lifting shells in and out of machines. In some factories they remove metal cuttings; in others this is done by men or boys. The removal of shells in quantities is done almost invariably by men.

Opportunities of rising to better posts.—The opportunities of promotion are not many, and the women at the machines, as a whole, do not want it, as it usually entails financial loss.

Machinery.—For the work on shells now being done in this district for the first time, a very large amount of new plant has been brought in. One competent observer said that, for the first time in the history of the west of Scotland, engineering shops had been filled with modern machine tools. It is doubtful if this is due to the introduction of women. It is probable that it would have been done in any case, to meet the necessity of producing huge quantities of a highly standardized product. Dilution of labor in general engineering has taken place in a relatively small degree, and its effect so far on the introduction of new plant has been inappreciable.

General conclusions in regard to end of war.—The extent to which processes at present performed by women are identical or even similar in character to those done by men prior to the war is very limited. In the case of skilled work it is almost nonexistent; and while there is a considerable amount of semiskilled work being done by women, it is under the supervision of men and is largely confined to repetition work.

On the other hand, the new and highly automatic type of machinery introduced into the shell factories can be adapted to general engineering work, and especially to the production of "standardized" and "interchangeable" parts. This will strengthen the general tendency, already rapidly growing before the war, to specialization in production and subdivision of labor. When the war ends, manufacturers will find to their hand an organization suited to its use and a supply of labor experienced in handling it. Such valuable material will not readily be thrown to the scrap heap; rather will

it be employed in an expansion of those branches of engineering organized on lines of specialized labor and automatic production. It may even create new industries.

HOURS OF LABOR.

The working hours of women as of men in the metal trades are based usually on the two-shift system—a day shift and a night shift. In shell factories, night work by women is common, but in general engineering women, as a rule, work only on the day shift.

Day shift.—On the day shift, the normal working week of women varies from 44 to 56 hours, with 54 the most common. The daily hours are longest in certain shell factories—from 6 a. m. to 6 p. m., with two breaks for meals, one of 50 minutes and the other of 60 minutes. But in one shell factory the shift was only 8 hours, including an hour meal period.

Generally, outside the shell-making industry, and sometimes within it, the day shift is $9\frac{1}{2}$ hours, exclusive of two meal breaks, one of 45 minutes and the other of 60 minutes. This is the regular working-day in the district for men. Some firms, however, in order that the men and women may be kept separate, provide that the women start later and leave earlier than the men.

A new practice for the industry has been the introduction of rest periods for women in addition to the meal-hour breaks. Two such rest periods of from 10 to 15 minutes each are now in force in most shell factories and several general engineering shops. In some cases, this arrangement applies also to the men.

Night shift.—Where night shifts are worked, they are in length from 12 to $12\frac{1}{2}$ hours, with two meal breaks of from 30 to 45 minutes each. In most cases, two short breaks of from 10 to 15 minutes are allowed to women. Women as a rule work the same hours in the night shift as men, but experience has shown that they do not take kindly to night work. After some experimenting the normal arrangement has now settled down in their case to alternate fortnights of day and night shift.

Overtime and Sunday work.—A considerable amount of overtime is worked by women in both shell factories and general engineering shops. Generally the practice is to work three hours on three nights per week; and, in one shop at least, the women work on alternate Saturday afternoons. Sunday work is, on the whole, rare. Only one firm is known to employ its ordinary workers on Sundays, and in this case alternate Sunday day shifts are worked by the women in conjunction with alternate Saturday afternoon shifts.

Time keeping.—Both employers and women superintendents were generally agreed that women are, on the whole, excellent timekeepers. Not only are they punctual in their attendance at starting time, but

they are seldom off work for any lengthy period. Night-shift work accounts for more broken time than day-shift work, especially among married women. In addition to the influences which affect men equally with women, there is the tendency on the part of women to take the opportunity when on night shift to use the hours when they should be asleep for the performance of domestic duties. This tendency is naturally strongest in the case of married women who have children to look after, and some employers, recognizing the fact, have done their best to exclude married women from their works.

There was general agreement also that women are, on the whole, better timekeepers than men. It was not possible to test this opinion satisfactorily, but the returns by one firm for one week, so far as they go, support the view.

General observations regarding hours of labor.—The inquiry has shown that not only do women nominally work, roughly, the same hours as men, but their actual time keeping compares very favorably with that of men. In an industry making under the best conditions a heavy call upon physical powers, this result is striking. It may be that psychical factors are at work which, for the time being, prevent physical effects from revealing themselves, and on that account it is well to suspend final judgment on the ability of women to work the same hours as men in this industry. It has to be remembered, too, that already modifications (e. g., short rest breaks) have been made in prewar conditions. But so far as experience goes, any unfitness of women to work the normal day hours in the engineering trades is not appreciable.

RATES OF WAGES AND EARNINGS.

The wage rates of women 18 years and over in the engineering trades are governed generally by Government order under the Munitions Act.

Time rates.—The time rate for women in shell factories is based on £1 (\$4.87) per week for a 54-hour week—the usual working hours in the district. This works out, roughly, at 4½ pence (9.1 cents) per hour. Overtime is paid generally at time and a half, and, in cases, all weekly excess over the usual 54 hours is regarded as overtime. Sundays (in the rare cases where worked) are paid for at double time. On night shift, meal hours are paid for, and usually the allowance of 1 shilling (24.3 cents) per shift to men is also made to women.

The time rates paid to women in other than shell factories vary considerably. Those employed on skilled work do not, in many cases, perform all the operations that were formerly done by men, and hence the rate paid to them is not always the men's rate. Shop committees of the men have usually come to an agreement with the employers and the Dilution Commissioners upon training periods varying between two and five months in length (the upper limit is

rare), during which women, employed on skilled and, in a few cases, semiskilled men's work, starting from a minimum time wage of 20 shillings (\$4.87) per week, receive gradually increasing rates until, when the training period ends, the men's time rate is paid. But, dilution has been too recently introduced for semiskilled and skilled men's time rates to be generally paid to women. On unskilled work—laboring of all kinds—the men's time rate is not generally paid.

In establishments where the work done by women is similar to work done by them prior to the war, the rates have not generally levelled up to the war minimum, with the result that, in one factory at least, two classes of work—the one done by women prior to the war and the other not, involving apparently about equal skill—are paid for at widely varying time rates.

Piece rates and premium bonus systems.—Piece rates have not been widely applied to women's work except in shell factories, and even in these the practice is not universal. Premium bonus systems have only in rare cases, in general engineering, been applied, and not at all, so far as the inquiry has shown, in shell factories. Other forms of bonus are, however, in operation in certain shell factories. Some have adopted a bonus on output, and in several departments of one factory a bonus is given to the woman turning out the maximum number of shells in the shift or in the week. This form of bonus is strongly objected to by male trade-unionists on the ground that it tends to "speeding up," with ultimate reduction in piece rates; serious injury to the health of the worker; and a weakening of common action among the workers. To the woman worker, undoubtedly, this bonus is a strong temptation to overexertion. One example was given where a woman had won a "shift" bonus by turning out 132 shells (nose profiling) in one shift where the normal output was 100 shells, and had had, as a result, to remain in bed on the following day. Another kind of bonus takes the form of a payment to all workers who keep full time. From the male trade-unionist point of view, this bonus is not nearly so objectionable as the bonus on output.

No general comparison of women's piece rates with the piece rates of men in shell work would be useful, since the work done is not the same. Actual rates for women were procured in a few cases; but the significance of a piece rate is seen in the earnings that it yields in a given time and not in itself, and the few examples collected are not here stated.

Earnings of women.—The actual earnings of women are, on the whole, considerably above the 20-shillings (\$4.87) minimum. In shell factories the minimum is generally exceeded and, over a large proportion of the women employed therein, much exceeded. This is due (1) to good time keeping; (2) to the amount of overtime worked; and (3), principally, to the prevalence of piecework. Actual cases

came under notice of women earning in shell factories as much as £5 (\$24.33). It is true that earnings above £3 (\$14.60) are not generally reached; but in at least one factory employing a large number of women, this amount is often exceeded, and there the average earnings are slightly over £2 (\$9.73). Earnings in general engineering shops are considerably lower than in shell factories, due principally to the absence of piecework in the former, but several cases of women earning on the average over 30 shillings (\$7.30) per week were observed.¹

Comparative earnings of men and women.—Not much material has as yet been collected on this subject. From the information available, it appears that men, generally, earn more than women. The difference is chiefly marked in the case of skilled labor, as might be expected from the fact that training here counts for more and women have not yet had opportunity for extended training. At best, however, comparison is difficult as, even in shell factories, men and women are rarely engaged on the same kind of operation.

EFFICIENCY OF WOMAN LABOR.

In dealing with the efficiency of female labor in the metal trades, it has to be borne carefully in mind that many of the women had before the war no experience of working machines, and that the experience of those who had worked machines (e. g., textile workers) was of a very different kind from that necessary to skilled engineering work. Where simple laboring is concerned, apart from physical disabilities, women might be reasonably expected to become quickly proficient; and in the case of work done on automatic machines, where technical skill is subordinate to attention, carefulness, and dexterity, they might also be expected to reach a fair level of proficiency in a short time.

Such expectations have undoubtedly been satisfied. There is general agreement that in unskilled and semiskilled work, women have very quickly achieved success. In regularity, application, accuracy, and finish, they have proved very satisfactory; and the opinions gathered on their work amply confirm what their earnings when on piece rates indicate. Where skilled work—requiring, in addition to the above-mentioned virtues, technical knowledge, experience, adaptability, and initiative—is concerned, it is too early to speak confidently. So far as opinion has been formed, it appears to be adverse, but difference in organization and the short time during which women have been employed upon such work do not permit of any final conclusions being drawn. Any inferences which can be made from the slender evidence seem, however, to point to

¹ See also "Employment and remuneration of women in Great Britain, p. 71."

women—should they continue in the metal trades after the war—entering into competition with men, so far as skilled work is concerned, under methods of organization and mechanical conditions practically unknown in prewar days to the engineering trades in the district.

CONDITIONS OF LABOR AS AFFECTING HEALTH.

The war has broken down the standards regarding the hours of labor of women. Given the necessity for this, it has been the business of the Government authorities to see that these relaxations should react with a minimum of evil results upon health. The difficulty of dealing with the problem has been increased in the Clyde district by the employment of women in the metal trades, where, until the war, their presence was scarcely known. Fortunately the employers have risen to the occasion. The result is that with the lowering of the standards of working hours there has gone the raising of standards in other directions. The significance of this latter fact for the future is probably greater than that of the former.

Hygienic and sanitary conditions of workrooms.—The inquiry has shown that in the important matters of ventilation, light, temperature, and cleanliness, the conditions under which women work in the industry are good. Lavatory and closet accommodation conform generally to the requirements of the Home Office. In one large factory, the absence of hot water from the lavatories was noted. Cloakrooms for the women are provided in all factories. In some the accommodation is rather inadequate and the lighting defective, but, on the whole, the arrangements are satisfactory. In the course of the inquiry the investigators were impressed by the excellent hygienic and sanitary conditions of several of the workshops.

Provisions for meals.—In most works where women are employed the incidence of meal periods is satisfactory; rarely indeed does the interval between them exceed four hours. On the basis of food being taken on the premises the length of the meal interval is also, as a rule, sufficient. Usually three-quarters of an hour for breakfast and one hour for dinner are allowed; on night shift, two intervals of 45 to 50 minutes are, as a rule, allowed. Women working in the danger areas of shell-filling factories are given a quarter of an hour before and a quarter of an hour after meals to change their outer clothing, in addition to the meal interval. This time is paid for. It is clear that these intervals leave little time on day shift and no time on night shift for going to and from home even to those who live close to the works. The evils resulting from carried meals are well known, and the Health of Munition Workers Committee has emphasized the importance of providing well-managed and properly equipped canteens for women workers. Most of the firms employing considerable numbers, and one or two employing small numbers of women in the metal

trades, have either already provided or are providing canteens where hot meals can be taken by the workers at a low cost.

The women do not take full advantage of the canteen. Estimates of the proportion of women taking dinner in different cases give from 7 per cent to 10 per cent, and of those taking a full night meal from 25 per cent to 75 per cent. A considerable number of women, in addition, take one course only or carry "pieces," and take tea or soup in the canteen.

During the two short rest intervals of 10 to 15 minutes given generally, one or two firms provide tea for the women.

Physical strain, fatigue, and liability to accidents.—No sufficient data are yet available on which to form a reliable opinion of the physical or mental effects of engineering work upon women. It is clear that no very serious consequences have yet emerged, and the period during which the women have been employed is too short for less obvious effects to be measured. There is, however, a considerable body of evidence that the work in handling the heavier classes of shells and some kinds of laboring work tax very much the strength of the women. Tackle or assistance of laborers is, except in a few instances, provided where shells of over 40 to 50 pounds in weight are handled; but women, in many cases, complain of the strain of frequent handling of shells of less weight. Moreover, the women in their haste to proceed with their work frequently do not wait for assistance. In ship-building yards, also, the laboring work is trying (e. g., where bogies are pushed and where rubbish is removed from ships by women). The liability of women to pelvic congestion and hernia through lifting weights and prolonged standing was emphasized in the medical opinions given. In this connection it is important to note that at least one firm employing a large number of women has provided seats for them.

Fatigue was referred to by several doctors interviewed as a consequence within their experience of the employment of women in engineering works. On the bad effects of night work upon the women there was general agreement among those interviewed.

No evidence of a greater proportion of accidents among women than among men was secured. Apparently any accidents that have occurred have been slight in character and relatively few in number.

A more serious question has been that of women exposed to risk of industrial disease in handling certain chemical substances. "Doping," dangerous because of the presence of tetrachlorethane in the varnish used, is, where done by women, carried out at widely separated intervals, and then only for an hour or two at a time. In one aeroplane factory, the "doping"—under the same conditions—is done only by men. No cases of injury from "doping" came under

notice. In filling shells with cordite, cases of temporary suffocation rendering artificial respiration necessary have occurred in the district; and in shell-filling factories the use of TNT has resulted in cases of serious illness, accompanied by jaundice, eczema, inflammation of the arms, and pains in the limbs. Picric acid, also used in shell-filling factories, has caused illness, accompanied by nosebleeding; but no serious case was reported. Provision has been made in the factory to which these cases relate for the women attending the Red Cross department in the works when feeling ill. An hour is now allowed as a maximum for this purpose without loss of pay.

Against the foregoing general evidences of deleterious effects upon health have to be set the opinion that, in many cases, the women have improved in bodily condition since entering the engineering industry. Improvement has been marked particularly in the case of women occupied prior to the war in dressmaking, and other employments where the hygienic conditions were not so good as those in which they now work. But a probably more important cause is that many of the women came from low-paid occupations. Good wages have made possible more adequate nourishment and better conditions of life, which have resulted in raising the physical and mental tone of the workers. The economy of high wages appears to have here a practical example.

The general impression left by the inquiry into the conditions of labor in relation to health is that, with the exception of night hours and overtime, they are considerably better than in many other industries in which women are employed. Doubtless the exceptions have been largely responsible for the raising of the standard in other respects, but there appears to be little doubt that firms engaged in the industry have shown a readiness to concern themselves with the welfare of their women workers, which has, unfortunately, not been a marked feature in the history of the factory employment of women. On the point of hours, one observation suggests itself. Notwithstanding the absence of any definite data, a fact which emerges clearly is that night work is ill suited to women. Given the necessary workers, it seems desirable to introduce generally, at the earliest possible moment, the three-shift system, instead of the present two-shift.

TRADE-UNION ORGANIZATION OF WOMEN.

As far as could be ascertained, the number of women in the metal trades who have organized in trade-unions is between 3,000 and 4,000, constituting between 16 and 22 per cent of all the women in these trades. This is a relatively small percentage, but it compares very favorably with the proportion of women organized in any other industry except textiles.

Most of those organized belonged to the National Federation of Women Workers, which enrolls women only. The remainder, as far as known, were distributed among four other "mixed" unions, only one of which—the Dyers and Bleachers—organizes skilled workers. The women have been admitted to the "mixed" unions on the same conditions as men, except for lower minimum contributions with correspondingly reduced benefits and varying kinds of benefit; but as none of these unions held prior to the war or now holds a considerable membership in the engineering industry of the district, this point is relatively unimportant.

Women workers are notoriously difficult to organize. In spite of this severe handicap, the National Federation of Women Workers made a strong and, in the circumstances, very successful effort to organize women munition workers. The initial success has been difficult to maintain.

On the other hand, in the metal trades the class of woman dealt with has been generally of a higher working-class grade than those among which the unions have hitherto worked. This made the membership in the metal trades more stable. The appeal, too, that has been made to the women to organize that they may safeguard the position of the men who have enlisted has been very effective, due doubtless in large measure to the fact that many of the women are related in one way or another to male workers in the industry.

The Amalgamated Society of Engineers decided at an early period of the war, in view of the temporary nature of the introduction of women, not to take them into the society, but to pledge support to the National Federation of Women Workers in any effort it made to organize them. The active members are alive to the advantage of the women being organized, and in most cases would have preferred that a temporary section had been set up for them in their own society. If the women ever get a permanent foothold in the industry, then it is extremely probable that they will be taken into the men's union.

ATTITUDE OF MALE TRADE-UNIONS.

The introduction of women into the engineering and allied trades has been accepted by the trade-unions only on the plea of urgent national necessity, and then not without written guaranties (1) that the women shall go out with the end of the war; (2) that the change shall in no way prejudice the economic position of the men; and (3) that all trade-union rights and customs shall be fully restored at the termination of the war.

Despite the guaranties and the conditions at present in force to safeguard their position, trade-unionists, the rank and file especially,

are convinced that their prewar position is being undermined. It is pointed out that, although in a number of instances the employers themselves have been compelled to introduce women against their will, when once the trouble of training them, and of adjusting the shop organization to the new conditions are over—assuming that certain processes can be economically done by such labor—a large reserve will have been created which, at the first favorable opportunity will be called upon.

It is further maintained that after the war the old struggle against the encroachment by the employer upon the skilled man's ground through the introduction of automatic machinery worked by semi-skilled labor will be resumed with these additional factors operating against the men. The result will only be determined then by the relative strength of the organized forces.

The attitude of the skilled men's trade-unions to women is largely determined by these considerations. With a view to simplifying the return at the end of hostilities to prewar conditions, they prefer that women rather than men should now come into the industry, since the line of sex demarcation is clearer than any line based upon classes of men. On the other hand, if the influx of unskilled and semiskilled labor is to remain or increase after the war, they prefer that men rather than women should now come into the industry on the ground that the former are stronger in their support of trade-unionism, and the probability of a reduction in the skilled man's standard of life by their competition is, therefore, less.

OBSERVATIONS ON POSTWAR CONDITIONS.

Without attempting to prophesy, certain observations regarding the position of women in the metal trades of the Clyde district are suggested by this inquiry. Shipbuilding and marine, structural, and locomotive engineering form the backbone of the metal trades in the area. The destruction caused by the war has largely occurred in just those materials which these main branches of the industry produce. It seems probable, therefore, that following upon the end of the war the present activity in these trades will not lessen considerably, though its direction will be largely changed. This change will make for the employment of larger numbers of skilled men rather than for the continued employment of the unskilled and semiskilled labor which is at present at work on munitions. This fact will make for a return to prewar methods of output in the engineering trades. On the other hand, the purchase of large quantities of automatic machinery, the creation of an organization suited to its use, and the presence of a body of labor trained in handling it will make for the extension of old or the setting up of new industries engaged in repeat production. Women have proved themselves suited to this last class of work and,

given normal hours and no night work, there seems no reason why they should suffer injurious physical or mental effects through undertaking it.

2. ENGINEERING AND METAL TRADES, BIRMINGHAM.

This investigation covered the employment of women in the various engineering and metal trades in Birmingham. These trades employ a far larger number of women than any other group of industries in that city. In 1911 there were 570,000 males and 37,000 females so employed.

Since the war there has been a very great increase in the business of most of these firms and many new munitions workshops have been built. Into these new shops there has been a large influx of women. Many smaller metal firms have turned to the manufacture of cartridge caps and similar war supplies, and many women are employed at such work. In certain plants not engaged in munitions work, and where large numbers of women were employed before the war (such as galvanized hollow ware and fire brick), the women employed have noticeably decreased. In brass foundries, sheet-metal works, and motor works few women are employed, and little change has been made since the war, as, in general, the work is too heavy for any but male workers.

For the most part, the women employed have been in addition to, rather than in substitution of, male labor; but their work has been similar to that formerly done by men.

Very many of the women have come from distant parts of Great Britain. In most cases they had been previously employed at lower paid occupations, such as domestic service and shop assistants. This has caused a labor shortage in such occupations.

WORK DONE BY WOMEN.

The work done by women is nearly all unskilled and semiskilled. This includes capstan lathe and press working and assembling. The machines used are automatic, and the work is repetitive and continuous. Other processes on which women are engaged are the early processes in tool making, saw milling, and boxes (heavy lifting is done by men in this last process). Women are also carriers in fuse huts and sweepers, and are engaged in the stamping room. One factory tried to employ women on "mufflers," but found the strain was too great except for the women who had been Cradley Heath chain makers previously; these last had to be allowed extra nourishment.

Women were also found engaged in cartridge-cap making and on some of the last processes of making shell cases by hydraulic press. The first processes, which were heavier, were done by men. In one

kind of lathe the men and women work together, about one man to four women. The man does the first part of the process, tightening the clutch and the first part of boring.

In a few cases women were doing skilled work after a short period of training. The work was identical in character with that of skilled men, but in many processes was lighter.

SHOP ORGANIZATION.

In many shell factories foremen were at the head of various departments, and the women workers were supervised by women charge hands (who did some work in the department). In the fuse huts the women charge hands supervised five women workers. In other shell factories forewomen supervised the work in certain departments. Where the workshops have arisen with the war, and where the influx of female labor has been very great, supervisors, or women welfare workers, have been appointed to represent the interests of the workers and to investigate all conditions of their work.

Machinery.—In many cases the existing plant needed no alteration when turned to munition purposes. In other cases slight modification and readjustment of parts had to be made. Automatic machinery has been the most striking introduction, but it may not be due to the influx of women into new industries, but to the necessity to increase the output of certain goods.

Opportunities of rising to better posts.—There are not many opportunities, as the work done is so frequently limited to one process, and lack of ambition prevents many women from doing more skilled work. The capable and intelligent workers are sometimes promoted to be forewomen.

HOURS OF LABOR.

In most of the factories the two-shift system—one day and one night—prevails. But in one large plant three shifts were in use. In the shell factories it is usual for the women employees to alternate fortnightly between day and night work.

The hours vary from 50 to 60 weekly. Night shifts are shorter than day shifts; in one factory they worked 48½ hours on the night shift, and at two of the largest factories visited there were three breaks in the night shift. As regards the day shift, it was found that, in addition to the meal-hour breaks, in most shell factories there were two short breaks at 10.30 a. m. and about 4.30 p. m., when it was possible for the women to make tea in the shop. Overtime, where worked, varies from one-half to two hours and, in some cases at least, is voluntary. There was no Sunday work for women in most of the plants visited.

The majority of the employers were agreed that women were good timekeepers, although in one large munition plant where many

married women were employed an opposite opinion was reported. Time keeping by women was generally worse on the night shift.

On the whole, it would appear that, though the weekly hours of men and women are nominally the same and the conditions of labor are practically identical, the women are giving as great satisfaction to the employers as the men. It is not possible at this stage to say whether this would hold in normal times, or whether it is due to any special effort they are making at present which may lead to collapse when the war is over. One must also take into consideration the fact that there have been several modifications (e. g., more frequent rest intervals) in conditions of labor since the war.

RATES OF WAGES AND EARNINGS.

In the large shell factories the minimum weekly wage is 20 shillings (\$4.87) per week for women of 18 and over engaged upon unskilled and semiskilled work. In some factories this is paid by a time rate, and in others by a piece rate with a time basis. For women trained at a technical school in munition work the minimum wage is 25 shillings (\$6.08). In some cases, a war bonus of 10 per cent is given for good time keeping.

In one firm 25 per cent additional wages were paid on night-shift work, which was only occasional; 50 per cent above the ordinary wage is given for overtime; and where Sunday work is done, employees are paid double wages.

The time rates paid to women in other than shell factories vary considerably.

Time rates are the more usual for women, except in shell factories, where piece rates are almost universal. Piecework prices are generally fixed to allow the average worker to earn 25 per cent over the time rate. The piece rates of women in shell factories can not be compared with those of men, because the work is not the same. It was found, however, that in processes where women were doing the same work as men they received the same wages as men.

EFFICIENCY OF WOMAN LABOR.

In heavy capstan work women were able to do three-quarters of the men's work; on light capstan work women were able to turn out more than men. In several large firms the output of men and women was equal, and in the turning out of small articles the women's output was considerably more. Some firms stated that the women turned out more than the men, because the trade-unions prevented the men turning out all they might have done.

Nearly all employers agree that women are giving great satisfaction.

CONDITIONS OF LABOR AFFECTING HEALTH.

The influx of women into places where they were not employed before has necessitated many changes in workshop conditions.

Hygienic and sanitary conditions.—Where the workshops are entirely new, ventilation, light, and cleanliness are noticeably good. Where workshops have had to adapt themselves without being able to extend, in some cases the workrooms appear too small, and to have insufficient light and air. In some cases, temperature seems higher than desirable, because of the nature of the processes, the overhead lighting, and the material of the building.

Lavatory and closet conveniences are generally suitable, hot and cold water being provided. In one large factory, the arrangement for regularly douching the floors with a disinfectant gave a freshness particularly admirable. Cloakrooms, in some cases, were good and ample; in other cases, only racks at one end of the workrooms were provided, or passage-hanging accommodation was allowed.

Provision for meals.—Large mess rooms are provided for the workers in all the new shell factories, and very well equipped kitchens. These mess rooms are spacious, airy, and well lit; and hot meals are served at certain intervals and at very reasonable prices.

In some cases, the workers brought their food with them, and had what hot drinks they needed. At one of the largest factories, beer was sold on the premises at the lunch hour: one pint to men and half a pint to women. The head forewoman considered that this arrangement made for less drunkenness, as there was less going to the public house. There was no marked desire on the part of the younger women to avail themselves of this opportunity. In some firms, women are allowed to have tea in the workrooms: in one case at stated hours and in another case when they wish it.

Physical strain, fatigue, and liability to accidents.—The work, as a whole, is so new, that it involves the use of muscles which women do not usually employ, and this has involved a great strain for the first month or two. At the same time, the women workers of Birmingham district have long been accustomed to work involving physical strain (e. g., chain making), and do not feel bad effects so much as women in other districts.

The opinions vary as to the relative carelessness of men and women in proximity to machinery. Some say that women are less clumsy and naturally more careful. In many of the new factories, the women wear overalls and caps, which lessen the risks, and machinery is carefully fenced.

In one firm there was some slight risk in lead soldering. The women who have replaced men in the fuse huts have light work, but it is very dangerous, and was previously considered only fit for men. It consists of hammering in small screws and putting on red paint

marks. In the stamping-out room, the work was hard and in a hot atmosphere, and red-hot metal was used in the process. The hours were long, and the continued application made for overfatigue. This led to straying attention and consequent liability to accidents.

Ambulance rooms and rest rooms are provided, with nurses in attendance, in all the new factories. In two of the largest factories, seats are provided in certain of the workrooms, and are largely used. Apart from the signs of fatigue, the physical condition of the women seems surprisingly good. This may be due to a higher wage or to better conditions of working than they previously had.

As the welfare of women workers is so essential, many large firms have appointed lady welfare workers to attend to the well-being of their female employees.

HOUSING.

The fact that so many of the women munitions workers came from distant points makes a very considerable demand for lodgings. It seems, however, that this is balanced by the number of men who have left to join the army, so that little extra overcrowding has resulted.

A committee of the city council conducts an office for directing women to vacant lodgings which a health officer has visited and approved of. Also, some of the larger munitions plants maintain lists of available and suitable lodgings to which their employees may be directed.

TRADE-UNION ORGANIZATION OF WOMEN.

No figures are available regarding organized women in the immediate district of Birmingham. In the whole Midland area there are some 200,000 women and girls employed, of whom perhaps 25,000 are organized. Of these latter, between 8,000 and 10,000 are in the National Federation of Women Workers. The others are distributed among 8 unions, of which 5 were not open to women before the war.

That the women realize the value of unionism is seen in the fact that many of them are paying the union fees of the men they are replacing, in order to keep the men's membership alive. But there has been the same general indifference of women themselves to organize that was a recognized fact of peace times. The alleged reasons are: General indifference, especially as wages are good; lack of ability to act collectively; and the fact that many women consider their work only temporary, for the period of the war.

ATTITUDE OF MALE TRADE-UNIONS.

Before the war, skilled men were indifferent on the matter of female organization, thinking that women would never compete with them. Since the introduction of women in such large numbers, the skilled

men, fearing undercutting, have tried to induce women to organize. For the most part, this has been done by persuading the women to join a women's union. The Amalgamated Society of Engineers, for example, has agreed with the National Federation of Women Workers to give every encouragement to women to join the National Federation of Women Workers.

So far as the war has led to the replacement of men by women and the relaxation of trade-union rules to permit of women's employment in new spheres, the attitude of the men is one of determination to have all prewar privileges restored. It is believed in some trade-union circles that, after the war, there will be a great demand for semiskilled and unskilled labor rather than for skilled labor. If the subdivision of processes, which has been a feature in the metal trades, continues, the women who have become expert on a particular operation may displace skilled men.

3. CHEMICAL INDUSTRIES, GLASGOW.

This inquiry did not cover the manufacture of explosives. Its scope was thus limited to two classes of manufacture, which may be designated as:

1. Manufacturing chemists, such as soaps, drugs, and patent medicines.

There has been no important change of employment in these plants. The plants are small and many of them have temporarily suspended business, partly because of dependence on Germany for the basis of drug preparation.

2. Chemical manufactures, such as artificial manures, bichromate of potash, bichromate of soda, sulphuric acid and its by-products.

In this branch of the industry there seems to have been a shortage of men and some increase in the employment of women. But the women are solely engaged in light, unskilled labor—such as filling sacks and sewing bags. These take the place of boys or of men of the casual labor type. The opinion in the plants visited is that in this class of employment the output of women is equal to only about half of that of men. Their wage is less than that of the replaced men by 15 or 16 per cent. There has apparently been no substitution of women for men in the skilled or semiskilled occupations.

4. TEXTILE INDUSTRY, GLASGOW.

The textile industry in Glasgow is a declining one and was so before the war. Since the war there has been a marked decrease in the number of both male and female employees. The women have been attracted by the higher wages paid in munitions factories and by the city tramway service.

There has been comparatively little replacement of men by women. Out of a total of 1,289 men and 4,808 women in the textile factories covered by this inquiry, the number of women taking the place of men was 71, and of these 32 were engaged in clerical work, leaving only 39 replacements in textile occupations.

In one firm, 19 women have replaced 13 men in threading and filling carriages; in another, 4 women are employed in threading and 1 in card punching. In cotton, the women are employed as warpers, ingivers, harness helpers, tape helpers, and waste packers. One foreman in the twisting department was replaced by a forewoman. The difficulty of obtaining skilled and unskilled labor, the long period of training necessary to fit the unskilled, together with the heavy nature of the men's work and the unsuitability of women's clothing amongst swiftly moving machinery, prevent the entire replacement of the men who have gone on service.

The replacements have been so few in number that no change in plant, organization, or process has taken place.

According to the opinion of the manager of a lace factory, women in threading and brass winding (replacement in the latter process took place prior to the war) have proved as satisfactory as men and could completely replace them. A director of a large weaving factory submitted as his experience that heavy work required two women in place of one man, but with that reservation women have proved as satisfactory as men.

Employers reported an influx of orders and delay in execution through lack of workers. Thus there is, and will probably continue to be, a demand for every type of worker skilled in the industry.

5. PRINTING AND ALLIED TRADES, LONDON.

The war caused a serious depression in the printing trades. But the shortage of labor has now overbalanced this, and where women have not been substituted for men it has been due to some natural or artificial restriction and not to the fact that there is sufficient male labor to meet the demand. Of the 36 firms giving information, all but 6 were experiencing a shortage of labor.

Of these 36 firms, 23 had introduced women in one capacity or another since the war; 1 was completely staffed by women before the war; and 12 (small firms with one exception) had neither introduced women nor increased their employment in the processes in which they had previously been engaged.

WORK DONE BY WOMEN.

Compositors.—In London, there has been but a negligible attempt to substitute women compositors for men. No cases were found of women on the linotype machine. Four firms out of 36 were using

women on hand composition and three on the first process on monotype machines. All of these were nonunion or cooperative plants.

Aside from the matter of skill and physical strength, there are two important reasons for the slight attempt to use women as compositors. First, is the fact that London is in a peculiar position with regard to the printing trade. The business consists in a maximum of newspaper, jobbing, and emergency work, with a relatively small amount of book printing. Consequently it is only practicable to employ those who can work at night and for long stretches at a time. Apart from any other reasons, women are prohibited from this by the Factory Acts.

A second factor is the strength of the Compositors' Union in London. This union is willing to admit women members, provided they join under the same conditions as the men (i. e., that they earn the same minimum time wage and have served the seven years' apprenticeship). So far, these conditions have prohibited the introduction of women on any appreciable scale.

Furthermore, the unions seem to feel that the indiscriminate introduction of women into the trade would be dangerous, partly because this might tend to weaken their own organization and increase the power of the employers, and partly because they feel that the nature of the work is detrimental to the health of women (e. g., lifting the forms and other heavy work).

Compositors require a long training, apart from trade-union agreements; therefore, it is impossible for women to be suddenly introduced into this department.

As opposed to these views, some employers maintain that the trade would be benefited if women were widely introduced, since they could do all but the heaviest work, but they feel that this has been prevented by trade-union opposition. Some nonunionists oppose the long apprenticeship required by the Compositors' Union, stating that this is unnecessary. On the other hand, the Union upholds its system of apprenticeship to insure (amongst other things) that its members know more than one process, and so increase their mobility and decrease unemployment during times of trade depression. There are also many employers who are, on the whole, in agreement with the policy adopted by the union with regard to women compositors, thinking that they are unsuited to the work, and that a seven years' apprenticeship is essential.

Much of the work included in a compositor's duty is too heavy for women, although they could undoubtedly do the actual "composition"; but, broadly speaking, they are prohibited from this (a) on account of the long apprenticeship, which, owing to their short industrial career, they are unwilling to serve; (b) because for the same reason, employers are unwilling to train them; and (c) because

employers are not prepared to pay them at the same rate as male compositors, since they have to employ men to do the heavy work (e. g., lifting, etc.).

Machine minders and managers.—These superintend the machines which print the impression from the forms. Machines vary from small treadle machines, often worked by a boy, to large cylinder, newspaper machines.

Very few women have been placed in these positions, and then only on the lighter kinds of printing. The nature of the London trade in part accounts for the difficulty of introducing women into this department. An ex-machine minder said that where newspapers are printed, the lifting of the paper to and from the large rotary machines "nearly tears the inside out of even a man."

Where books are printed, "women minders" can be introduced more easily, since the machine can be run for a considerable period without being reset. But, apart from newspaper work, London is chiefly concerned with jobbing and emergency orders, in which the machines have continually to be reset, and have to be worked at long stretches without a stop, often through the night. It is exceedingly rare for a woman to set a machine; thus it is impracticable for women to be employed as "minders" only, since they would be idle for a large proportion of their time.

The work of a machine minder requires much skill and an apprenticeship varying from four to seven years is demanded; it also involves certain dirty and oily tasks which are often considered unsuitable for women.

On the whole, employers are agreed that it is impossible for women to be widely employed as machine minders, though some of them consider that the dirty work would not hurt them. One foreman remarked: "If they wore overalls and used plenty of soap, they would be none the worse." The real difficulties are (1) lack of training, (2) heavy work, and (3) restrictions imposed by the Factory Acts.

Printers' assistants (layers-on and takers-off) and machine rulers and feeders.—A layer-on places the separate sheets of paper in position on the machine, which then proceeds to make the impression. A taker-off is sometimes employed on some of the machines to remove the printed sheets. A printers' assistant not only feeds the machines, but also oils them and cleans the rollers, etc.

Machine ruling is a separate branch of printing (i. e., the marking of lines for account books, ledgers, forms, etc.). The ruler's work consists of setting up the pens in the required position, and in regulating the supply of ink.

Boys, girls, and women were employed to a certain extent as machine feeders before the war, though only to a limited degree in

London. Adjustment by the introduction of women seems to have taken place to the greatest extent in this department of the work.

On the whole, women are not employed in the capacity of printers' assistants. Cleaning the machines is considered too dirty for them, and they have rarely had the necessary training to understand the technicalities of the machines; in addition to this, some of the work is very heavy.

It takes from two to six months for a woman to become an efficient layer-on; and where the work is limited to laying-on, it is not heavy, though entailing a considerable nerve strain. The comparatively short training greatly facilitates the introduction of women in this department, the majority of those thus employed being transferred from the folding, stitching, and warehouse departments.

Generally speaking, employers are availing themselves of women feeders as far as possible, the great drawback being the prohibition of night work. However, the National Society of Operative Printers is making its agreements on the assumption that women have permanently entered this department.

Readers.—Readers are employed by the larger firms to read the manuscript to the compositors, and to correct the first proofs, etc. In London, this work is usually done by boys. In the course of this inquiry we found seven firms which had substituted girls for this work. As in the other processes, women are not employed in London as readers for newspapers, since it means night work.

According to the trade-union secretary, although girls can not be used for newspaper work, "owing to the scarcity of boys, employers are using girls as copyholders on day work in the general printing house"; and that "in many cases they are receiving more wages than boys," on account of the fact that the majority of the boys formerly used were apprentices to composing.

In many cases, reading proves a "blind alley" trade for boys; and, on the whole, the unions do not object to the introduction of women, provided they maintain the standard rate of wages.

Stereotyping and electrotyping.—In only one firm did we find any attempt to introduce women into the stereotyping process. The trade-union opinion is that their employment would be impracticable, the trade being of a "highly skilled and technical nature combined with work of a laborious character."

Lithography.—We found one firm which had trained women for this work since the war. In the opinion of a trade-union secretary, apart from the long training required, lithography is too heavy for women, the weight of the stones frequently being injurious to men.

Warehousemen are employed in connection with the storage of paper and its distribution to the working staff. We did not find any firms which had introduced women into this department for the first

time; but three firms (two being union houses) had employed them in this capacity before the war, and had since increased the numbers thus employed.

Folding.—Hand folding was found to be exclusively done by women and to be universally recognized as a woman's work. Those firms which possessed folding machines employed women on them; and where men had also been employed, the numbers of women had been increased since the war.

Bookbinding.—Folding, stitching, and collating was done by women in all the firms covered. The actual binding is heavy work, and in London is usually done by men, although one firm had introduced women for the cheap flush binding, which is not such heavy work.

In no cases were women found at such occupations as guillotine cutting, and type founding, all of which work required considerable physical strength.

EFFICIENCY OF WOMAN LABOR.

On the whole, the verdict of the employers is very favorable as to the value of women's work compared with that of men. Women are said to be loyal, conscientious, regular, punctual, and clean at their work. One employer found women readers slower than men, while two stated girl readers were better than boy readers.

Women compositors are said to be slower, but more accurate, than men. Women are generally slower at feeding the machines than men; in one case, we were told that a man would feed at the rate of 1,800 sheets per hour, while a girl could only do so at a rate of 1,200, the machine being capable of printing 3,000.

A union secretary said that women can work as quickly as men at any given moment, but that their staying power is weaker; and thus in a longer period, such as a week, their output is less.

All the firms had made some alteration with regard to their clerical and messenger staff, and in many cases the employers stated that they preferred the women and would permanently employ them in that capacity.

REASONS FOR AND AGAINST INTRODUCTION OF WOMEN.

The trade-unions only oppose the introduction of women in so far as—

- (1) They would be physically injured by the work.
- (2) They would undercut men's wages.
- (3) They would possibly increase unemployment by flooding the market after the war, and since, through lack of training, they would be restricted to one process, and would tend to increase the hardship at times of depression.

On the other hand, those who favor the introduction of women argue that—

(1) There are many strong women who could do the heavy work (instancing that printing is no heavier than the fishing done by girls on the east coast of Scotland).

(2) Training is an overrated difficulty, the long apprenticeship being unnecessary.

But the shortness of a woman's industrial career is universally recognized as an insurmountable objection to any widespread employment in the highly skilled processes.

In any case it is, perhaps, safe to say that the obstacles in the way of the further employment of women in London printing firms are very great. In the Provinces and in Edinburgh, where book printing is mostly done, these obstacles do not exist to such an extent, and women are more widely employed on a greater number of processes, and, on the whole, are considered satisfactory.

6. PRINTING TRADE, BIRMINGHAM.

The printing trade in this city is mostly commercial, such as catalogue printing, and this has naturally declined greatly during the war. This decrease in business has about balanced the loss of men to the army. Thus, the question of labor shortage has not become acute, and the introduction of women has been on a very small scale and in a limited number of processes.

No women have been introduced to take the place of men as hand compositors, on the linotype or monotype machines, as machine minders and managers, or on the highly skilled work of electrotyping and stereotyping. Women have done machine ruling in many firms in Birmingham for some time, and the war has caused no increase in female machine rulers; folding has always been women's work, and continues such.

It is in "feeding" or "laying on" that the greatest change has taken place, and women have been introduced here to replace both men and boys. The introduction of female labor in binding and in cutting, in both of which processes they were considered very satisfactory, was also reported. From the employers' point of view women have proved as satisfactory as men in all the processes they have entered.

In addition to the usual physical and legal obstacles to the full entrance of women into many of the skilled processes, the most immediate reason for their nonentry is that of the trade-union restrictions.

The trade-unions stand very definitely for "equal work, equal pay," in the skilled processes especially. They do not wish semi-

trained women to attempt these processes; the result would only be the lowering of the rate of wages.

On the other hand, the trade-unions strongly advocate more women entering the feeding and other unskilled processes; they prefer women to youths working on these—as it prevents boys entering “blind alley” occupations. The employers are willing, in most cases, to take on women in all the unskilled processes, and several of them expressed their inability to see why women should not do composing (except the lifting of the forms) and also the linotyping and monotyping. Two of them strongly recommend that women should enter the artist lithographing and designing department, as being clean, interesting, and well-paid work.

With regard to the future, both employers and trade-unions recommended apprenticeship as the best method of regularizing employment, and they considered it should be universal and compulsory. If both men and women went through the same term of apprenticeship, it is probable the trade-union rules would be relaxed and women allowed to work side by side with men, providing always they received equal pay for equal work.

7. PRINTING TRADE, NEWCASTLE-UPON-TYNE.

In two newspaper printing offices women have replaced men in the dispatch and in the machine room. In both cases they proved slower workers, and some of the work in the machine room (e. g., carrying the lead plates up narrow ladders to the “plater,” who fixes them on the cylinders of the rotary machines) is said to be too heavy for the women. Two or three women are required to replace one man, and the wages paid are correspondingly lower than the men’s.

In other printing works (nonunion), one or two women are found as hand compositors on linotype machines, and on platen machines, at wages considerably lower than those paid to men for the same work. Women have always been employed as “feeders,” but since the war their wages have risen in consequence of the competition of munition works.

8. BRUSH MAKING, LONDON.

Formerly brush making was essentially a man’s trade. But even before the war women were gradually encroaching in various departments of the work.

The shaping of the stock and the sorting of the bristles are almost entirely confined to men. For the drilling of holes in the stock to receive the bristles, machinery has been introduced and enabled women to take the place of men. At present, however, most of the women are found in “drawing” (i. e., in drawing bristles through the holes in stock and fastening with a loop of wire). “Pan work”—i. e.,

the setting of bristles into the stock by means of hot pitch, instead of by drawing—has been the most strenuously preserved sphere of men's work. It was said to be too hard and demoralizing for women. But even here women are entering to some extent. And in the finishing of the brush—i. e., the gluing on of the back, shaping and polishing—women are employed in increasing numbers.

The brush-making trade can be pursued by quite young and by quite old people. Consequently, the drain of the war has not been felt so acutely as in trades where great physical energy and endurance are needed. But all factories and workshops visited have suffered to some extent, and, at the same time, work has increased owing to Government contracts for army brushes. But the obvious solution of introducing more women has not up to the present been generally accepted. The reasons for this, as given by the employers, are (a) that the introduction of numbers of women would, in nearly every case, have necessitated setting up new premises and plant; (b) the trade-unions would not easily permit the introduction of women to processes that were previously men's; (c) the long training (seven years' apprenticeship) necessary for some of the highly skilled men's processes; (d) "female labor is more trouble than it is worth."

Of the four brush-making unions, only one, the Amalgamated Society of Brushmakers, has admitted women members. They are excluded because it "is not recognized as a women's trade." One official stated that women are excluded from "pan work" "because they are not physically fit for it," but also stated that where women are replacing men, the unions are trying to safeguard their position by insisting that the women shall be dismissed at the end of the war. Employers, on the other hand, say that if the women prove satisfactory they will be retained after the war.

Piece rates are the general rule, but time rates and combinations of time and piece rates are also to be found. Of the 40 firms visited, 6 were paying a "war bonus"; but there were no obvious indications that women's wages had risen generally during the war to correspond to the 15 per cent secured by the men.

9. TAILORING, LONDON.

This investigation included the wholesale trade (inquiries made in Whitechapel) and retail trade (West End). The sum of the investigation is that the tailoring trade has not been appreciably affected by the war as regards the displacement of men by women. If there has been any displacement it has simply been a continuation and development of tendencies that were at work before the war. Women have apparently not been employed on any novel processes, and the substitution of women plus machinery for men—chiefly in the wholesale trade—occurred long before the war.

No novelty attaches to the employment of women in this trade, hence no changes of organization or plant have been involved. Some firms have laid down new plants, but entirely to cope with the extra work connected with the large military contracts, not because women were employed.

The employment of women in the branches in which they were and have been employed before and during the war will probably continue after the war. The general idea seems to be that more women may be employed on the old processes in which they were already employed, but not more on new.

10. LEATHER, BIRMINGHAM.

The employment of women in the leather trade has increased by about 30 per cent since the beginning of the war; this is chiefly, though not entirely, in the military equipment branch, and is due rather to the great increase in the amount of work than to the actual substitution of men by women. There is a certain amount of substitution, but generally the work is not identical with that done by men, the men's work being subdivided in order to simplify it. For example, "girthing" is divided into three sections for this purpose; formerly one man would do all three processes. But there is an exception to be made here in the case of "preparing"; one firm has put women on to the identical men's work, but has not found them so satisfactory.

The processes which women are now working on, in addition to the usual stitching and machining, are riveting, preparing, and lighter forms of cutting. In one firm (light leather goods), cutting had been undertaken by women prior to the war, but this was a firm in which even in normal times about 90 per cent of the employees were women, and the only two processes exclusively done by men were clicking and heavy cutting, which demand great physical strength. The firm stated, however, that even in these processes they would try women in preference to closing down the particular department.

There is no change in manufacturing process except the subdividing of occupations. This has entailed extra foremen, who, where possible, have been taken from other departments of the work.

There appears to be divided opinion as to the efficiency of women. Where substitution is concerned it seems to be lower. In riveting and cutting the inferiority is due to lack of physical strength, but one firm seemed to think that, with good training and practice, these might be done by women to a greater extent than they are at present.

The women are chiefly on daywork and their wages, compared with men's, are lower, since the work is simplified.

Most employers seem to regard the specialization of work as only of a temporary nature, to be discontinued after the war, when it is

hoped that the men will again take on the work. The trade-union secretary who gave information said that his union is quite willing to admit skilled women, but not unskilled women. Women members, many of whom are married women (soldiers' wives), and will remain after the war, have been admitted to the union on the same terms as men. The majority are quite willing to be organized and take their part in trade-unions.

11. TRAMWAYS, GLASGOW.

(This inquiry relates chiefly to Glasgow, but reports were also received from London and Newcastle-upon-Tyne, and the findings as a rule apply also to those other centers.)

Previous to the war, no women were employed except in the offices as clerks. The change since August, 1914, has been rapid—due in no way to increase of traffic, but entirely to the replacement of men by women. A very large number of the tramway men were enlisted; they did so on the understanding that those who are physically fit will be taken back to their old positions.

Conductors and drivers.—There are now 1,153 women acting as conductors on the cars out of a total of 1,643. The working conditions have been somewhat changed. Previously, all conductors, after serving about 6 months, had also to serve as drivers; no one unfit for the work of driver was allowed to remain a conductor. Now women are allowed to remain conductors, no pressure being put on them to attempt the more trying work. In April, 1916, there were only 23 women drivers out of a total of 1,443, but the manager is entirely satisfied with those who have served in this capacity. Training for the position of driver takes 12 days, provided always that the applicant has served as conductor for 6 months, while training for the position of conductor takes only 8 days.

The working week is the same for women as for men—51 hours (i. e., 8½ hours per day). The shifts are, as far as possible, of four hours' duration, the extra half-hour being allowed for reaching one's destination and making up the cash. One objection expressed by the women used to be that they might wind up a late "run far from their homes," but an effort is now made, for men as for women, to finish duty on routes landing them within reach of their homes in reasonable time. The only other important objection is that women are often exposed to impertinence from uncivil passengers, but the complaint is not general.

Women as conductors and drivers are paid at practically the same wage scale as are the men, the minimum being 27 shillings (\$6.57) per week.

The manager expresses himself as satisfied with the women's work. Far fewer have given up than was expected. Up to 17th September, 1915, when there were 787 in actual service, 15 had been dismissed and 55 had resigned. Large numbers are waiting for vacant openings.

Generally speaking, the women employed do not lose much working time; they are more often off than were the class of men employed before the war, but not more so than the class employed since.

Car cleaners.—In April, 1916, there were 125 women engaged in cleaning the cars, out of a total of 524. The manager expects that before long there will be few men employed in this capacity; those at present employed have been asked to leave the service for "more important national work," though it is understood that this is only for the period of the war.

The car cleaners have a working week of 51 hours—from 10.30 p. m. to 8 a. m., with an hour's rest between 3 a. m. and 4 a. m. As far as possible, one night in the week is given off; but every fourth week the cleaner gets from Saturday morning till Monday night. The wage is 27 shillings (\$6.57) per week.

The wage is large, but many do not like the night work and many do not stand it, so that as many have given up as have stayed on. Probably those who have families do not take sufficient sleep during the day.

Future of women in tramway service.—There seems no doubt that women will be retained after the war for car cleaning; but it is open to question whether the proportion of those engaged in conducting will be large, if the old rule is reestablished that the conductor must become proficient in driving as well. It is too soon to assert that it is only the exceptional woman who can drive. Conductors have sometimes to face overcrowded cars and unruly passengers, and get through to the satisfaction of the manager and the general public.

12. SCOTTISH RAILWAYS.

The employment of women on the Scottish railways has probably doubled since the war. This has been due to the substitution of women for men and not to additional business. The increase in women employees has taken place in many departments, including the transport department of "coaching."

"Coaching" comprises ticket collectors, booking clerks, carriage cleaners, and porters. Of these, carriage cleaners and booking clerks are the only grades not included in the agreement between the companies and the National Union of Railwaymen. There were women carriage cleaners before the war, and there were a few booking clerks. In one company the carriage cleaners are all paid at the old rates—12 shillings (\$2.92) for a working week of 54 hours, with a war bonus of 3 shillings (\$0.73); while in another they are now paid the minimum men's rate. The same applies to booking clerks in the same companies.

But ticket collectors and porters are paid everywhere at the minimum rate of the men's grade, the former receiving in a representative

company 21 shillings (\$5.11) per week, with a war bonus of 4 shillings (\$0.97).

The women ticket collectors and booking clerks as a rule work precisely the same hours as men and have early and late duty. The carriage cleaners work usually on day shifts only, although at one station at least, there were both day and night shifts.

Opinions differ as to the work of women on the railways. One authority of wide experience expressed his conviction that three women are needed for every two men employed in a work like carriage cleaning—not that three women would take the same time as two men, but two women would not suffice and a third would need to be employed. The same authority also held to it that women could not, for physical reasons, work the same hours as do men in strenuous employment and would prefer, as experience had taught him, shorter hours and less pay. But others again stated their conviction that what women lacked in quantity of work they made up in quality, and expressed their surprise at the amount of work women could get through if they had sufficient wages to feed and clothe themselves properly.

As in the case of the tramways, time is needed to show whether women can undertake the same hours and duties as men carriage cleaners, ticket collectors, and booking clerks or whether changes must be made to allow of their partial employment. It is hardly likely that they will wish to continue as porters. The work is too heavy even for the few.

Women were admitted to the railway men's union two years ago, and "quite a few" have joined.

13. CLERICAL WORK.

This report covered the employment of women in banks, solicitors' offices, shipping offices, gas company, engineering firms, accountants' offices, and cooperative stores. In these businesses there were women employed before the war as typists and as telephone girls, but in most cases their employment as general clerks seems to be a new departure.

In one bank having several branches, where a few typists only were employed before the war, there are now 90 women clerks, whereas the number of men has fallen from 166 to 80. In another bank where formerly there were no women, the women now number two-thirds of the staff.

In general, the employment of girls and women is due entirely to the necessity for replacing men. The exceptions to this generalization are found in shipping offices and in cooperative stores, where the increase of business has meant a real increase in staff. The same may also be true of engineering firms. In one colliery office the em-

ployment of girls has necessitated provision of suitable accommodation, which seems to have been the sole hindrance to an even earlier adoption of women for clerical work.

The employment of women is almost everywhere confined to the more mechanical sides of the clerical work—typing, shorthand writing, copying, and filing. In some cases, such as shipping business and accountancy, the higher grades of work are very technical and need special training and experience, which the women do not possess and do not think it worth while to acquire.

Most of the firms estimated the worth of a girl clerk as less than that of a male clerk. But there is a general opinion that women are more conscientious and painstaking than men, though the latter are probably more accurate on the whole. In all routine work (such as typing and copying), women prove better workers than men. Lack of staying power constitutes a barrier to women's employment, in the opinion of most. Women, for example, can seldom stand overtime. Underlying these defects is the fact that the woman does not take such an impersonal interest in business as a man does. Opposed to this view was that of the manager of a large shipping firm, who considered that in quickness and initiative there was nothing to choose between men and women, that the girls, as a rule, did a more thorough and better day's work, and worked overtime if necessary.

As regards hours, the periods worked are generally the same as those worked by men. In a few cases, hours are slightly shorter for women, and, as mentioned above, overtime is generally regarded as impossible.

In banks, colliery offices, and shipping offices, girls are getting higher wages than youths of about 17 years doing the same work. This is because the latter are paid on an apprenticeship basis. A large engineering firm has an apprenticeship system for girls as well as for boys.

In most businesses there has been a substantial increase in wages, due to general changes in conditions. Solicitors, for instance, pay 20 shillings (\$4.87) to beginners who formerly received 12 shillings and 6 pence to 15 shillings (\$3.04 to \$3.65); while one firm which paid its women clerks 20 shillings to 22 shillings and 6 pence (\$4.87 to \$5.47) before the war, now gives them 25 shillings (\$6.08) to start, experienced women getting 30 shillings to 35 shillings (\$7.30 to \$8.52).

As to the possibilities of continued employment of women after the war, the general opinion seems to be that it will be only in the lower grades of work, and that, in general, the numbers retained will be small. Among solicitors in Newcastle there exists a great body of opinion that not only will woman labor continue, but it will increase.

14. LAUNDRIES, NEWCASTLE.

In the laundries visited in Newcastle there has been little replacement of men by women, except in a few cases in the washhouses. On the whole, all work for which women are capable was done by them before. Where substitution has taken place in the washhouse, it has almost always been in the proportion of two to one, because of (a) the heavy nature of the work (specially with military contracts); (b) the unreliability of many of the women, so that two must be engaged to make sure of the presence of one.

The working conditions of laundries have been seriously disorganized by the efflux of women to munition factories and to clerical work. These women were skilled, especially as packers and sorters; and the latter, according to one firm, take years to become really efficient. On the whole, the type of woman is much lower than formerly, and managers prefer to take on young girls to train.

There has been a general rise in wages, because of the shortage in workers and the desire of the managers to retain a certain number of skilled women. The rise has not, however, been very great, averaging from 1 shilling to 2 shillings and 6 pence (24.3 to 60.8 cents) a week.

15. DISTRIBUTIVE TRADES, GLASGOW AND NEWCASTLE.

In eight out of nine representative drapery and grocery firms in Glasgow an increase in the number of women employed since the war was reported. With one exception, this was attributed to the substitution of women for men, not to increased business.

Where an increase has occurred it was, in all cases except one, almost entirely due to the replacement of men. The changes in organization necessitated by the introduction of women have been few and slight. In certain wholesale drapery warehouses there have been redivisions of work—the still remaining men were being gradually transferred from “light” departments, such as neckwear, to “heavy” departments for which women are unsuited, and women are taking up the “light” work. There is no record of any reorganization in the grocery establishments covered.

As regards the efficiency of women in comparison with men, opinions of employers are widely diverse. Summing up, as far as possible, the varying statements, the impression received is: First, that so far as the less “skilled” departments are concerned, while lack of physical strength does, to some extent, militate against the successful employment of women, where there is no undue tax on strength, women’s work is as satisfactory as that of men, and will in all probability continue. Second, that, in the case of the “skilled” posts, such as managers and travelers, and of sales people in dress fabrics and linen departments, there will be a tendency to give men the preference. This is for two reasons: (a) The greater willingness of men to devote

some study to the technique of the work (as in the case of dress fabrics and linen, by taking suitable classes). (b) The greater chance of retaining a man's services permanently. It may be suggested that possibly the lack of prospects of promotion is, to some extent, the cause of the alleged unwillingness of women to give more interest and study to their work.

The attitude of trade-union members may be noted. Male members are desirous that women should organize as well as men. Women employees are stated to be less enthusiastic than men regarding organization; but, since the war commenced, the National Amalgamated Union of Shop Assistants, Warehousemen, and Clerks has made a special appeal to women employees with considerable success.

16. PUBLIC SERVICE.

Teaching (in one city).—There has been no important increase in the number of women teachers as a result of the war, but the scarcity of teachers had necessitated many temporary measures, such as putting children on half time.

With regard to the future, as shortage of good assistant masters is to be expected, and the present new openings are drawing women away from the profession of teaching, the salaries of both men and women will, therefore, probably rise, and women will be more extensively employed in boys' schools as teachers of the lower grades and as teachers of special subjects.

The salaries paid just now to secondary teachers are equal or almost equal for men and women.

- *Head post office (in one city).*—There has been an increased employment of women since the war in all departments of the post office, including postmen and telegraphists. The increase is due to the replacement of men, the business done being slightly less.

Women have proved as satisfactory as men in the routine clerical work of the engineering department, but do not seem to have taken so well to the night work of sorting. On delivery, the women "have done splendidly" on lighter rounds, but they are not good for heavy work, and even the light work would tell on them in the long run. Telegraphist women are nearly as good as men. Women, however, are not paid the same as the men, who can stand a strain longer and can work any time. The maximum of an expert male telegraphist in this city is 58 shillings (\$14.11) per week; that of a woman, 36 shillings (\$8.76).

City engineer's office (one city).—Before the commencement of the war women were employed by this department only in women's lavatories. Since the war 123 women have been engaged to replace men. Of these 123, 100 are employed in street cleaning; 20 in public parks; and 3 in sorting waste paper.

As a general rule, women have not proved to be so satisfactory as men on the particular kind of work for which they are engaged by this department, and it is probable that they will not be so employed after the war.

EXTENSION OF EMPLOYMENT OF WOMEN IN GREAT BRITAIN IN 1916.¹

The data regarding the increase in the employment of women in Great Britain during the war, as presented in the report summarized above, are brought down as late as October, 1916, in the January, 1917, number of the British Labor Gazette. The tabular statement of this increase, together with the text comment of the Gazette, is as follows:

FEMALES EMPLOYED JULY, 1914, INCREASE IN NUMBER EMPLOYED SINCE THAT
DATE, AND NUMBER REPORTED AS DIRECTLY REPLACING MEN.

	Estimated number of females employed in July, 1914.	Estimated increase in the number of fe- males employed since July, 1914.		Number of females re- ported by employers as directly replacing males.	
		July, 1916. ¹	October, 1916.	July, 1916. ¹	October, 1916.
Industrial occupations.....	2, 133, 000	361, 000	393, 000	264, 000	314, 000
Government establishments ²	2, 000	79, 000	117, 000	³ 79, 000	³ 117, 000
Commercial occupations.....	496, 000	240, 000	268, 000	226, 000	264, 000
Professional occupations.....	67, 500	14, 000	15, 000	15, 000	15, 000
Banking and finance.....	9, 500	32, 000	37, 000	31, 000	37, 000
Hotels, public-houses, cinemas, theaters, etc.....	176, 000	20, 000	16, 000	31, 000	30, 000
Agriculture, permanent labor (Great Britain).....	80, 000	20, 000	500	35, 000	20, 000
Transport (not municipal).....	17, 000	35, 000	41, 000	35, 000	41, 000
Civil service.....	66, 000	58, 000	67, 000	³ 41, 000	³ 64, 000
Local government (including teachers and transport workers under municipal au- thorities).....	184, 000	30, 000	34, 000	26, 000	31, 000
Total.....	3, 231, 000	889, 000	988, 500	783, 000	933, 000

¹ The figures for July, 1916, differ slightly from those previously published, as they have been revised in view of additional information received.

² Arsenal, dock-yards, national shell-filling factories, etc.

³ Estimated.

Since the war about 988,500 women, or 30.6 per cent of the numbers employed in July, 1914, have been drawn into the various occupations included in the above table. Women employed in connection with the nursing of soldiers and sailors are not included, and under this head there has been an increase since July, 1914, of some 34,000 women. Allowing for this and for the displacement of women from domestic service and from small workshops and workrooms in the dressmaking trade, which are also excluded from the table, it is estimated that the net increase since July, 1914, in the number of women regularly engaged in occupations outside their own homes is in round figures about 850,000.

In the occupations enumerated in the table there has been an increase since July, 1916, of nearly 100,000, which is roughly one-third of the corresponding increase between April and July. It appears therefore that, taking the whole field of employment, though the number of women is still increasing rapidly, the rate of increase has slackened considerably compared with that of the preceding three months.

¹ Great Britain. Board of Trade Labor Gazette, January, 1917, pp. 7, 8.

As far as substitution is concerned there has been an increase since July, 1916, of 150,000 in the number of women directly replacing men, which is considerably more than half the corresponding figure for April to July. As in the case of the increased employment of women, there has therefore been a check to the rate of expansion, but this check is less marked in the case of women acting as substitutes than for the total numbers employed.

The increase in the number of women employed has not been equally divided between the different classes of employment. In industrial occupations there has been an increase of 32,000 between July, 1916, and October, 1916, the corresponding increase for the preceding three months being 83,000. In the chemical and metal trades alone there has been an increase of 42,000 women since July, 1916, so that in all other industries taken together there has been a decrease of 10,000. This is accounted for by a drop in the number of women employed in the textile, clothing, and paper and printing trades. In the clothing trades alone the number of women employed has fallen since July, 1916, by 15,000, or 2.5 per cent of the prewar numbers, exclusive of dressmakers in small workshops; the tailoring trade accounts for 8,000 of this number. In the textile trades the number has fallen by 1,000 since July, 1916, or 0.7 per cent of the numbers employed before the war. This change in the clothing and textile trades is explained in part by a lessened demand for women, due to changes in the extent of Government work and to the increasing economy of the general public, but this does not appear to be the sole explanation. The returns received from employers show that this decrease in the number of women employed has been accompanied by an increasing shortage of women's labor. In July, 1916, 38 per cent of the textile firms and 20 per cent of the clothing firms making returns reported that they were unable to get all the women they required. By October, 1916, the figures had risen to 40 per cent and 21 per cent, respectively. In the paper and printing trades the corresponding figures were 17 per cent in July, 1916, and 19 per cent in October, 1916. It is clear, therefore, that though the demand for women's labor has fallen off somewhat, the supply of women's labor has decreased to a greater extent and that the process of transference from these trades to munition work or other better paid occupations still continues.

EMPLOYMENT OF WOMEN.

[Memorandum No. 4.]

1. Though some brief reference has already been made in other memoranda issued by the committee to certain matters affecting the employment of women, there are substantial grounds for dealing in a single memorandum with the various and difficult problems involved. It will be generally admitted that in considering the conditions of employment of women workers as compared with those of men, account must be taken not only of physiological differences but also of those contributions which women alone can make to the welfare of the state. Upon the womanhood of the country most largely rests the privilege of creating and maintaining a wholesome family life and of developing the higher influences of social life. In modern times, however, many of the ideals of womanhood have found outward expression in industry, and in recent years hundreds and thousands of women have secured employment within the factory system. The problems thus raised are numerous, but broadly they may be considered as chiefly concerned with the wise and effective organization of women's industry, in such a way as to protect and safeguard their unique contribution to the state.

2. The engagement of women in the manufacture of munitions presents many features of outstanding interest. Probably the most striking is the universal character of their response to the country's call for their help; but of equal social and industrial significance is the extension of the employment of married women, the extension of the employment of young girls, and the revival of the employment of women at night. The munition workers of to-day include dress-makers, laundry workers, textile workers, domestic servants, clerical workers, shop assistants, university and art students, women and girls of every social grade and of no previous wage-earning experience; also, in large numbers, wives and widows of soldiers, many married women who had retired altogether from industrial life, and many again who had never entered it. In the character of the response lies largely the secret of its industrial success, which is remarkable. The fact that women and girls of all types and ages have pressed and are pressing into industry shows a spirit of patriotism which is as finely maintained as it was quickly shown. Conditions of work are accepted without question and without complaint which, immediately detrimental to output, would, if continued, be ultimately disastrous to health. It is for the nation to safeguard the devotion of its workers

by its foresight and watchfulness lest irreparable harm be done to body and mind both in this generation and the next.

3. More than ever in the past should consideration now be given to the well-being of young girls fresh from school, of the prospective mother, and of the mother whose care is especially claimed by her infant during the first months of its life; for more than ever is their welfare of importance to the state, and much more than ordinarily is it threatened by conditions of employment.

Speaking generally, there are five matters, which apart from questions of wages, concern the health and industrial output of the worker, and which demand the careful attention of employers in regard to the employment of women on any large scale, viz, (1) the period of employment (including night work, length of hours, overtime, etc.); (2) rest pauses and the provision of meals; (3) sanitary conditions of the factory; (4) physical condition of women workers; (5) questions of management and supervision. The committee recognize that certain collateral issues, such as housing, transit, and the means of recreation are also intimately concerned in the welfare of women workers, although they may lie somewhat outside the immediate sphere of the employer. The committee have given careful consideration to the subjects enumerated above, and they desire to offer some observations under each heading. They appreciate the exceptional importance of women's labor in the present emergency, and they do not desire to suggest the imposition of conditions which are likely to embarrass employers or restrict the usefulness of women. They confine themselves, therefore, to matters which in their view are both necessary and urgent in the interest of the women themselves and the industrial output of which they are capable.

I. PERIODS OF EMPLOYMENT.

4. *Night work*.—The imperative necessity of war has revived, after almost a century of disuse, the night employment of women in factories. Prohibited for the textile trades by the factory legislation of 1844, it disappeared gradually in Great Britain, and also in other countries, until, after inquiry and deliberation, it was banished by international agreement from the 12 European countries which signed the convention drawn up at the international conference held at Berné in 1906.¹ These countries included Great Britain, Austria, Belgium, France, Germany, Italy, Portugal, Switzerland, and Spain. The agreement was based upon the results of inquiries into the effects, economical, physical, and moral of night work for women. The reports showed deterioration in health caused by the difficulty of securing sufficient rest by day; disturbance of home life with its inju-

¹ Bulletin of International Labor Office, English edition, Vol. 1., 1906, p. 272. Certain minor modifications were inserted by some powers.

rious effects upon the children; and diminished value of the work done—the common experience being that nightwork was inferior to daywork. Now once more all these half-forgotten facts are in evidence in the munition factories. In a working-class home the difficulty in obtaining rest by day is great; quiet can not be easily secured; and the mother of a family can not sleep while the claims of children and home are pressing upon her; the younger unmarried women are tempted to take the daylight hours for amusement or shopping; moreover, sleep is often interrupted in order that the mid-day meal may be shared. The employment of women at night is, without question, undesirable, yet now it is for a time inevitable; and the committee have, therefore, directed their efforts to the consideration of those safeguards which would reduce its risks to a minimum.

5. Evidence is highly conflicting as to the merits of continuous night work as against those of a weekly, fortnightly, or monthly change of shift. The committee have been impressed by the argument that the difficulty of sleeping by day and digesting food by night is largely overcome by practice, and that for this reason it is better to allow women to remain on night shift continuously for some months; it is also urged with considerable force that only those persons who can make suitable domestic arrangements would engage themselves for continuous night work. On the other hand, it is said that women who are engaged for night work only are disinclined to remain more than a month or two, and that those who offer themselves for permanent night work are less efficient than those who prefer the day shift. The example of the night duty of hospital nurses has been quoted to show that women can work for long periods at night with excellent results. The committee feel, however, that comparisons can not be fairly drawn between industrial night work and the night duty of hospital nurses; not only are nurses a selected and trained body of women, but the disciplined conditions of their life are not those either of the factory or the working-class home. The committee are fully alive to the disadvantages of a constantly recurring alternation between day and night shifts, but they consider that the matter is one which must be largely dealt with locally on social considerations.

6. It has been stated by some managers and foremen that the last few hours of a 12-hour night shift yield little output. This greater influence of fatigue at night is partly due to the fact that the hours between 3 a. m. and 6 a. m., and 4 a. m. and 7 a. m. coincide with the period when, apart from industrial fatigue, vitality is low, and partly to the fact that night workers lack the stimulus of a satisfactory meal. There seems little appetite for the meal which occurs between 1 a. m. and 3 a. m., and it is often of a most unsatisfactory character. In one factory visited at night the manager stated that fatigue pre-

vented many of the women from making the effort to go from their work to the mess room though in itself the room was attractive. In another, visited also at night, several women were lying, during the meal hour, beside their piles of heaped-up work, while others, later, were asleep beside their machines, facts which bear additional witness to the relative failure of these hours. A few women of rare physique withstand the strain sufficiently to maintain a reasonable output, but the flagging effort of the majority is not only unproductive at the moment, it has its influence also upon subsequent output, which suffers as in a vicious circle. The committee are satisfied, therefore, on the facts before them that the employment of women at night calls for particular care and supervision, and that adequate pauses for rest and meals are indispensable.

7. *House accommodation and transit.*—While the urgent necessity for women's work remains, and while the mother's time and the time of the elder girls is largely given to the making of munitions, the home and the younger children must inevitably suffer. Where home conditions are bad, as they frequently are, where a long working day is aggravated by long hours of traveling, and where, in addition, housing accommodation is inadequate, family life is defaced beyond recognition. If the home is to be preserved from such processes of destruction, greatly improved conditions of transit and housing must be secured, as well as the best possible hours of work by night and day. It is far from uncommon now to find some 2 or 3 hours spent on the journey each way, generally under the fatiguing conditions of an overcrowded train or tram, often with long waits and a severe struggle before even standing room can be obtained. The superintendent of a factory situated in a congested district stated that the women constantly arrive with their clothes torn in the struggle for a tram, the satchel in which they bring their tea being sometimes torn away. The workers were of an exceptionally refined type, to whom such rough handling would be altogether unfamiliar, but they bore these conditions with cheerful resolution. Tribute is constantly paid by foremen and managers to a similar spirit; they tell of workers readily working overtime in the knowledge that their action means the loss of the last tram and a 4 or 5 mile walk at midnight. Often far from offering a rest from the fatigue of the day, the home conditions offer but fresh aggravation. A day begun at 4 or even 3.30 a. m., for work at 6 a. m., followed by 14 hours in the factory and another 2 or 2½ hours on the journey back, may end at 10 or 10.30 p. m., in a home or lodging where the prevailing degree of overcrowding precludes all possibility of comfortable rest. Beds are never empty and rooms are never aired, for in a badly crowded district, the beds, like the occupants, are organized in day and night shifts. In such conditions of confusion, pressure, and overcrowding home can have no existence.

8. There is great need for improvement in means of transit, and this alone would help to relieve the unsatisfactory conditions of housing; but, however great the increased facilities of service, the journey between home and factory must still add, in many cases, a couple of hours to the working-day. When considering hours in relation to efficiency and fatigue this influence upon the total length of day should be remembered; the factory day can not always stand by itself as the only contribution toward fatigue. To quote a single instance—a recent inquiry made for the committee into the conditions of employment of 75 women employed from 6 a. m. to 8 p. m., showed that though most of the workers lived within a mile or a mile and a half of the factory, none of them got more than about $7\frac{1}{2}$ hours' sleep and many of them less than 7 hours. The majority rose before 5 a. m. Of the 75 workers only 19 were over 21 years of age, and many were between 16 and 18. Such facts illustrate the domestic side of the problem which the committee have had to consider. They serve to demonstrate both the need for improved facilities in housing and in transit and the need for limitation of the periods of employment.

9. *Hours of Labor.*—Happily there should be in the matter of hours of labor for women little conflict between the interests of the home and the interests of munitions, for the hours which conduce most to a satisfactory home life and to health conduce most to output. Long hours, particularly when they are worked during the night, are perhaps the chief factors in fatigue, and the committee are of opinion that in the interest of output and health alike they should be restricted within proper limits; that there should be suitable pauses for rest during the working period; and that there should be adequate cessation from work at each week end in addition to periodic holidays. It may be stated broadly that conditions which press hardly upon the average man press, because of her different constitutional development, with greater severity upon the average woman; while similarly, though conditions of mental fatigue are probably equally injurious to boys and girls, conditions of muscular strain well borne by the ordinary boy may be highly detrimental to the girl of corresponding vigor and physique. It is therefore especially important that women and young girls should be relieved from those conditions of over-strain to which they are now so widely exposed.

10. The importance to women of a wise limitation of their hours of work and an appropriate distribution of the pauses in those hours can hardly be overstated. The weight of scientific evidence is behind such limitation, and without it health and efficiency can not be maintained. The history of factory legislation, with its record of the progressive limitation of the working hours of women and girls, affords interesting proof of a growing conviction resulting from experience in the matter. The three systems of employment most

commonly adopted for women in munition works are as follows: One shift of 13 to 14 hours (the overtime system), two shifts of 12 hours; and three shifts of eight hours.

Of these the system of eight-hour shifts appears to yield the best results in the long run. The strain of night work, indeed strain generally, is sensibly diminished, greater vigor of work is maintained throughout the shift, less time is lost by unpunctuality or illness, and there is less liability to accident. More hours of actual work are available out of the 24, and in the 8-hour shift each hour has a sustained value in contrast to the diminishing value of the later hours in a 12-hour shift. When the shift changes over weekly the night shift, which is the most trying, recurs every third instead of every other week, and, partly for this reason, a class of labor is attracted which would otherwise be unrecruited. It has been suggested that in certain districts, and for certain industrial processes, it may be possible, during the stress of the war, to employ married women on half time, in two or more shifts daily of four or five hours each. The committee recognize that such a system possesses its own inherent difficulties, which may, however, not prove insurmountable. (*A separate memorandum deals with hours of labor.*)

11. *Overtime.*—The flagging output which appears to characterize the last hours of a 12-hour night shift seems similarly characteristic of the last hours of overtime during the day. The disadvantages of an overtime system are being increasingly recognized by employers. The recognition has been forced upon some by the resultant fatigue, illness, and bad timekeeping of the workers; to others it has come by some accidental shortening of the day, which has shown that the loss of hours has carried with it no diminution in output. One large munition firm, finding bad results from overtime, changed to a system of two 12-hour shifts. The firm now believe that these hours also are too long for women, and they are endeavoring to collect a sufficient number of workers for three 8-hour shifts. Another munition firm which has employed some women from 8.15 a. m. to 8 p. m. and some on 8-hour shifts has decided that the longer hours exhaust the women without any corresponding value in output. It is now proposed to employ these workers on two shifts of 7.30 p. m. to 6.30 a. m. (with 1½ hours for meals) and 8.15 a. m. to 6.30 p. m. (with 1½ hours for meals). Again, several employers of different kinds who, accustomed to work their women from 8 to 8, were forced by lighting regulations and other causes to stop at 6, found the output undiminished. While an army-clothing factory, well experienced in times of pressure, was satisfied that no increased output would be secured by an extension of its normal day of 8 to 6, yielding 8½ hours' actual work. The management, convinced, by old experience, that any extension of these daily hours only exhausted the workers, secured their increased

output by extending the Saturday hours to the level of the other days. In all these circumstances the committee recommend the adoption of the three-shifts system, without overtime, wherever a sufficient supply of labor is available. Where the supply is governed by difficulties of housing and transit the committee are of opinion that every effort should be made to overcome these difficulties before a less serviceable system be continued or adopted.

II. ARRANGEMENTS FOR REST AND MEALS.

12. Pauses, well distributed and adapted in length to the needs of women workers, are of the highest value in averting breakdown and in giving an impetus to output. The Factory Acts permit in textile factories a maximum of four and a half hours' continuous work; in nontextile the limit is five, but many managers believe that four hours is the longest period during which a woman can maintain continuous work at full vigor. Within this period a pause of 10 minutes has been found to give excellent results, and where the spell is continued for five hours some such pause should certainly be made for a cup of tea or cocoa. It is particularly valuable in the morning spell in those numerous cases where breakfast has been hurried or omitted altogether, and also in filling factories where some of the high explosives seem to create a special feeling of hunger. Here there is the added reason that a well-fed person is the better able to resist the influence of poisonous materials.

13. Facilities should be provided, especially during the night shift, for rest in cases of fainting or other temporary illness. These are now frequently found in well-equipped works; they usually consist of a few comfortable chairs¹ and a camp bed for the more serious cases, placed in the surgery or rest room now being provided by many employers. A nurse is generally in attendance, whose assistance may be claimed by men and women alike.

14. The week-end rest has been found to be a factor of such importance in maintaining health and vigor that it has been reinstated by employers who had taken it for work at the beginning of the war. The committee are strongly of opinion that for women and girls a portion of Saturday and the whole of Sunday should be available for rest, and that the periodic factory holidays should not, on any account, be omitted. (*A separate memorandum dealing with Sunday labor has already been issued.*)

15. When women are employed on eight-hour shifts an interval of half an hour for a meal may be regarded as normally sufficient, but where longer hours are worked, it is important that they should be

¹ Suitable seats of the "deck chair" type can be provided economically in regard to both cost and space by the following means: Fix two strong horizontal rails, one 12 inches from the ground and 30 inches in front of the second, which should be 36 inches from the ground. Between the rails fasten a series of strips of strong material (canvas, cord, or wire netting), 54 inches long and 18 inches wide.

allowed an hour for dinner and for the principal meal during the night. Indigestion can not easily be avoided if a substantial meal is followed immediately by work without an intervening period for rest. Half an hour, especially in large factories, and in filling factories where the actual consumption of food in the danger area is prohibited, provides but scant time even for the eating of the meal. Ten minutes are easily spent in reaching the mess room and returning to work, certainly another five are occupied in the washing of hands and the service of the dinner. And so but 15 remain for the meal.¹ During the course of this inquiry women and girls have frequently dwelt upon their need of a meal time which, for the principal meal, shall allow opportunity for the comfortable consumption of their food and the enjoyment of a short rest afterwards. Attention should also be given to the provision of good, wholesome, and tempting hot meals, as well as to the conditions under which they may be taken, which should be as restful as possible. The committee are convinced of the advantages of well-managed industrial canteens for women and girls, in convenient proximity to the workrooms, and open both day and night at suitable hours. They have sometimes found canteen or mess room conditions providing, in themselves, only fresh occasion for fatigue. Ill-ventilated, dark, and overcrowded rooms with narrow benches offer little chance of rest either during the progress of the meal or the resting time which should naturally follow. These conditions should be avoided, and the committee are satisfied that the extra expenditure entailed by the opening of canteens at every change of shift, by the provision of seats with backs, and the provision of other similar amenities, is well rewarded by the greater comfort and relaxation of the workers, which is unquestionably reflected in increased output. (*A separate memorandum deals with industrial canteens.*)

III. THE SANITARY CONDITION OF THE FACTORY.

16. The effect upon the health and energy of women and girls which results from clean, bright, and airy workrooms, well warmed in winter, can hardly be exaggerated. The Factory Act secures a minimum of these essential things, but the highest standard attained in the best factories is not too high. Women desire these things in their working hours and appreciate and respond to a good environment. Cleanliness and good order contribute to increased output as well as to the discipline and morale of the factory. The provision of washing accommodation has become increasingly important. The refreshing effect of washing and its influence on self-respect, especially where workers are heated by their work, have been dwelt upon by many witnesses who have given their evidence before the committee.

¹ Where workers are required to "clock in" and "clock out," the available time is still further diminished.

In those processes in which poisonous substances are used, such, for example, as the filling of shells and fuses with high explosives, suitable washing conveniences are required by law.¹ It is a great convenience when the lavatories and cloakrooms can be grouped with the canteens. The lavatories should be of sufficient size to accommodate all those workers from a room or department who cease work at the same time, and they should be provided with a good supply of hot and cold water, soap, and nailbrushes. Clean towels should be supplied before every meal, and the lavatories should be kept scrupulously clean and in good repair. If these facilities are easily accessible and are sufficient to enable the workers to wash without undue encroachment upon their meal times, experience shows that they are much appreciated and fully used.

17. Cloakrooms should also be provided, and wherever possible should be near the canteens and lavatories. It is of importance that they should afford facilities for changing clothes and boots, and for drying wet outdoor clothes in bad weather and working overalls used in wet processes. Steam pipes placed under the hanging pegs have been found a convenient and simple method. Lockers for each person are provided in many factories and are much appreciated. Each peg or locker should bear the worker's name or work number. The cloakrooms should be kept very clean.²

18. The provision of adequate and suitable sanitary accommodation is a matter of special importance. The necessity for proper equipment and maintenance of cleanliness, privacy, and convenience of access should be borne in mind. It is the more necessary to call attention to this matter since in many instances women are now employed in factories where, until quite recently, there have been male workers only. The conveniences for women should be so situated as to be readily accessible at all times, with due regard to the privacy of the approach. They should be adequate in number, suitably planned, and of sound sanitary construction.³ In the case

¹ The requirements, as far as structural points are concerned, are that there shall be either (1) a trough with a smooth, impervious surface, fitted with a waste pipe without plug, and of such length as to allow at least 2 feet for every five persons employed and having a constant supply of warm water from taps or jets above the trough at intervals of not more than 2 feet; or (2) at least one lavatory basin for every five persons fitted with a waste pipe and plug or placed in a trough having a waste pipe and having either a constant supply of hot and cold or warm water laid on, or (if a constant supply of heated water be not reasonably practicable) a constant supply of cold water laid on and a supply of hot water always at hand when required for use by persons employed. ("Memorandum upon structural requirement of the Factory and Workshop Acts." 1912. Home Office.)

² Hanging pegs should not be less than 18 inches apart and may, if desired, be separated by small partitions. Lockers may be made of metal open work in preference to wood to allow of a free circulation of air.

³ The Home Office Sanitary Accommodation Order, 1903, requires, *inter alia*, that the closets shall be (a) sufficient in number, namely, not less than one for every 25 females; (b) so arranged and maintained as to be conveniently accessible at all times to all persons employed; (c) separated from workrooms by the open air or by an intervening ventilated space; (d) sufficiently ventilated; (e) sufficiently lighted; (f) under cover; (g) every convenience so partitioned off as to secure privacy and with a proper door and fastening to each (the height of door not less than 6½ feet); (h) provided with separate approaches for men's and women's conveniences, and with proper screening of the interior so as to be invisible from places where persons of the other sex have to pass.

of some new factories of a temporary character, or in isolated situations, the most approved system of drainage and construction can not be carried out, and recourse must be had to pail closets. In such cases the number must be greater in proportion to the women employed unless proper arrangements for daily scavenging (out of working hours) can be made. But, whatever the accommodation provided, a high standard of cleanliness must be maintained, and it is desirable that an attendant shall be in charge of the conveniences throughout the period of employment.

IV. THE PHYSICAL CONDITION OF WOMEN WORKERS.

19. It is obvious that many women now entering upon employment in the factory system are unaccustomed to its conditions. They come, as we have seen, from various spheres, domestic and other, which have not involved them in the strain and stress of factory life. In considering the physical capacity of such a woman successfully to withstand the fatigue consequent upon continued work of this kind it should be remembered that her body is physiologically different from, and less strongly built than, that of a man; that her muscular system is less developed; and that she may have lived a sedentary or domestic life and is not in the habit of taking active and regular exercise. The nature of her work should therefore be determined with due regard to its effect on her immediate and future health. Certain ailments and forms of physical disability to which women are liable are readily caused, or at least accentuated, by inattention to these matters. Among such conditions are (a) disturbances of digestion, due to unsuitable food, irregular and hurried meals or fatigue; (b) anemia, with possibly associated disease of the heart and circulatory system; (c) headache; (d) nervous exhaustion; (e) muscular pain and weakness, flat-foot, etc.; and (f) derangement of special physiological functions. Though these conditions may not in all cases be immediately incapacitating, they frequently have a tendency to become chronic in nature and far-reaching in effect. They lead directly to malnutrition and a reduction of body energy. If allowed to persist they inevitably lay the foundations of ill-health and disease in later years, and in some cases they may exert an injurious effect on maternal functions. With a view to the detection of minor ailments and incipient or actual disease (e. g., tuberculosis or organic heart disease), it is desirable when practicable to provide for the examination by a medical woman of all applicants for employment. It would also be advantageous, if possible, to arrange for girls who complain of illness to consult a medical woman familiar with the conditions of their employment. The committee are satisfied that there is a significant amount of physical disability among women in factories which calls both for prevention and treatment.

20. In this connection the committee consider it is desirable that the lifting and carrying of heavy weights and all sudden, violent, or physically unsuitable movements in the operating of machines should, as far as practicable, be avoided. Often a simple appliance, or the alteration of a movement, modifies an objectionable feature when it does not altogether remove it. By similar thought and care much may be done to mitigate the strain of prolonged standing, which should be restricted to work from which it is inseparable.¹ Prolonged standing has been found a highly provocative cause of trouble to women and girls, whose health it has often permanently and seriously injured. When standing is absolutely unavoidable, the hours and spells of employment should be proportionately short, and seats should be available for use during the brief pauses which occasionally occur while waiting for material or for the adjustment of a tool. Where so much depends upon the character of a movement, upon the angle and position at which a weight is lifted or carried, it is not advisable to lay down a standard of prohibited weights. But serious accidents and injuries to health have been caused in factories in the past by the excessive carrying of weights, and it is trusted that employers will give this matter their most earnest consideration.²

V. MANAGEMENT AND SUPERVISION.

21. The committee have received abundant evidence of the necessity of wise and suitable arrangements for the management and supervision of women's labor. Their personal visits to large and small works where women and girls are employed, as well as the evidence placed before them, have led them to the opinion that there is hardly any condition of greater importance than this, in respect both of smooth working and of maximum output. The modern development of commercial undertakings, not to speak of the vast size of many factories, precludes the personal oversight and interest of the responsible employer, and makes it all the more necessary to appoint efficient substitutes. This is particularly important in regard to the occupation of women unaccustomed to the organized factory life, business methods, and discipline of large engineering shops. Briefly, the committee recommend that in all cases where women are employed consideration should be given by the management to the appointment of forewomen, nurses, and welfare supervisors, whose position and status should be properly assured and whose duties should be pre-

¹ See medical evidence on the grave effects of long hours of standing on the health of women given before the Select Committee on Shops, 1895 (p. 219, answers 5401 to 5406), and the effects of industrial strain on the working woman (Trans. Fifteenth International Congress on Hygiene and Demography, Washington 1912, vol. iii, pt. 2, p. 933).

² Report of Departmental Committee on Accidents, 1911, (Cd. 5535).

scribed. In this way provision is made for each woman worker to have ready access to an officer of her own sex in case of difficulties occurring in regard to her work, her health, or the conditions of her employment.

22. The committee have watched, in several factories, a steady stream of workers bringing to the nurse troubles of many kinds; sometimes a girl who has just fainted, or a girl whose feet are badly swollen by long standing; or hands have been injured, or eyes struck by a splinter of steel; or there is a burn from some boiling splashing liquid or from some explosion in the danger area. Both employers and workers warmly appreciate the value of the services of a nurse, and in the opinion of the committee a trained nurse should always be available whenever the liability to accident is considerable or the numbers employed are large. It is desirable that a complete register of accidents and cases of sickness should be kept. (*The subject of sickness and injury will be dealt with in a separate memorandum.*)

23. Another appointment urgently called for in munition works is that of a welfare supervisor. Those employers who have already secured the help of a skilled woman in this capacity give the highest testimony to her usefulness, not only to the workers but to themselves. The committee have dealt with this subject in an earlier memorandum, but they desire in the present statement to refer to the duties of the welfare supervisor in respect of the peculiar needs of prospective mothers, and mothers with infants or young children.

24. Clearly everything it is possible to do should be done to reconcile the mother's conflict of interests between her duties to her home and children and her work on munitions. Wherever other labor is available, the employment of mothers with infants is to be deprecated, as is also that of the mother of any young family, for it must be remembered that the mother's work is certainly not ended with her factory day. Her children make many claims upon her time and energy, more especially, of course, at the period of the midday meal and at bedtime. In some factories the majority of the women employed at night are married, and many of them express a preference for their work, because it leaves them free for domestic work during the day. In thus undertaking double duties their zeal may easily outrun their strength, and factory and home equally may suffer. Where married women are indispensable, every effort should be made to give them the preferential treatment common, in normal times, in some factory districts. It is the experience of managers that concessions such as half an hour's grace on leaving and arriving, or occasional "time off," is not injurious to output, as the lost time is made good by increased activity, and under the system of eight-hour shifts it might be arranged without industrial dislocation of any kind that married women are employed only in that shift which would

cause least dislocation in their home. For organization of this kind, as well as for the care of young girls, individually during the first few months of their employment, the welfare supervisor would be invaluable; she would secure short periods of rest, or such interchange of occupation as would lessen either the spell of muscular fatigue or the continued exposure to an injurious process. Her supervision would have particular value during night shifts when ordinary supervision tends to become relaxed. (*A separate memorandum deals with welfare supervision.*)

VI. CONCLUSION.

25. Finally, the committee desire to state that, in their opinion, if the present long hours, the lack of helpful and sympathetic oversight, the inability to obtain good, wholesome food, and the great difficulties of traveling are allowed to continue, it will be impracticable to secure or maintain for an extended period the high maximum output of which women are undoubtedly capable. The committee recognize that emergency conditions must obtain in many cases, but they are satisfied that every effort should be made to organize women's labor effectively and promptly. It may be that in the entanglement of problems new and old the coming of the new and their imperative claim for solution will help the solving of the old. There is impulse now as there was impulse long ago when the cause of the children in the cotton mills of Lancashire won the early factory acts for the generations that followed. There is need now as there was need then. There is need for the work of women in industry; there is need also for safeguarding that service. Happily there is manifest a public spirit and a devotion able to overcome difficulties and solve problems. There is also a fuller recognition of the claims of women and of their children and of their vital importance to the State, which is reward for the sacrifice and courage of those women now working steadfastly in the ranks of labor.

Signed on behalf of the committee.

GEORGE NEWMAN, M. D.,
Chairman.

E. H. PELHAM, *Secretary.*

JANUARY, 1916.

MIGRATION OF WOMEN'S LABOR THROUGH THE EMPLOYMENT EXCHANGES IN GREAT BRITAIN.¹

During 1914 the number of women who obtained employment in other districts through the employment exchanges was 32,988; in 1915 the number increased to 53,096, and 1916 to no less than 160,003.

In some cases these figures merely indicate a transference of labor from, e. g., one village to the next, or from one district of London to another; in others they indicate a complete change of residence and of occupation. (The number of women at present being transferred away from home through the employment exchanges to work at a distance amounts to an average of between 4,000 and 5,000 a month.) In general the figures illustrate the increasing mobility of women's labor due to war conditions.

Two main difficulties have been experienced by the exchanges in the past in attempting to move even women without domestic ties from areas where there was unemployment or a lack of staple industries employing women's labor to centers where their services were in demand. In many cases the wages offered were too low to support a woman living in a strange town, or to attract a woman from a district where the men of her household normally earned high wages. In others, even where the wages offered were comparatively high, there was a lack of a compelling motive strong enough to counteract the working woman's natural distrust of new conditions of employment amongst strange surroundings.

These difficulties have been in great part lessened by the increasing competition during the last two years for women to carry out Government contract work, or to act as substitutes for men, which has resulted in a growing demand for their services on favorable terms. At the same time, economic pressure in the early days of the war and the patriotic desire of women of all classes to undertake work directly in connection with the manufacture of munitions and other war supplies have been powerful incentives to women to volunteer for work away from home if necessary.

The migration of women has also been very considerably facilitated by the arrangements made for their housing, welfare, and recreation in the larger demand centers, through the activities of the Ministry of Munitions and of the local advisory committees on women's war employment appointed under the Labor Exchanges Act (details of whose work in this connection were described in an article in the November, 1916, issue of this journal).

¹ Great Britain. Board of Trade Labor Gazette. March, 1917, pp. 92, 93.

Some incidents of this war-time migration of women's labor are described below.

In the early days of the war women thrown out of employment in the pottery districts were moved to silk mills in neighboring towns, cotton operatives and carpet weavers were transferred to the Yorkshire woolen mills, and tailoresses from Cambridge, Cardiff, Belfast, and elsewhere were imported into Leeds for work in the local clothing factories.

In the West Midlands district alone, where before the war the migration of industrial women was practically unknown, over 4,000 women were during 1915 placed by the employment exchanges in employment away from their own districts, the greater number on munitions work, and others as artificial silk workers, rubber workers, chocolate makers, farm hands, and as substitutes for men in various kinds of work.

In the great majority of cases the occupations were entirely new to the workers, who were drawn from such diverse occupations as carpet weaving, chair making, domestic service, dressmaking, fustian cutting, lock making, millinery, shopwork, tailoring, web weaving, and pottery decorating.

Similarly much useful work was accomplished during this early period by the exchanges in transferring inland to other employment women from seasonal resorts on the east coast, and fisher girls and other women engaged on subsidiary industries in fishing towns.

For example, women from Scarborough and Grimsby were moved to Keighley and the Colne Valley, and between March, 1915, and the end of the year no less than 700 women from the northeast coast towns and villages in Scotland were found employment in the Dundee jute mills and other industries of the town.

During the last year women have been transferred through the exchanges in steadily increasing numbers to act as substitutes for men in clerical and commercial occupations or in staple industries and to meet the growing demand for their services in agricultural districts and in different large munitions centers.

Some 300 women, for example, have been transferred from the Provinces for work in Government offices in London, in addition to the 11,000 or so who have been drawn into this work from London and its suburbs. Over 200 women have been imported from other northern districts into Huddersfield to act as pieceners, and a successful experiment was made at Barwell in drawing in some dozens of women from other East Midlands towns and villages to undertake work on various processes in the boot trade hitherto entirely performed by men.

During the summer of 1916, partly as the result of a specially organized scheme for vacational land workers, 1,225 women were moved

to rural areas for fruit picking, harvesting, and other seasonal work, in addition to the very large numbers who were found permanent employment on the land.

The effort made by the Minister of Labor and the Ministry of Munitions in recruiting for munitions work to avoid as far as possible disturbing the labor employed on other important work in munitions centers or in other areas has in many cases necessitated the transference of women over considerable distances. Special propagandist campaigns have been undertaken appealing to unoccupied women in nonindustrial areas remote from the center where their labor is required. For example, efforts have been made to enroll the services of women in eastern and southern coast towns, in London suburbs, and in Tyneside towns, where there is normally little outlet for women's industrial activity.

During the last month 5,118 women from some 200 different exchange areas were brought into eight large munitions centers alone.

To one factory, for example, in the south of Scotland, 1,641 women were brought during this period from 63 different districts, including 228 from two Tyneside towns alone, 40 from Berwick, 55 from Inverness, and 9 from one small Fifeshire village. To another in the West Midlands 772 women were imported from centers as far apart as Aberdeen and Penzance.

In this responsible work of transferring large numbers of women away from home the exchanges have had valuable assistance from local authorities, from women's county committees for agriculture, from the central and local advisory committees on women's war employment, and from other voluntary workers cooperating with them unofficially in meeting emergency problems.

As a general result the employment exchange authorities are able to guarantee that no woman is sent forward for employment away from home without suitable arrangements having been made as to reception and transit at the other end, lodging or hostel accommodation, and general welfare. Women submitted for work in national factories have to pass a medical test before they leave home, and in all cases before proceeding on their journey women are fully informed as to the conditions of employment, the details of the journey, the address of the exchange at the other end, and the nature and approximate cost of the lodging accommodation available.

The exchanges also have general powers under the Labor Exchanges Act to advance money for traveling expenses by means of railway warrants.

EMPLOYMENT AND REMUNERATION OF WOMEN IN GREAT BRITAIN—MUNITION ORDERS.

No. 9.

THE MUNITIONS (REMUNERATION OF WOMEN AND GIRLS ON WORK NOT RECOGNIZED AS MEN'S WORK) CONSOLIDATED ORDER, No. 2, DATED JANUARY 6, 1917, MADE BY THE MINISTER OF MUNITIONS IN PURSUANCE OF SECTION 6 OF THE MUNITIONS OF WAR (AMENDMENT) ACT, 1916 (5 AND 6 GEO. 5, c. 99).

Whereas section 6 of the Munitions of War (Amendment) Act, 1916, provides as follows:

6. (1) Where female workers are employed on or in connection with munitions work in any establishment of a class to which the provisions of section 7 of the principal act as amended by this act are for the time being applied by an order made thereunder, the Minister of Munitions shall have power by order to give directions as to the rate of wages, or (subject, so far as the matter is one which is dealt with by the Factory and Workshops Acts, 1901 to 1911, to the concurrence of the secretary of state) as to hours of labor, or conditions of employment of the female workers so employed.

(2) Any directions given by the Minister of Munitions under this section shall be binding on the owner of the establishment and any contractor or subcontractor employing labor therein and the female workers to whom the directions relate, and any contravention thereof or noncompliance therewith shall be punishable, in like manner as if the order in which the direction is contained was an award made in settlement of a difference under Part I of the principal act.

(3) No directions given under this section shall be deemed to relieve the occupier of any factory or workshop from the obligation to comply with the provisions of the Factory and Workshops Acts, 1901 to 1911, or of any orders or regulations made thereunder, or to affect the liability of any person to be proceeded against for an offense under the Employment of Children Act, 1903, so, however, that no person be twice punished for the same offense.

And whereas the establishments named in the second schedule hereto are establishments of a class to which the provisions of section 7 of the principal act, as amended by the Munitions of War (Amendment) Act, 1916, are for the time being applied by an order made thereunder. Now, therefore, in pursuance of the above-mentioned powers, the Minister of Munitions hereby orders and directs that the

directions contained in the first schedule hereto regarding the wages of female workers employed on munitions work shall take effect and be binding upon the owners of the establishments named in the second schedule hereto and any contractor or subcontractor employing labor in any such establishment, and the female workers to whom the directions relate, as from January 22, 1917.

This order may be cited as "The Munitions (Remuneration of Women and Girls on Work not Recognized as Men's Work) Consolidated Order, No. 2."

This order amends and extends the directions given in the orders of July 6 and September 13, 1916 (Statutory Rules and Orders, 1916, Nos. 447 and 618), relating to the remuneration of women and girls on munitions work of a class not recognized as men's work and in The Munitions (Remuneration of Women and Girls on Work not not Recognized as Men's Work) Consolidated Order, No. 1 (Statutory Rules and Orders, 1916, No. 759).

Dated this 6th day of January, 1917.

Signed on behalf of the Minister of Munitions.

U. WOLFF,

Deputy Assistant General Secretary.

MINISTRY OF MUNITIONS OF WAR,
6, Whitehall Gardens, London, S. W.

First schedule.

DIRECTIONS RELATING TO THE REMUNERATION OF WOMEN AND GIRLS ON MUNITIONS WORK OF A CLASS WHICH PRIOR TO THE WAR WAS NOT RECOGNIZED AS MEN'S WORK IN DISTRICTS WHERE SUCH WORK WAS CUSTOMARILY CARRIED ON.

1. Where women or girls are engaged on munitions work of a class which prior to the war was not recognized as men's work in districts where such work was customarily carried on, the time rates for piece-workers and premium bonus workers shall be as follows:

	Per hour.
Workers 18 years and over.....	4d. [8.1 cts.]
Workers 17 years and under 18.....	3½d. [7.1 cts.]
Workers 16 years and under 17.....	3d. [6.1 cts.]
Workers 15 years and under 16.....	2½d. [5.1 cts.]
Workers under 15 years.....	2d. [4.1 cts.]

2. The rates for such women and girls when customarily on time shall be as follows:

	Per hour.
Workers 18 years and over.....	4½d. [9.1 cts.]
Workers 17 years and under 18.....	4d. [8.1 cts.]
Workers 16 years and under 17.....	3½d. [7.1 cts.]
Workers 15 years and under 16.....	3d. [6.1 cts.]
Workers under 15 years.....	2½d. [5.1 cts.]

3. Women and girls in danger zones shall be paid $\frac{1}{2}$ d. (1 cent) per hour in addition to the above rates. Allowances for other processes which are dangerous or injurious to health will be decided on the merits of such cases.

4. In an establishment in which a custom prevailed prior to the war of differentiating between the rates of wages paid to women and girls employed in warehouses and those otherwise employed, an application may be made to the Minister of Munitions for special directions as to the rates of wages to be paid to women and girls employed in warehouses.

5. Women and girls may be rated at $\frac{1}{2}$ d. (1 cent) per hour less than their appropriate time rate under these directions for probationary periods not exceeding—

In the case of workers of 18 years and over.....	1 month.
In the case of workers of 16 years and under 18.....	2 months.
In the case of workers under 16 years.....	3 months.

Such probationary periods shall be reckoned from the date when women or girls are first employed, and no woman or girl shall be called upon to serve more than one probationary period.

6. The appropriate time rate shall, in the case of any woman or girl on piecework, be guaranteed irrespective of her piecework earnings. Debit balances shall not be carried forward from one week to another.

7. On premium bonus systems every woman's and girl's appropriate time rate shall in all cases be paid.

8. Women or girls shall not be put on piecework or premium bonus systems until sufficiently qualified. The period of qualification should not generally exceed four weeks.

9. Additional payment in respect to overtime, night-shift, Sunday, or holiday work shall be made to women and girls employed on munitions work of a class which, prior to the war, was not recognized as men's work in districts where such work was customarily carried on. Such additional payments shall be made in accordance with the custom of the establishment for the class of workpeople concerned, in cases where such a custom exists. Where no custom providing for such additional payment exists in the establishment, such additional payments shall be made at the rates and on the conditions prevailing in similar establishments or trades in the district. Where there are no similar establishments or trades in the district, the rates and conditions prevailing in the nearest district in which the general industrial conditions are similar shall be adopted. In the absence of any custom prevailing in the establishment, or in the district, or elsewhere, such additional payments shall be made at such rates and on such conditions as the Minister of Munitions may direct.

10. Piecework prices and premium bonus basis times shall be such as to enable a woman or girl of ordinary ability to earn at least 33½ per cent over her time rate, except in the case of an establishment where an application that this provision should be dispensed with either generally or as regards any particular class of workpeople has been approved by the Minister of Munitions.

11. The above rates and conditions shall be recognized as war rates and conditions, and as due to and depending on the exceptional circumstances resulting from the present war.

12. The position of any person or persons whose existing rates of remuneration exceed the rates herein prescribed, shall not be prejudiced by this order either by a reduction in existing rates or by replacement by another person or other persons at lower rates, nor shall employers be prevented from recognizing special ability or responsibility.

13. For the purpose of this schedule the term "men" means males of 18 years of age and over.

14. Any question which arises as to the interpretation of these provisions shall be determined by the Minister of Munitions.

Second schedule.

LIST OF ESTABLISHMENTS.

No. 10.

THE MUNITIONS (REMUNERATION OF WOMEN AND GIRLS ON WORK NOT RECOGNIZED AS MEN'S WORK) CONSOLIDATED ORDER, No. 3, DATED JANUARY 6, 1917, MADE BY THE MINISTER OF MUNITIONS IN PURSUANCE OF SECTION 6 OF THE MUNITIONS OF WAR (AMENDMENT) ACT, 1916 (5 AND 6 GEO. 5, c. 99).

[The body of this order is identical with that of No. 9, and is therefore not reprinted here. The differences in the orders are indicated by the schedules, which are reproduced in full.]

This order may be cited as "The Munitions (Remuneration of Women and Girls on Work not Recognized as Men's Work) Consolidated Order, No. 3."

This order amends and extends the directions given in the orders of July 6 and September 13, 1916 (Statutory Rules and Orders, 1916, Nos. 447 and 618), relating to the remuneration of women and girls on munitions work of a class not recognized as men's work and in The Munitions (Remuneration of Women and Girls on Work not Recognized as Men's Work) Consolidated Order, No. 1 (Statutory Rules and Orders, 1916, No. 759).

Dated this 6th day of January, 1917.

First schedule.

DIRECTIONS RELATING TO THE REMUNERATION OF WOMEN AND GIRLS ON MUNITIONS WORK OF A CLASS WHICH PRIOR TO THE WAR WAS NOT RECOGNIZED AS MEN'S WORK IN DISTRICTS WHERE SUCH WORK WAS CUSTOMARILY CARRIED ON.

1. Where women or girls are engaged on munitions work of a class which prior to the war was not recognized as men's work in districts where such work was customarily carried on, the time rates for pieceworkers and premium bonus workers shall be as follows:

	Per hour.
Workers 18 years and over.....	3½d. [7.6 cts.]
Workers 17 years and under 18.....	3¼d. [6.6 cts.]
Workers 16 years and under 17.....	2¾d. [5.6 cts.]
Workers 15 years and under 16.....	2½d. [4.6 cts.]
Workers under 15 years.....	1¾d. [3.6 cts.]

2. The rates for such women and girls when customarily on time shall be as follows:

	Per hour.
Workers 18 years and over.....	4½d. [8.6 cts.]
Workers 17 years and under 18.....	3¾d. [7.6 cts.]
Workers 16 years and under 17.....	3¼d. [6.6 cts.]
Workers 15 years and under 16.....	2¾d. [5.6 cts.]
Workers under 15 years.....	2½d. [4.6 cts.]

3. Women and girls in danger zones shall be paid ½d. (1 cent) per hour in addition to the above rates. Allowances for other processes which are dangerous or injurious to health will be decided on the merits of such cases.

4. In an establishment in which a custom prevailed prior to the war of differentiating between the rates of wages paid to women and girls employed in warehouses and those otherwise employed, an application may be made to the Minister of Munitions for special directions as to the rates of wages to be paid to women and girls employed in warehouses.

5. Women and girls may be rated at ½d. (1 cent) per hour less than their appropriate time rate under these directions for probationary periods not exceeding—

In the case of workers of 18 years and over.....	1 month.
In the case of workers of 16 years and under 18.....	2 months.
In the case of workers under 16 years.....	3 months.

Such probationary periods shall be reckoned from the date when women or girls are first employed, and no woman or girl shall be called upon to serve more than one probationary period.

6. The appropriate time rate shall, in the case of any woman or girl on piecework, be guaranteed irrespective of her piecework earn-

ings. Debit balances shall not be carried forward from one week to another.

7. On premium bonus systems every woman's and girl's appropriate time rate shall in all cases be paid.

8. Women or girls shall not be put on piecework or premium bonus systems until sufficiently qualified. The period of qualification should not generally exceed four weeks.

9. Additional payment in respect of overtime, night-shift, Sunday, or holiday work shall be made to women and girls employed on munitions work of a class which, prior to the war, was not recognized as men's work in districts where such work was customarily carried on. Such additional payments shall be made in accordance with the custom of the establishment for the class of workpeople concerned, in cases where such a custom exists. Where no custom providing for such additional payment exists in the establishment, such additional payments shall be made at the rates and on the conditions prevailing in similar establishments or trades in the district. Where there are no similar establishments or trades in the district, the rates and conditions prevailing in the nearest district in which the general industrial conditions are similar shall be adopted. In the absence of any custom prevailing in the establishment, or in the district, or elsewhere, such additional payments shall be made at such rates and on such conditions as the Minister of Munitions may direct.

10. Piecework prices and premium bonus basis times shall be such as to enable a woman or girl of ordinary ability to earn at least 33½ per cent over her time rate, except in the case of an establishment where an application that this provision should be dispensed with either generally or as regards any particular class of workpeople has been approved by the Minister of Munitions.

11. The above rates and conditions shall be recognized as war rates and conditions, and as due to and depending on the exceptional circumstances resulting from the present war.

12. The position of any person or persons whose existing rates of remuneration exceed the rates herein prescribed, shall not be prejudiced by this order either by a reduction in existing rates or by replacement by another person or other persons at lower rates, nor shall employers be prevented from recognizing special ability or responsibility.

13. For the purpose of this schedule the term "men" means males of 18 years and over.

14. Any question which arises as to the interpretation of these provisions shall be determined by the Minister of Munitions.

Second schedule.

LIST OF ESTABLISHMENTS.

No. 48.

THE MUNITIONS (EMPLOYMENT AND REMUNERATION OF GIRLS ON MEN'S WORK) ORDER, No. 4, DATED JANUARY 22, 1917, MADE BY THE MINISTER OF MUNITIONS IN PURSUANCE OF SECTION 6 OF THE MUNITIONS OF WAR (AMENDMENT) ACT, 1916 (5 AND 6 GEO. 5, c. 99).

Whereas section 6 of the Munitions of War (Amendment) Act, 1916, provides as follows:

6. (1) Where female workers are employed on or in connection with munitions work in any establishment of a class to which the provisions of section 7 of the principal act as amended by this act are for the time being applied by an order made thereunder, the Minister of Munitions shall have power by order to give directions as to the rate of wages, or (subject, so far as the matter is one which is dealt with by the Factory and Workshops Acts, 1901 to 1911, to the concurrence of the secretary of state) as to hours of labor, or conditions of employment of the female workers so employed.

(2) Any directions given by the Minister of Munitions under this section shall be binding on the owner of the establishment and any contractor or subcontractor employing labor therein and the female workers to whom the directions relate, and any contravention thereof or noncompliance therewith shall be punishable, in like manner as if the order in which the direction is contained was an award made in settlement of a difference under Part I of the principal act.

(3) No direction given under this section shall be deemed to relieve the occupier of any factory or workshop from the obligation to comply with the provisions of the Factory and Workshops Acts, 1901 to 1911, or of any orders or regulations made thereunder, or to affect the liability of any person to be proceeded against for an offense under the Employment of Children Act, 1903, so, however, that no person be twice punished for the same offense.

And whereas the establishments named in the second schedule hereto are establishments of a class to which the provisions of section 7 of the principal act, as amended by the Munitions of War (Amendment) Act, 1916, are for the time being applied by an order made thereunder. Now, therefore, in pursuance of the above-mentioned powers, the Minister of Munitions hereby orders and directs that the directions contained in the first schedule hereto regarding the wages of female workers employed on munitions work shall take effect and

be binding upon the owners of the establishments named in the second schedule hereto and any contractor or subcontractor employing labor in any such establishment and the female workers to whom the directions relate as from February 5, 1917.

This order may be cited as "The Munitions (Employment and Remuneration of Girls on Men's Work) Order, No. 4."

Dated this 22d day of January, 1917.

Signed on behalf of the Minister of Munitions.

U. WOLFF,

Deputy Assistant General Secretary.

MINISTRY OF MUNITIONS OF WAR,

6, Whitehall Gardens, London, S. W.

First schedule.

DIRECTIONS RELATING TO THE EMPLOYMENT AND REMUNERATION OF GIRLS UNDER 18 YEARS OF AGE ON MUNITIONS WORK OF A CLASS WHICH PRIOR TO THE WAR WAS CUSTOMARILY DONE BY MALE LABOR OF 18 YEARS OF AGE AND OVER IN DISTRICTS WHERE SUCH WORK WAS CARRIED ON.

NOTE.—These directions are on the basis of the setting up of machines being otherwise provided for. They are strictly confined to the war period and are subject to the observance of the provisions of Schedule II of the Munitions of War Act.

(1) Where girls under 18 years of age are employed on work customarily done by male labor of 18 years of age and over the following rates shall be paid:

(a) In the case of time-workers of—

17 and under 18 years, 18 shillings (\$4.38) per week reckoned on the usual working hours of the district in question for men in engineering establishments.

16 and under 17 years, 16 shillings (\$3.89) per week reckoned on the usual working hours of the district in question for men in engineering establishments.

Under 16 years, 14 shillings (\$3.41) per week reckoned on the usual working hours of the district in question for men in engineering establishments.

(b) In the case of pieceworkers of—

17 and under 18 years, the piecework price paid or allowed for the work when customarily done by men, less 10 per cent.

16 and under 17 years, the piecework price paid or allowed for the work when customarily done by men, less 20 per cent.

Under 16 years, the piecework price paid or allowed for the work when customarily done by men, less 30 per cent.

(2) Where girls are prevented from working owing to breakdown, air raid, or other cause beyond their control, they shall be paid for the time so lost at the rate of three-fourths of their above time rates, unless they are sent home.

(3) Girls shall not be put on piecework or premium bonus systems until sufficiently qualified. The period of qualification on shell work shall not, in general case, exceed three to four weeks.

(4) On piecework, each girl's time rate shall be guaranteed irrespective of her piecework earnings. Debit balances shall not be carried forward beyond the usual weekly period of settlement.

(5) On premium bonus systems each girl's time rate shall in all cases be paid.

(6) Overtime and night-shift and Sunday and holiday allowances shall be paid to girls employed on piecework or premium bonus systems on the same conditions as now prevail in the case of men in engineering establishments in the district in question for time-work.

(7) Piecework prices and premium bonus time allowances, after they have been established, shall not be altered unless the means or method of manufacture are changed.

(8) All wages and balances shall be paid to girls through the office.

(9) The foregoing rates and conditions shall not operate to prejudice the position of any person who has better terms and conditions, nor prevent employers from recognizing special ability or responsibility.

(10) Any question which arises as to the interpretation of these directions shall be determined by the Minister of Munitions.

Second schedule.

LIST OF ESTABLISHMENTS.

No. 49.

THE MUNITIONS (EMPLOYMENT AND REMUNERATION OF WOMEN ON MEN'S WORK) ORDER NO. 6, DATED JANUARY 24, 1917, MADE BY THE MINISTER OF MUNITIONS, IN PURSUANCE OF SECTION 6 OF THE MUNITIONS OF WAR (AMENDMENT) ACT, 1916 (5 AND 6 GEO. 5, c. 99).

NOTE.—This order reenacts the provisions of the Munitions (Employment and Remuneration of Women on Men's Work) Order No. 5 (Statutory Rules and Orders, 1916, No. 888), with an amendment to paragraph 1 (b) thereof.

[The body of this order is identical with that of No. 48, and is therefore not reprinted here. The differences in the orders are indicated by the schedules, which are reproduced in full.]

This order may be cited as "The Munitions (Employment and Remuneration of Women on Men's Work) Order, No. 6."

This order amends and reenacts the directions commonly known as L2 given in the Munitions (Employment and Remuneration of Women on Men's Work) Orders Nos. 1, 2, 3, 4, and 5.

Dated this 24th day of January, 1917.

First schedule.

DIRECTIONS RELATING TO THE EMPLOYMENT AND REMUNERATION OF WOMEN OF 18 YEARS OF AGE OR OVER ON MUNITIONS WORK OF A CLASS WHICH PRIOR TO THE WAR WAS CUSTOMARILY DONE BY MEN OF 18 YEARS OF AGE OR OVER IN DISTRICTS WHERE SUCH WORK WAS CUSTOMARILY CARRIED ON.

NOTE.—(1) These directions are on the basis of the setting up of the machines being otherwise provided for.

(2) These directions are confined to the war period and are subject to the observance of the provisions of Schedule II of the Munitions of War Act, 1915.

(3) Proposals under paragraph 1 (a) (ii) of these directions for advances to classes of women upon the time rates prescribed by paragraph 1 (a) (i) are proposals for changes in rates of wages within section 4 (2) of the Munitions of War Act, 1915, and must accordingly be submitted to the Minister of Munitions for his sanction.

1.—(a) (i) Women employed on time-work customarily done by men shall, except as provided in paragraphs 1 (a) (ii) and 1 (b) be paid:

Where the working week is 48 hours, £1 (\$4.87).

Where the working week is less than 48 hours, £1 (\$4.87) for the working week and for additional hours, if any, worked up to 48.

Where the working week exceeds 48 hours, as follows:

	£	s.	d.	
For 49 hours.....	1	0	6	[\$4.99]
For 50 hours.....	1	1	0	[\$5.11]
For 51 hours.....	1	1	6	[\$5.23]
For 52 hours.....	1	2	0	[\$5.35]
For 53 hours.....	1	2	6	[\$5.47]
For 54 hours.....	1	3	0	[\$5.60]

(a) (ii) Women employed on time, (a) on work of a class customarily done by semiskilled men, or (b) on work of a specially laborious or responsible nature, or (c) where special circumstances exist, shall be paid according to the nature of the work and the ability of the women, but in no case less than the time rates specified in paragraph 1 (a) (i).

(a) (iii) Overtime, night-shift, Sunday and holiday allowances, as customarily paid to men, shall be paid to the women to whom paragraphs 1 (a) (i) and 1 (a) (ii) refer. The basis for overtime shall be the working week for women in the establishment in question. For this purpose the working week for women shall in no case be reckoned as less than 48 hours or more than 54 hours. The rate for overtime for women other than those referred to in paragraph 1 (a) (ii) and 1 (b) shall be computed on the basis of £1 (\$4.87) for 48 hours.

(b) (i) Women employed on the work customarily done by fully skilled tradesmen shall in all cases be paid as from commencement the time rates of the tradesmen whose work they undertake.

(b) (ii) A woman shall be considered as not employed on the work customarily done by fully skilled tradesmen, but a part or portion only thereof if she does not do the customary setting up, or when there

is no setting up, if she requires skilled supervision to a degree beyond that customarily required by fully skilled tradesmen undertaking the work in question.

(b) (iii) Women who undertake part or portion only of the work customarily done by fully skilled tradesmen shall serve a probationary period of three months. The wages of such women for this period shall be reckoned as follows:

They shall be rated for a period of four weeks at the time rate of wages to which they are entitled under these directions when employed on time, and from that rate shall then rise from the beginning of the fifth week until the end of the thirteenth week by equal weekly increases to the district time rate of the fully skilled tradesman, and shall thereafter be rated at the district rate of the tradesman whose work they are in part or portion undertaking.

(b) (iv) In any case where it is established to the satisfaction of the minister that additional cost is being incurred by extra setting up or skilled supervision due to the employment of women in place of fully skilled tradesmen, the rates payable to women under these directions may, with the sanction of the minister, be subject, for so long as such additional cost is incurred, to deductions not exceeding 10 per cent to meet such additional cost, provided that no women shall in any case be paid at lower rates than those prescribed by paragraph 1 (a) of these directions.

(b) (v) No woman shall be called upon to serve more than one probationary period.

(b) (vi) Every woman who has served the probationary period shall receive from her employer a certificate to that effect.

(b) (vii) Any time immediately before the date on which these directions take effect during which a woman has been employed on part or portion of the work customarily done by fully skilled tradesmen shall be reckoned in diminution or extinction as the case may be of the probationary period prescribed by these directions.

(b) (viii) The same overtime, night-shift, Sunday and holiday allowances shall be paid to women employed on the work customarily done by fully skilled tradesmen or part or portion thereof as are customarily paid to the tradesmen. The basis for overtime for such women shall be on the working week for the tradesmen in the establishment in question. For this purpose the working week for such women shall be the same as that of the tradesmen.

2. Where women are prevented from working owing to breakdown, air raids, or other causes beyond their control, they shall be paid for the time so lost at three-fourths of their time rate unless they are sent home.

3. Women shall not be put on piecework or premium bonus system until sufficiently qualified. The period of qualification on shell work

shall not exceed four weeks without the express sanction of the Minister of Munitions.

4. Where women are employed on piecework they shall be paid the same piecework prices as are customarily paid to men for the same job.

5. Where women are engaged on premium bonus systems, the time allowed for the job shall be that customarily allowed to men for the same job, and the earnings of the women shall be calculated on the basis of the man's time rate.

6. Where the job in question has not hitherto been done on piecework or premium bonus system in the establishment in question, the piecework price, or the time allowed, shall be based on a similar job previously done by men, on piecework or premium bonus system as the case may be.

7. Where in the establishment in question, there are no data from previous operations to enable the parties to arrive at a piecework price or time to be allowed, the price or the time to be allowed shall be so adjusted that the woman shall receive the same percentage over the time rate of the class of men customarily employed on the job as such man would have received had he undertaken the job on piecework or premium bonus system as the case may be.

8. The principle upon which these directions proceed is that on systems of payment by results equal payment shall be made to women as to the men for an equal amount of work done.

9. Piecework prices and premium bonus basis times shall be fixed by mutual agreement between the employer and the woman or women who perform the work.

10. On piecework every woman other than a woman to whom paragraph 1 (b) relates shall be guaranteed, irrespective of her piecework earnings, the time rate prescribed by paragraph 1 (a) (1), or where special circumstances exist such higher time rate as the Minister of Munitions may direct. Every woman to whom paragraph 1 (b) relates shall be guaranteed the time rate prescribed by paragraph 1 (b).

Debit balances shall not be carried forward beyond the usual weekly period of settlement.

11. On premium bonus systems every woman other than a woman to whom paragraph 1 (b) relates shall, in all cases, be paid the time rate prescribed by paragraph 1 (a) (1), or where special circumstances exist, such higher time rate as the Minister of Munitions may direct. Every woman to whom paragraph 1 (b) relates shall, in all cases, be paid the time rate prescribed by paragraph 1 (b).

12. Overtime and night-shift and Sunday and holiday allowances shall be paid to women employed on piecework or premium bonus system on the same conditions as customarily prevail in the case of men for time-work.

13. Piecework prices and premium bonus time allowances, after they have been established, shall not be altered unless the means or method of manufacture are changed.

14. All wages and balances shall be paid to women through the office.

15. For the purpose of these directions, the term "woman" or "women" means a woman or women of the age of 18 years or over, and the term "man" or "men" means a man or men of the age of 18 years or over.

16. Any question which arises as to the interpretation of these directions shall be determined by the Minister of Munitions.

Second schedule.

LIST OF ESTABLISHMENTS.

OUTPUT OF MUNITIONS IN FRANCE.¹

With the concurrence of Mr. Lloyd George and with the hearty approval of M. Albert Thomas, the French Minister of Munitions, Lord Murray of Elibank, Director General of Recruiting for Munitions Work, appointed the following as a mission to visit the industrial districts in France and report on the causes which have contributed to the enormous increase which has taken place in the production of munitions in that country, notwithstanding that one-eighth of the country and five-eighths of the former metallurgical productivity are in the hands of the enemy.

The mission was as follows:

Mr. J. T. Brownlie, Chairman of the Amalgamated Society of Engineers and member of the National Advisory Committee and the Central Munitions Labor Supply Committee.

Mr. Alexander Duckham (Ministry of Munitions).

Mr. D. J. Shackleton, Labor Adviser (Ministry of Munitions).

Mr. Allan M. Smith, Secretary of the Engineering Employers Federation and member of the Central Munitions Labor Supply Committee.

Attached to the mission were two engineers of wide experience in the manufacture of war munitions in this country.

REPORT.

1. *Interview with M. Thomas.*—On 30th November, 1915, the mission, accompanied by Col. Le Roy-Lewis, military attaché to the embassy in Paris, were received by M. Albert Thomas, Minister of Munitions for France. At this meeting the mission explained the purpose of their visit, and M. Thomas placed every facility at their disposal in order that whatever they desired they might have an opportunity of inspecting. It is desirable at this stage to say that the treatment of the mission by the French ministry deserves an expression of the greatest gratitude. Every effort was made to simplify their task, and the attention paid to the mission by various officers and others detailed for the purpose gave evidence of the most friendly feelings. Both at the ministry and in the various factories all information asked for was made available, and no restriction was placed on the inspection of any processes of manufacture.

¹ Great Britain. Ministry of Munitions. Report by Mission, appointed by the director general of recruiting for munitions work, on the Output of Munitions in France, December, 1915. London, 1916. 10 pp. [Cd. 8187.]

2. *Factories visited.*—The mission visited 23 establishments engaged in production of munitions.

3. *Nature of investigation.*—The mission endeavored to ascertain what circumstances had led up to the greatly increased production of munitions in France.

4. *Causes of increase of production.*—Three factors appear to have contributed to this increase:

(A) Increasing intensity of production.

(B) Erection and equipment of new factories and extension of existing munitions factories.

(C) Adaptation of existing factories to the manufacture of munitions.

5. *Increased intensity.*—With regard to the increasing intensity of production, it was evident to the mission that as the war has proceeded the French nation has settled down with a determination and feeling of set purpose to the fulfillment of the task allotted to it.

There is no question but that the nation is at war, and the dominant sentiment not only of the men but also of the women is to carry the war to a successful termination. Everything else is subordinated to this determination.

Women, of whom many thousands are employed in munition factories, work with a good will which is most impressive; this spirit is also evident in the case of male workers.

The men have apparently welcomed the introduction of women into the factories and are doing everything they can to instruct and cooperate with them in increasing the output of munitions.

This feature is important and is worthy of careful notice in view of the fact that not only have the women been introduced for the purpose of increasing the supply of labor, but also of freeing the men for service in the army.

6. *New factories, etc.*—The erection and equipment of new factories has been resorted to in great measure.

It is remarkable that this effort is due to private enterprise.

No factories have been subsidized by the Government, nor have loans of any kind been made to the owners.

The owners have, at competitive prices, taken orders from the Government, and on the strength of these orders have purchased land, built factories, procured machinery, and now depend on the contract prices for reimbursement of their outlay and for gaining the profit to which they are entitled.

In cases of this description the Government has paid, on the equipment of the factory, one-third of the contract price of the contract taken and the remaining two-thirds of the price are paid as and when the munitions are delivered.

No attempt is made by employers to amortize the expenditure; it is sufficient that they are able to turn out the munitions. The rest is for determination after the war is over.

7. *Adapted factories.*—Remarkable success has attended the efforts of a number of employers who have abandoned their normal manufacture and adapted their machinery for the output of munitions.

This is especially noticeable in the case of shops whose usual pre-war trade was gear cutting, manufacture of small parts for motor cars, and of articles from bars of small diameter, etc.

In these cases very satisfactory progress is being made in the production of fuses, gaines, and shell up to 75 millimeters.

8. *Layout of shops.*—In new shops the layout much impressed the mission.

The amount of space left clear for transit of material and the mechanical devices for transport are most carefully thought out. The result amply justifies the expenditure, no congestion takes place and the facility with which the products are handled can not fail to have a good effect on the workpeople employed.

9. *Congestion in shops.*—In some of the older shops where congestion does take place, the free and unrestricted effort of the workpeople seems adversely affected in a sentimental as well as a material manner.

10. *The small producer.*—A feature of the French system is the fostering of the small producer for machine operations. Of these there are about 1,800 in the Paris district.

In such cases it is found that for reasons of administration, inspection, etc., it is better that small producers should be working under subcontract and not under direct contract from the Government.

The work let on subcontract is paid for at the price the main contractor receives from the Government, and no profit is made by the main contractor out of the work subcontracted.

Many small shops are manned by various members of a family and work day and night shifts.

In one case visited, for example, the day shift was superintended by the father and daughter and the night shift by the mother and son. Although the shop was of meager proportions and the equipment poor, very satisfactory output was effected, due no doubt to the spirit which dominated every one employed in it.

In another case, a very small shop, the work had been superintended by the wife of the owner, who was serving in the army. The woman worked herself to death, and the husband was ordered back from the army to continue the work she had been doing.

11. *Night shifts.*—Practically all the factories run night shift as well as day shift. In some cases the hours are divided into three shifts.

12. *Day-shift hours.*—Those on the two-shift system have one break in the day. The usual starting times are 6 a. m. to 7 a. m. A break of one to two hours (averaging one and a half hours) takes place at noon, and the day shift continues until 6 or 7 p. m. The long break in the middle of the day enables the women to look after the meals and comfort of their children at home and is highly valued on this account.

13. *Night-shift hours.*—On night shift usually 10 hours are worked, one hour is generally allowed for a meal, but this is usually taken at the machines, and where the period is half an hour it is paid for, and in few cases is the machinery stopped.

14. *Change of shifts.*—In most cases the shifts change over every fortnight, and on the change the workpeople get 24 hours off.

15. *Saturday work.*—No difference is made in the case of Saturdays, the same hours being worked as on other week days.

16. *Sunday work.*—In some cases no work is done on Sundays after noon. This gives an additional time for carrying out necessary repairs, etc.

17. *Introduction of female labor.*—In practically all cases, women have been introduced since the commencement of the war. They have been drawn from all kinds of occupations.

18. *Hours of female labor.*—In most cases the women work the same hours as the men, but where tramway journeys are undertaken the women start usually 15 minutes later and leave 15 minutes earlier than the men, to avoid congestion on the trams.

19. *Night-shift production.*—The production on night shift appears to equal that on day shift. In some cases it is better, owing, as was stated, to there being less interruption at night.

20. *Women on night shift.*—Not much female labor is at present employed on night shift. So far, the tendency is to have a female day shift and male night shift. This, however, is being modified, and probably women will, to a large extent, be engaged on night shift. Where three shifts are worked, the women are of course engaged during the night.

21. *Sphere of female labor.*—There is no restriction on the work which women may do. The only processes which are confined so far to men are setting up and tool making, though with regard to the former the women qualify for some part of it and with regard to the latter some women are actually grinding the edges of the cutting tools for machines.

22. *Output specialized.*—One consideration which has made the employment of unskilled male and female labor satisfactory is that in most cases the factory has specialized on a single product, or at least a small range of products.

For example, many factories specialize in fuses, others in games, others in 75 mm. shell, and so on, with the result that the repetitive nature of the work is increased and the tool-room and inspection work is proportionally decreased.

The specialization has been arrived at after due regard has been paid to the nature and capacity of the machinery employed.

The Government has paid great attention not only to the desires of employers in this matter, but also to the capacity of each factory and its plant.

23. *Capacity of female labor.*—The opinion in the French factories is that the output of females on small work equals and in some cases excels that of men, and in the case of heavier work, within certain limits, women are of practically the same value as men. It has to be kept in mind that physical considerations limit the range of work which may be done by women. It was noticed, however, that part of the work done by women involved greater strain than might be thought reasonable in this country.

24. *Locker and sanitary accommodation.*—In most cases good locker, washing, and sanitary accommodation is provided.

25. *Provision of overalls, etc.*—Several firms supply and arrange for the washing of caps and overalls for their women, but this is not universal. It was noted, however, that those women who are so provided give the impression of being superior to those employed in works where such provision is not made. No doubt the former will have the pick of the supply.

26. *Piecework.*—Practically all the work except tool-room work, setting up, and floor laboring is done on piece. Premium bonus system is not known.

In the case of women there does not appear to be any recognized time rate other than that paid during the period of training; these rates are usually recognized as guaranteed minimum rates.

The same piecework prices are paid to women as to men.

27. *Training.*—The period of training for machine operations for women is on the average one week. In some cases it extends to a fortnight, while in others it is less than one day.

28. *Technical instruction.*—There does not appear to be any arrangement made by the Government for technical instruction of unskilled men or of women.

This work is done in each factory.

In some cases a man will teach a woman, who will then take his place and teach another woman, and thereafter be promoted and be replaced as a teacher by her pupil.

In a few cases men originally objected to this system, but that objection has long since disappeared, and no difficulty is placed in the

way of unskilled male and female labor being enabled to acquire all the skill necessary for their work.

29. *Dilution.*—The introduction of unskilled male and female labor has not presented the difficulties experienced in this country. It was ascertained from representatives of the trade-union movement in France that trade-union conditions as regards wages and labor had been practically suspended.

In France there does not appear to be any recognized system of apprentices except in the higher branches of the engineering trade. Labor is being specialized and workpeople are permitted to specialize in more skilled operations as they show ability.

30. *Time keeping.*—A remarkable feature in the French factories is the almost entire absence of lost time. The time lost by the workpeople owing to avoidable causes does not exceed on the average 1 per cent of the total time.

At one factory, for example, where 10,000 are employed, on the day of the visit of the mission 10 to 20 were to be punished for culpable absence, of whom 2 or 3 were the worse for drink. On the same day 60 persons made a late start in the morning. On many days, however, not a single late start takes place.

31. *Penalties for lost time.*—In cases of loss of time the usual punishments for civilians are a reprimand for the first offense, in some cases a fine for the second offense, but generally the workman is dismissed for the second offense. It is, however, not usual for the second offense to take place within such a short period as would not justify its being dealt with by a further reprimand.

In the case of military workers the man is sent to his depot and dealt with under military law.

32. *Military labor.*—A large proportion of the male labor employed is military, and of this many of the men are those who have not been able to pass as fit for active service but in view of the military law are still mobilized.

33. *Strikes.*—Although prior to the war the usual labor troubles were experienced, no strike has taken place since the commencement of hostilities.

34. *Advance in wages.*—No applications for general advances in wages have been made by the workpeople since the commencement of the war.

35. *Female superintendents.*—There is not uniformity of opinion as to the desirability of having women superintendents of discipline, etc., as distinguished from superintendents of manufacturing operations. Some employers prefer female and others male.

36. *Industrial fatigue.*—There is no evidence of fatigue due to the long hours worked either on day shift or night shift. This is worthy of note, as the temperature of the shops is so high as to make the

atmosphere oppressive, and even at this temperature the workpeople have rigged up screens to prevent any draft playing on them. Perhaps the best evidence of the absence of industrial fatigue is afforded by the intensity of production and the good time keeping. On the other hand, it must be kept in view that the long break in the middle of the day and the absence of overtime beyond the usual working hours have, no doubt, an important bearing on this question.

37. *Importation of machinery.*—The extent to which the owners of the factories have been able to import machinery much impressed the mission.

Thousands of new machines have been installed. These are mainly from America, but in many cases are of British and Swiss make.

Representatives were sent to America, provided with cash and instructed to purchase all the machinery available for munitions work, and if any machinery available was not exactly what was required, if it could be used, it was to be purchased. By this means there has been a steady flow of most valuable machinery from America to France.

38. *General conclusions.*—The general conclusions at which the mission have arrived are:

- (A) The people of France realize that they are at war.
- (B) The one idea in the mind of all is to bring the war to a successful issue.
- (C) The spirit which dominates the nation has prevented difficulties arising in the manufacture of war material.
- (D) Loss of time is practically negligible.
- (E) No trade-union restrictions exist at the moment.
- (F) Everything is done to increase production.
- (G) No limitation of profits exists and no question in this respect has been raised by the workpeople.
- (H) The manner in which the employers in France have been able to acquire machinery, and the initiative and energy displayed by them are beyond all praise.
- (I) In conclusion, it appears to the mission that the increase of production in France is due to one cause and one only, and that is the patriotic enthusiasm which exists there.

APPENDIX A.

REPRESENTATIVE LIST OF OPERATIONS UNDERTAKEN BY FEMALE LABOR IN MUNITION FACTORIES IN FRANCE.

(a) *Hand operations.*

Assembling.
 Bogey-running.
 Brazing water jackets of motors.
 Cartridge (rifle), complete.

Charging gaines with melinite.
Checking.
Compressing powder in rings on time fuses.
Core making.
Filing.
Filling shrapnel with resin and bullets.
General survey, for information of management, of quality of articles made.
Gauging shell, cartridge cases, fuses, rifle cartridges, etc.
Loading rifle cartridges.
Making up powder charges in bags.
Molding (sand).
Oxy. acet. welding.
Screwing on shrapnel caps.
Setting up.
Sights—
 Filing and finishing.
 Finishing and assembling optical work.
Soldering (electric iron).
Sound testing of shell.
Testing fuse taps.
Water-pressure testing of shell.

(b) *Machine operations.*

Boring, including finish boring of shell.
Centering.
Chamfering.
Cleveland machines—four bars (one woman working two machines).
Drilling.
Grinding—
 General.
 Turning tools (jigs supplied).
Lathes—
 Center—power and hand.
 Shell—four tools on one rest and base faced by tool on back rest, all on one operation.
 Shell—two tools on one rest.
 Rifle barrels—two tools on two rests.
 Turning copper bands.
 Finishing shell—back and front rest and former—hand-filing for finishing to gauge (one operation).
 Shell—combination boring.
 Fuse bodies filed on lathes to make them concentric with thread.

Machines—two and three worked by a woman according to length of operation.

Milling—hand-fed—in some cases not straight work.

Thread-milling machine for case and shell.

Narling recess for copper bands.

Painting shell.

Recessing for copper bands.

Rectification of shell (machine).

Rifle barrels—

Boring—one woman working two boring machines, two barrels to each machine.

Turning, two tools—two rests.

Milling, except milling for foresight.

Stamping studs—hot metal.

(c) *Special instances of complete manufacture.*

75 millimeter shell, complete.

120 millimeter shell, complete.

Fuses, complete.

Rifle cartridges, complete, including loading, but not loading of caps.

APPENDIX B.

STATEMENT SHOWING PRESENT AND FORMER OCCUPATIONS OF WOMEN EMPLOYED IN ONE OF THE MUNITION FACTORIES IN FRANCE.

Department.	Number of work-women.	Occupation in factory.	Former occupation.
Boring.....	41	Vertical boring.....	15 housewives. 1 corsetière. 20 factory girls. 4 mechanics. 1 florist.
Hardening.....	39	30 inspectors..... 9 laborers.....	29 housewives. 1 shirt maker. 1 cutter out. 1 domestic. 1 clerk.
Finishing.....	337	337 turners.....	6 factory girls. 30 dressmakers. 30 children's nurses. 1 hospital nurse. 36 domestics. 6 lace makers. 68 housewives. 46 clerks.
Inspection room.....	255	255 inspectors.....	120 factory girls. 56 housewives. 60 dressmakers. 4 shorthand writers. 40 clerks. 14 embroiderers. 30 breeches makers. 4 florists. 27 no occupation. 20 factory girls.

STATEMENT SHOWING PRESENT AND FORMER OCCUPATIONS OF WOMEN EMPLOYED IN ONE OF THE MUNITION FACTORIES IN FRANCE—Concluded.

Department.	Number of work-women.	Occupation in factory.	Former occupation.
General inspection.....	209	209 inspectors.....	67 housewives. 4 domestics. 3 artists. 2 hairdressers. 2 cashiers. 4 florists. 4 embroiderers. 18 dressmakers. 8 typists. 2 schoolmistresses. 15 children's nurses. 20 clerks. 60 factory girls.
Fuses.....	848	110 drillers..... 70 turners..... 55 correctors..... 45 dressers..... 45 setters up..... 40 greasers..... 35 markers..... 30 screw-tap makers..... 30 inspectors..... 363 gaugers..... 25 various.....	470 breeches makers, seamstresses, and milliners. 125 clerks. 125 housewives. 53 no profession. 75 factory girls.
Gaines.....	158	62 inspectors..... 40 turners..... 56 laborers.....	30 dressmakers. 6 furniture polishers. 10 florists. 4 bread carriers. 16 children's nurses. 10 weavers. 40 housewives. 16 tulle makers. 16 cardboard-box makers. 10 factory girls.

APPENDIX C.

STATEMENT SHOWING THE EARNINGS (IN FRANCS) OF MALE AND FEMALE LABOR IN MUNITION FACTORIES IN FRANCE.

<i>Males.</i>		<i>Females.</i>	
	Average per day.		Average per day.
Laborers.....	6.01 francs [\$1.16]	Minimum.....	3.53 francs [\$0.68]
Machinemen.....	10.42 francs [\$2.01]	Mean.....	5.95 francs [\$1.15]
Skilled.....	12.23 francs [\$2.36]		

NOTE 1.—The foregoing averages are averages of the mean earnings per shop. In ascertaining the averages the proportion of workpeople employed at the various rates in each shop has not been considered. Each shop furnished the mean of the earnings of its workpeople, and the above average is the average of the mean earnings supplied to the mission.

APPENDIX D.

STATEMENT SHOWING NUMBER OF HOURS WORKED PER WEEK IN MUNITION FACTORIES IN FRANCE.

TWO-SHIFT SYSTEM.

(1) *Day shift.*

Morning start varies from 6 a. m. to 7 a. m. Mean, 6.30 a. m.

Morning period, 4½ hours to 5½ hours. Mean, 5 hours 6 minutes.

Midday break, 1 hour to 2 hours. Mean, 1 hour 30 minutes.

Afternoon period, 4½ hours to 7 hours. Mean, 5 hours 30 minutes.

Stopping time, 6 p. m. to 8 p. m. Mean, 6.45 p. m.

Number of hours worked per day, 10 hours to 12 hours. Mean, 10 hours 45 minutes.

(2) Night shift.

Starting time, 6 p. m. to 8 p. m. Mean, 7.10 p. m.

Supper time, usually 1 hour, about midnight.

Stopping time, 5 a. m. to 7 a. m. Mean, 6.15 a. m.

Number of hours worked per night, $9\frac{1}{2}$ hours to 11 hours. Mean, 10 hours 10 minutes.

THREE-SHIFT SYSTEM.

4 a. m. to 12 noon or 6 a. m. to 2 p. m.

1 p. m. to 9 p. m. or 2 p. m. to 10 p. m.

8.45 p. m. to 4.15 a. m. or 10 p. m. to 6 a. m.

CHANGE OVER.

Two shifts.

Shifts change over each per fortnight with 24 hours off.

Three shifts.

In some cases the shifts do not change over; in others they change each fortnight, with 24 hours off.

There are no breaks for meals on the three-shift system, but in some cases light refreshment is taken whilst work proceeds.

REGULATIONS AS TO WAGES OF WORKERS IN MUNITIONS FACTORIES IN FRANCE.

The new regulations concerning earnings of male and female workers engaged in the manufacture of armaments, munitions, and war materials in Paris and in the Department of the Seine are as follows:

1.

The rates of pay provided for in the schedule hereto attached shall not be considered as effecting in any case a decrease in wages which may be higher at present, whether they be basic or piecework wages.

This schedule represents, with respect to the minimum wages, and with respect to piecework, the minimum hourly wages which should be earned by an average worker working normally, but in neither the one nor the other case do they preclude higher wages.

2. BASIC RATES.

A basic rate is established for occupations in Paris and the Department of the Seine. The basic rate shall be uniform for all workers, male and female, performing identical work.

The lowest wages paid must assure the minimum necessary to provide a living. Premiums, extra pay, etc., constitute supplementary earnings corresponding to the increased production of male and female workers more apt and more enduring.

This schedule of rates and the present regulations shall be posted in the workshops in accordance with regulations issued by the controller of labor.

3. PIECEWORK.

The rate of pay for piecework must be fixed in a manner to permit an average workman, working normally, to earn a minimum computed on the basic rate, and a bonus determined by the scale appended here (minimum hourly wage for piecework).

In case of disputes, the burden of proof rests on the employer to establish the fact that the piece rate surely permits the earning of the bonus provided.

There is no limitation of rate provided for piecework.

4. PREMIUMS (GRATUITIES OR ENGLISH PREMIUMS).

Male and female workers, to whom work may not be assigned at piece rates, may receive premiums or gratuities above the basic rate.

Their minimum earnings in that case (basic rate plus the premium or gratuity) must be fixed at the minimum piece rate of workers of the same class employed on like manufactures and working at piece rates.

5. EARNINGS OF WOMEN AT PIECEWORK.

For work exactly identical, performed under the same conditions by men and by women, the piecework wages paid the women shall not be less than those paid to men. If one part of the work done by the men (setting up machines, regulating tools, or supplementary care) is not performed by the women, or if male workers must be

provided in order to make operation possible, the total earnings of the women, plus the general expenses which the employment of women necessitates, shall not be less than that which men earn who perform all parts of the same work.

6. STABILITY OF PIECEWORK RATES.

The rates for piecework may only be decreased in case of actual modifications in machines having an influence on production and in proportion to that modification.

During the period of training of the workers, male or female, or during the period of adaptation required for new work, the proper rate of earnings shall not be less than the minimum rate known as the English rate, defined above in paragraph 2 of article 4.

7. IMPERFECT WORK.

If piecework is rejected because of imperfection and deductions are made from the earnings of male or female workers, such rejected work must be rendered useless in their presence. If, however, such imperfect work can be utilized by correction of the imperfection, of which the controller shall be the judge, the worker shall receive earnings as per schedule less costs of correction of the imperfection.

8. STOPPAGE OF WORK FOR CAUSES NOT INHERENT IN THE WORKERS.

In case of stoppage of work by accident to the machinery, lack of material, or any other causes not inherent in the laborers, the workers, male or female, shall be paid an allowance representing the loss of earnings during the period of unemployment. The sum thus paid as a substitute for earnings shall not take into account piecework earnings or premiums. Time lost in this manner shall be paid for at the basic rate.

9. PIECEWORK TICKETS.

Work tickets for piece rate or bonus work must show the district basic and special rate and the various bonuses.

The tickets must also show the number of pieces produced and the wage per unit and must be delivered to each worker on commencing work.

10. RATE SHEETS.

Rate sheets shall be prepared in conformity to a uniform model which will permit workers to easily determine the equality of wages in the different establishments. The model rate sheet will be prepared by the controller of labor.

11. EMPLOYMENT.

Regulations shall be established fixing the conditions of discharge and reemployment; they shall at all times guarantee the workers against earnings inferior to their individual ability, and assure the regularity of production of articles necessary for the national defense.

12. PENALTIES.

The system of penalties, in force in a certain number of workshops, shall be revised by a mixed commission appointed by the Minister of Munitions.

13. APPLICATION.

All differences arising in the application of these regulations shall, in cases of individuals, be laid before the controller of labor and, in collective cases, before the committee above provided for.

The earnings of special classes of workers, male or female, not specified in the present schedule, and which do not come under any of the specified classes, shall be fixed on identical bases by the action of the same commission.

14. REVISION.

The present rate schedule may be modified on demand of either the employers' or workmen's organizations.

BASIC MINIMUM WAGE SCALE.

Unskilled workers.

Basic wage: Men, 0.80 franc [15.4 cents]; women, 0.65 franc [12.5 cents]. Average minimum hourly wage for piecework: Men, 1 franc [19.3 cents]; women, 0.75 franc [14.5 cents].

SKILLED WORKERS.

Occupation.	Basic wage.		Average hourly minimum wage for piecework.	
	Francs.	Cents.	Francs.	Cents.
Fitters, semiskilled.....	0.75	[14.5]	0.95	[18.3]
Fitters, setters up, inspectors.....	1.00	[19.3]	1.30	[25.1]
Tool fitters.....	1.10	[21.2]	1.40	[27.0]
Turners, skilled.....	1.00	[19.3]	1.30	[25.1]
Turners, tool makers.....	1.15	[22.2]	1.45	[28.0]
Milling.....	1.00	[19.3]	1.30	[25.1]
Milling, hand-fed.....	1.10	[21.2]	1.40	[27.0]
Metal beaters, planers.....	1.00	[19.3]	1.30	[25.1]
Correctors.....	1.00	[19.3]	1.30	[25.1]
Correctors, tool makers.....	1.10	[21.2]	1.40	[27.0]
Tinsmiths, sheet-iron workers.....	.95	[18.3]	1.25	[24.1]
Boiler makers.....	1.00	[19.3]	1.30	[25.1]
Solderers' helpers.....	.75	[14.5]	.95	[18.3]
Solderers, autogenous.....	1.00	[19.3]	1.30	[25.1]
Hammer works: Blacksmiths, skilled pattern makers.....	1.15	[22.2]	1.60	[30.9]
Small forges: Blacksmiths' helpers (hand), and tool makers.....	.95	[18.3]	1.35	[26.1]

JUVENILE EMPLOYMENT.

[Memorandum No. 13.]

I. GENERAL.

1. It is now more than a century since the problems of juvenile employment first became the subject of public discussion and legislative enactment. For a long time, however, the factory acts were concerned only with conditions of employment in the textile trades, and it was only in 1864 that they were extended to certain non-textile processes including the manufacture of percussion caps and of cartridges, and in 1867 to other industries with which this memorandum is immediately concerned. Some reference has already been made in earlier memoranda to conditions of juvenile employment, but the subject is of such immediate urgency at the present time that no justification is needed for a fuller discussion of the subject, especially in so far as it concerns boys. At the present time when the war is destroying so much of its best manhood, the nation is under special obligation to secure that the rising generation grows up strong and hardy both in body and character. It is necessary to guard not only against immediate breakdown, but also against the imposition of strains which may stunt future growth and development. Long hours of work by day or by night, often coupled with unsatisfactory conditions of housing and transit, late hours and lack of parental care, make the dangers grave and immediate. Some spirit of inquiry and desire for change are natural features of adolescence, and harm may be done if they are unduly checked by long hours of monotonous toil and the absence of opportunity for healthy recreation. Though, fortunately, signs of immediate breakdown are not as yet generally apparent, it is interesting to note that in the annual report for 1915 of the chief inspector of factories the principal lady inspector states that:

Miss Constance Smith has been much impressed by the marked difference in outward effect produced by night employment on adult and adolescent workers. "Very young girls show almost immediately, in my experience, symptoms of lassitude, exhaustion, and impaired vitality under the influence of employment at night." A very strong similar impression was made on me by the appearance of large numbers of young boys who had been working at munitions for a long time on alternate night and day shifts.

2. Where definite symptoms of fatigue are already apparent, conditions outside the factory are frequently found to be a contributory cause as well as those within it. Thus, after examining 40 per cent

of the workers in a steel works, one of the medical investigators employed by the committee concludes:

First, that fatigue does exist among both the boys and the men.

Secondly, that the best evidence of fatigue are the muscular pains, the foot ache, the restlessness, the sleepiness and tired feeling of the workers, and, particularly among the boys, a dry skin, a vacant expression, and a skin rash.

Regarding the boys employed at this factory, he reports:

Of the boys it may be said for the most part that they are "so spiritless, so dull, so dead in look, so woe-begone and attacked with weariness to a dulling of their spirits" as to compel attention. These conditions are attributable in a very large measure to the conditions outside the workshop, many of them going to bed very late, due to a want of proper parental control.

Inquiries showed that in almost every case lost time was due to the fact that the boys went to bed so late at night that it was almost impossible for them to get up at the proper hour on the following morning. On the other hand, the same medical investigator reports as follows of the boys employed in a factory where, though the hours were long and the wages by no means high, the conditions outside the factory were highly favorable:

The nervous system shows its response to good conditions and to reasonable hours in the very large percentage of boys who feel perfectly fit and fresh on rising, though most of them are out of bed never later than 5.15 a. m., some of them even starting for their work at or before 5 a. m., but always fortified with food before doing so. It is all important to remember that the homes from which these boys come are, though small, in every case well situated; that is to say, there are no squalid courts, no back-to-back houses, no sordid areas as in most industrial towns. * * * These boys are an example of what juvenile workers under proper conditions can be. About 50 per cent of them are engaged for more than 60 hours per week and yet find time and are sufficiently fresh at the end of the day to cycle, to act as golf caddies, to swim, to boat, or to pass the time playing football or enjoying other healthy recreation. * * * In no case do they earn high wages nor do they come from what may be termed the children of the middle-class workers.

3. Again, it has to be remembered that boys and girls need a sufficient reserve of energy not only for the maintenance of health, but for growth. Even under normal conditions, there is some danger of juvenile employment adversely affecting physique, and this danger is materially increased by the present conditions of employment.

A social worker who has had considerable experience of boys employed in munition works stated that, so far as he knew, there had been no general breakdown, but then he did not expect to see immediate effects, notwithstanding the long distances that some boys had to travel. He suggested, however, that the boys are drawing on their strength, and pointed to the fact that boys fall asleep in the trains and trams, and often travel on beyond their stations. They have no leisure, no recreation, and no classes, and he was very anxious as to what would become of the boys after the war. He suggested that too big a price was being paid for output. Even the hours allowed under the factory acts were very lenient. The granting of relief at the week-end was a great boon.

II. HOURS OF LABOR.

4. In considering what hours of employment are reasonable for boys it is necessary to distinguish between boys under 16 years of age and those over. A recent witness before this committee has expressed the view that:

Boys between 16 and 18 were quite different from boys under 16, they were much stronger. Boys under 16, on the other hand, were probably more delicate than girls of the same age, and more likely to break themselves up. The essential safeguards were the reduction of hours and welfare work. Apart from the strain on the health involved, long hours had disastrous effects upon the characters of boys. They also might make an adequate amount of sleep difficult and, perhaps most important, they prevented adequate facilities for recreation. Such facilities were of primary importance both for the physical and the moral welfare of the boys. This latter danger was accentuated by the monotonous character of their work, which afforded no intellectual interest. In the absence of healthy recreation the boys' minds and conversation were likely to become unhealthy and to lead to a general deterioration in character. Eight hours of sleep at least were essential, nine hours would be better. Unfortunately many boys got only six or seven hours.

The committee entirely concur in the view of this witness as to the importance of recreation, especially for younger boys, and they note with satisfaction the statement in the report for 1915 of the chief inspector of factories that requests for Saturday afternoon work have become less common, and that there seems to be a more general recognition of the advantage of the week-end rest. Recreation is necessary, not only for the physical well-being of boys and girls, but also as a healthy relief from the monotony of work.

5. At a time when night work is so prevalent, the question of sleep is a matter of special concern, and there is much danger that it may be unduly curtailed. The temptations of the cinema and the amusements of the street tend to keep boys and girls up too late; while the distance of the home from the works often renders early rising compulsory. The selling of newspapers in the evening and in the early morning before work is not unknown. It must be remembered, too, that in many instances the home conditions leave much to be desired, even where the wages earned are high. Thus an inquiry made at a large munitions center showed that out of 33 boys employed at one factory only 3 had a room to themselves, and the majority shared a bed with at least one other person. In a number of cases three persons occupied a single bed. The following cases, which are typical of many, may also be quoted:

1. A boy, aged 14, stated that his average wage was 19s. [\$4.62] weekly. He slept in the same bed with two young men each earning about £2 [\$9.73] a week; also in the same room, but in another bed, two young girls slept.

2. A boy, aged 16, earning about 22s. [\$5.35] weekly, slept in a bed with another boy. In another bed, in the same room, a boy and girl slept.

In some cases the same beds are occupied by day as well as by night.

The question of sleep during the day also needs consideration. It can hardly be disputed that under the ordinary conditions of an industrial home sleep during the day is not comparable with that which should be obtained at night. Noises in the street and in the home, the family meals, and other causes interrupt sleep during the day. Apart from this a good deal depends on the influence of the parents; though the boy may go to bed immediately he leaves the night shift, it has been stated that he not infrequently gets up early in the afternoon so as to obtain some social amusement before going to work. On the other hand, inquiries made on behalf of the committee show that this is not always so. Thus in one instance out of 81 boys employed alternately on day and night shifts, 36 boys obtained 8 or more hours of sleep at night as compared with 56 boys when they slept during the day. The greater amount of sleep obtained in this case by the boys when they slept during the day may be accounted for by the fact that they came from very crowded homes and could generally get a bedroom to themselves only during the day, an advantage which has to be set off against the disadvantages referred to above.

6. Though these evils may be mitigated in individual cases, their general removal is beyond the powers of factory management, and they must accordingly be taken into account in determining hours of labor and other conditions of employment.

7. Under the Factory and Workshops Act, 1901, boys and girls under 18 years of age, who are legally exempt from further attendance at school, may be employed for 12 hours ($10\frac{1}{2}$ exclusive of meal times) a day during the week, and for 8 hours ($7\frac{1}{2}$ exclusive of meal times) on Saturdays, that is to say for a weekly period of 60 hours. Subject to some exceptions in the case of boys all night work and Sunday work is forbidden, as also is overtime. Under section 150 of the act the secretary of state has power in case of public emergency to relax these restrictions, and since the commencement of the war this power has been widely exercised. The weekly hours have frequently been extended to 67, and in some instances even longer hours have been worked. The daily hours of employment have been extended to 14, and occasionally even to 15 hours; night work has been common; Sunday work has also been allowed, though latterly it has been largely discontinued.

8. The hours prescribed by the factory act are to be regarded as the maximum ordinarily justifiable, and even exceed materially what many experienced employers regard as the longest period for which boys and girls can usefully be employed from the point of view of either health or output. Any extension of these hours must therefore be critically examined with a view to discontinuance on the first opportunity. The problem of the limitation of the hours for

which boys are employed is one of special difficulty, owing both to dearth of labor available and to the extent to which they are employed to assist men; in the absence of the boys the work of the men may be hindered or altogether stopped. The demand for adult male labor both for industry and for the army is so acute that any substitution of adult for boy labor is impracticable. In 1912 the departmental committee on the "Night employment of male young persons" rejected, with regret, as impracticable the general establishment of the three-shift system, and existing conditions have only emphasized the difficulties in carrying out such a system.

9. In these circumstances the committee, though with great hesitation, recommended in their memorandum on "Hours of work" that boys should be allowed to be employed for the same hours as for men (about 65 hours a week); they urged, however, that every effort should be made not to work boys under 16 for more than 60 hours a week, and also that opportunity should be afforded for outdoor recreation on Saturday afternoon. An extension of the weekly hours beyond 60 can only be obtained by increasing the length of the working day or by reducing the week-end rest. Such extensions impose a strain, which only exceptional circumstances can justify, and the committee are strongly of opinion that every effort should be made to restrict the employment of all boys under 16 within the limit of 60 hours, even at the cost of some inconvenience to male labor. They trust that the time has now come when exceptions can be limited to cases where boys under 16 are employed to assist men.

10. Similar difficulties do not often arise in regard to the employment of girls, and as employment has become more organized a noticeable reduction has taken place in the hours of work. Employers have increasingly recognized that there are definite limits beyond which women and girls can not usefully be employed. At a number of factories the three-shift system has been introduced, and in works where this has not been found practicable the weekly hours have frequently been kept below 60. The committee are glad to learn that the Ministry and the Home Office are now taking steps to bring the hours of work for women and girls in controlled establishments generally within the weekly limit of 60 hours allowed under the ordinary provisions of the factory act.

11. *Hours of daily work.*—While there can be no doubt that a daily period of 12 hours is longer than is desirable under ordinary circumstances, the committee do not feel justified in recommending that no extension beyond this limit should be permitted. Such extension, if the weekly hours are limited as proposed above, must be met by a corresponding reduction in the hours of work on Saturdays or on other days of the week, and it provides an opportunity for exercise in the

open air which might not otherwise be available. Some power of extension is of value to employers in enabling them to meet sudden emergencies, and the committee consider that, unless the conditions of employment are specially unfavorable, daily employment for more than 12 hours a day may continue to be allowed under the present exceptional circumstances provided that—

(a) The maximum weekly hours already recommended are not exceeded.

(b) Overtime employment should be concentrated on not more than three evenings in any week, and so far as possible not on consecutive evenings.

If these conditions are satisfied, the concession is not likely to do harm.

12. *Sunday work.*—The arguments in favor of a weekly period of rest put forward in the committee's memorandum on "Sunday labor" apply with special force in the case of boys and girls; they are less fitted to resist the strain of unrelieved toil, and are more quickly affected by monotony of work. Sunday work for boys and girls has always been less frequent than for men, and has recently been largely reduced through the action of the Ministry and the Home Office. Apart from a few cases where authority has been given to work on a Sunday in the event of a breakdown of machinery or similar emergency, the Home Office as a rule only authorize Sunday work on condition that each boy or girl employed on Sunday shall be given a holiday on another day in the same week, or as part of a system of eight-hour shifts in which provision is made for weekly or fortnightly periods of rest. Apart from this, permission for boys over 16 to be employed periodically on Sunday was on July 1 last only allowed in seven cases, and in three cases for boys under 16. In only one instance are boys employed every Sunday, but this is limited to boys over 16, and the total weekly hours are only about 56. In only one case are girls employed periodically on Sunday and there the concession is confined to girls over 16. It is greatly to be hoped that all Sunday work will shortly be completely stopped. Where the two-shift system is in operation, at least two shifts should be dropped at each week-end.

13. *Night work.*—Under the factory act the employment at night of women and girls is forbidden and is only allowed so far as munition works are concerned, in the case of boys over 14 employed in blast furnaces and iron mills. It should, however, be pointed out that the committee on the "Night employment of male young persons" in 1912 recommended the repeal of this concession so far as it affects blast furnaces, and its restriction to boys over 16 in the case of rolling mills. Acting on the recommendation of that committee, the secretary of state in 1913 withdrew an order allowing the employment of

boys over 16 on certain processes in the manufacture of cordite and guncotton. The same committee stated that—

We are strongly of opinion that the employment of boys under 18 years of age at night in factories is undesirable, and ought not to be allowed to any greater extent or at an earlier age, than is absolutely necessary. This applies specially to boys between 14 and 16 years of age, when the rate of growth is most rapid, and when the conditions of life ought to be rendered as favorable as possible for mental and physical development.

Under existing circumstances night work has been widely used owing to the desire to employ machinery for the maximum number of hours. The serious objections which exist to night work, notably in the case of young persons, have been already set out in the memoranda on "Employment of women" and "Hours of work." Subsequent experience has fully confirmed the propriety of the recommendations made in those memoranda, and the committee remain of the opinion that girls under 18 and boys under 16 should only be employed at night if other labor can not be obtained. Wherever possible it should be stopped. In March last, in reply to an inquiry as to the employment of girls of 15 at night, the parliamentary secretary to the Ministry stated that—

The general practice of the Home Office, in consultation with the Ministry of Munitions, has been and is to refuse all proposals for the employment of such young girls on night shifts. In one or two cases, however, through exceptional circumstances a departure has been made from this practice. These cases are now under review with the object of arranging for the discontinuance of such employment at the earliest possible moment.

14. *Change of shifts.*—On physiological grounds there is little doubt that if adults are employed at night the change from day to night shift should not be made too frequently; the body requires time to become accustomed to the altered conditions and frequent changes prevent the system from becoming accustomed to either day or night conditions. It has been represented to the committee that—

A period of a week on night shift is so short that a boy can not get accustomed to sleep in the day time. He is indeed glad to be free during the day, and for the short period of a week he can manage to exist with very little sleep. If, however, his night shift continued for a longer period, his physical being would very soon rebel against the loss of sleep, and he would be forced to take it.

On the other hand, unless they are made to work seven nights in the week (a highly objectionable plan), boys and girls will, during each week-end, tend to revert to their day habits; further, boys and girls suffer more quickly from the interruption of friendships or hobbies and the absence of recreation and amusements, and they are tempted to seek them at the cost of a perhaps already insufficient allowance of sleep; it is probable, too, that the adaptability of youth makes them suffer less than adults from frequent changes.

15. *Spells and breaks.*—There is considerable evidence in support of the view that young persons can not profitably work for a continuous period of as much as five hours (the maximum legal period). Even in somewhat shorter spells, a break of 10 minutes has proved highly beneficial. It not only affords a period of rest and recovery from fatigue and a break in the monotony of work, but provides an opportunity for refreshment, which is particularly necessary in the morning, since frequently the only food previously taken is a light breakfast hastily eaten before a long journey to work. The committee understand that the Home Office are now requiring the provision of an opportunity for refreshment in all cases where work begins before 8 a. m., and no breakfast interval is allowed and they hope that employers will arrange for similar facilities whenever the length of the spell approaches five hours, whether in the morning or in the afternoon.

16. *Holidays.*—In addition to the ordinary holidays boys and girls are likely to benefit greatly by occasional opportunity for a holiday of longer duration. Whenever feasible a week's holiday may be usefully granted, perhaps as a reward for regular attendance during the year.

III. SUPERVISION OF HEALTH AND WELFARE.

17. The committee in their memorandum on "Welfare supervision" recommended the appointment of welfare supervisors in all factories where women and girls are employed, and also wherever 100 boys are employed. The manager of a controlled firm, who have for many years taken an active interest in the welfare of their works, as regards the effect on girls, states—

The results have been eminently satisfactory, and we undoubtedly get the pick of the labor available in the town. Internally, there has been an improvement in the health, discipline, and broadened outlook of the girls, who are also more reliable. Generally, the girls have improved in manner and dress, and they have been taught self-respect; their morality has also improved. There is a general eagerness to come to our works, and we always have a very long "waiting" list. The majority of the girls stay with us till they are married. The age of marriage originally was at 18 and many of the girls made bad matches in consequence. Now they marry mostly from 23 to 25 and make very much more careful choice.

18. In the past the need for the welfare supervision of boys has not been so widely recognized as in the case of women and girls; present conditions have, however, served to call attention to its urgency and it is receiving the attention of an increasing number of employers. Boys fresh from the discipline of a well-ordered school need help and friendly supervision in the unfamiliar turmoil of their new surroundings. They are not men and can not be treated as such. On the other hand high wages and the absence of the father have frequently tended to relax home control. Long hours of work prevent

attendance at clubs; healthy and organized recreation is seldom available. As might be anticipated under these circumstances, complaint is often made of boys leaving their work after a few days or playing truant; this may be the result of slackness and discontent, or the cause may be found in fatigue, sickness, or perhaps home troubles. If smooth working is to be secured, the real causes of such discontent and trouble must be ascertained and appreciated. Experience, however, shows that the problems involved are outside and distinct from those of ordinary factory discipline, and they are likely to remain unsolved unless someone is specially deputed for the purpose.

19. The solution of these problems has been taken in hand by the welfare department of the Ministry, who have issued special memoranda dealing with the duties of a welfare supervisor. The more important of these may be briefly summarized as:

(a) To become acquainted with all boys when first employed; to be present at the medical examination by the factory surgeon, to note any matters needing attention, to arrange for the reexamination of special cases.

(b) To visit cases of sickness and to investigate other causes of irregular attendance and of complaints in regard to work.

(c) To receive complaints made by boys and their parents, and to dispose of misunderstandings.

(d) To be consulted before any boy is dismissed.

(e) To watch the conditions of housing and transit and the facilities for obtaining food.

(f) To supervise and promote arrangements for saving.

(g) To seek facilities for recreation and to organize their use. In one case, quoted by a witness, an excellent recreation ground was provided by a firm, but was at present unused largely owing to the lack of anyone to organize its use.

20. It may be of interest to give the following statement of duties assigned to the "Boy visitors" in the scheme of welfare supervision for boys which has recently been initiated at the royal ordnance factories at Woolwich Arsenal—

The boy visitors' work is directed to improving the boy workers' moral and material well-being and to reducing the difficulties which slackness, ill discipline, etc., cause the factory staff.

The present abnormal conditions of work, high wages, lack of healthy recreation, and in many cases the absence of the father, tend to thriftlessness, ill discipline, and other evils.

In fairness to the boy it should be said that bad timekeeping, etc., may be the outcome of genuine fatigue, illness, home troubles, or discontent. It is the business of the boy visitor to get at the root of these troubles by personal work amongst the boys and to inform the factory officials of the knowledge which his investigation of the boys' circumstances, home life, etc., will give him.

The boy visitor will, by personal guidance, work toward getting contented, well-disciplined boy workers, and the information he gathers will always be available to assist the staff in the smooth working of the factory.

1. To meet new boys on entry and keep a record of the boys' progress and career in the factory.

2. To deal with absentees and bad timekeepers—first with the boy, then, if necessary, with parents.

3. To see boys before dismissal or leaving and, if necessary, to see the parents.

4. To investigate shop and police reports and make recommendation thereon.

5. To keep an eye on the feeding arrangements, dining halls, lavatory accommodation, etc., and to report and make suggestions thereon to the welfare supervision department.

6. To inquire into and discuss with the boys their complaints and troubles, and, where necessary, present them on behalf of the boys to the proper authorities.

7. To overlook the general conditions and health of the boys, and, where necessary, arrange for medical inspection.

8. To suggest suitable candidates for convalescent homes after sickness or injury.

9. Where necessary, to visit the homes of the boys who are evidently ill-cared for, and report upon the home conditions, etc. To note specially the state of clothing and boots of boy workers.

10. To encourage and arrange recreations, sports, etc., at spare times.

11. To keep in personal touch with the boys by means of individual talks, meeting them at meal times, etc., and advising them in difficulties, encouraging them to thrift and well doing.

12. To gather information as to boys' characters and progress and capabilities for promotion and for post-war employment.

N. B.—The boy visitor has no executive authority and his function is to assist the boy when he is in difficulty or trouble and to place his case in a very tactful way before the foreman or manager. It is emphasized that great tact is necessary in the relations of the boy visitors as the boys' friend with the foremen and officials. The boy visitor should clearly show to the officials that his work will not in any way reduce their authority, but will strengthen it and help to secure efficiency and discipline in the factory.

The boy visitors are stated to have a definite responsibility for the selection of boys for employment. Notices are prominently displayed wherever boys are at work stating the name of the boy visitor for that particular shop, and how he can be communicated with. Records are kept of the boys' character, progress, trade, or technical training, amusements, manner, intelligence, appearance, and home circumstances. The plans for boys' recreation include the use of a recreation ground, formation of a boys' club, swimming competitions, and a standing country camp for short rest periods during the summer. Special canteen accommodation is reserved for boys.

21. *Instruction of young workers.*—The first days of factory employment are likely to press hardly on the boy or girl fresh from school. They take time to get acclimatized, and it may often be well to allow for the first week some relaxation of their conditions of employment. They should also be instructed in the best method of performing their work, and if possible also in its aim and purpose; by such means

they will not only become more quickly efficient but interest may be stimulated and monotony relieved. Thus in one munition factory the boys are to begin with being put together in a room under special supervision, so that they get a real insight into the work. In another the boys are put to work under supervision in a gallery where types of all machines are available. Under ordinary conditions young persons are frequently encouraged or even required by their employers to attend classes for technical or other instruction; such instruction is wholly advantageous, provided that the hours of work are sufficiently curtailed. At present, unfortunately, the stress of work has rendered the continuance of education impracticable. Recently an education authority in a large munition center has allowed boys of 13 to be employed full time on condition that they attended an evening school; it should be obvious, however, that for a boy who has to work from 6 a. m. until 5 p. m. or even longer, subsequent attendance at school is worse than useless.

22. *Food*.—Though good food may be generally obtainable in the home, this is not always the case during the long hours spent away from home. In many factories there are no means of obtaining a good hot meal at the factory or in its immediate neighborhood, and the necessary food must be brought from home. Such food may prove adequate, if proper facilities exist for warming it up, but it is liable to be unsatisfactory in character, or it may become stale and unpalatable. The committee accordingly desire strongly to emphasize the importance of adequate canteen provision, whereby good food can be obtained and eaten under restful conditions. In some instances provision may be required at night, though unnecessary during the day. A special part of the canteen should be set aside for boys, otherwise they may be crowded out by the men. When the numbers are sufficient, there is much to be said for the provision of a separate canteen for boys, but in such cases the question of supervision should not be overlooked. Facilities should also be available for obtaining light refreshments at stated times. Where workers have to travel a distance to and from their work provision should be made for obtaining food at the beginning and end of each shift.

23. *Wages and saving*.—Much anxiety has been expressed by witnesses as to the demoralizing effects which may result from the high wages now commonly earned by young boys and girls. Such wages have undoubtedly been beneficial to health to the extent that they have brought good food and suitable clothing within reach of all. On the other hand they may encourage undue indulgence and extravagance. The possession of a large amount of pocket money is a serious temptation to indulge in thriftlessness and gambling. The need for saving against periods of sickness or other future difficulties is seldom appreciated. It is therefore of urgent importance that saving should

be encouraged. The personal aspect of the question should not, however, be allowed to obscure the national one; the boy should be shown that here is a way in which he can help his country, and an appeal should be made to his spirit of patriotism. The arrangements must be so organized as to attract the support of those who are not naturally thrifty. The rules should be few and easily understood. The collection of deposits should be made in close connection with the payment of wages. Since the wide variation of home circumstances, apart from other difficulties makes any uniform system of deductions from wages generally impossible, it is essential that the collection of deposits should be in the hands of the welfare supervisor or some other person who, through his acquaintance with the boy and his home, can advise him as to the amount which may properly be put by from one week to another. Upon the wisdom and tact of the supervisor rather than upon formal regulations should depend the restriction of improper withdrawals. If the boy thinks that he can not get his money out whenever he wants it, he may hesitate to deposit it. The rate of interest is sometimes important; too low a rate may prove a serious hindrance to success. The various forms of Government security now available should be found suitable for all conditions. Lastly, the support of the parents should be secured for whatever scheme is to be adopted.

24. *Supervision of health.*—Under existing conditions of employment, and with the urgent demand for juvenile labor, special care is necessary to prevent boys and girls entering employments for which they are physically unsuited. Local education authorities now possess much valuable information as to the physical condition of children leaving school, and means should be sought for making it available for employment committees and certifying surgeons. Once a boy or girl has been admitted to work, the welfare supervisor has many opportunities for guarding their health and physical fitness. The less robust should be given work within their powers. The effects of night work on individuals should be noted and arrangements should be made for those adversely affected to be employed only during the day. Careful records should be kept of any physical defects or other matters calling for such watchfulness. The maintenance of a high standard of personal cleanliness and the provision of suitable clothing have an important influence on health, and merit the careful attention of the welfare supervisor. As has already been pointed out, the conditions of employment may affect not only the present but also the future physical fitness and development of the boy or girl. In some cases it may be found possible to take periodical measurements of the heights and weights of the boys and girls in employment. As a result of the school medical service much evidence is accumulating as to the effect of employment of children while at

school, but no similar evidence is available as to the effects of employment after school age. Records, if carefully kept, should not only be of immediate value as giving early evidence of the presence of an undue strain, but may prove of more permanent value as throwing light on the many difficult problems arising out of the effect of occupation upon health.

Signed on behalf of the committee.

GEORGE NEWMAN, M. D.,
Chairman.

E. H. PELHAM, *Secretary*,
AUGUST, 1916.

JUVENILE EMPLOYMENT COMMITTEES IN GREAT BRITAIN.¹

The departmental committee on juvenile education in relation to employment after the war have recently recommended that juvenile employment committees should be set up in about 150 new areas where, up to the present, no such provision has been made. It is, therefore, of some interest to describe the nature and functions of the existing committees which have during the last six years been set up in connection with employment exchanges in about 130 areas of the United Kingdom.

Nearly half of these committees have been formed by local education authorities under the Education (Choice of Employment) Act, 1910, while a similar number of advisory committees for juvenile employment have been appointed by the Board of Trade under the Labor Exchanges Act, 1909. The latter include the London committee, which has itself formed 20 local advisory committees to work with the employment exchanges in the area of the L. C. C. It should be added that the control of the committees of this type has now passed from the Board of Trade to the new Ministry of Labor, together with the administration of the employment exchanges themselves. On the other hand, committees under the Choice of Employment Act are subcommittees of the education committee of the local authority in each case.

Four parts of the work may conveniently be distinguished. In the first place, there is the work of obtaining full knowledge of the educational and physical qualifications of boys and girls on leaving school or at later stages in their careers, in order that it may become possible to advise them suitably as to the occupations which they should enter. To this end teachers send to the committee, in respect of children leaving school, forms designed to obtain, among other information, particulars of their educational qualifications, their own wishes as to employment, and a summary of the school medical officer's health report. Invitations to meet members or officers of the committee are sent to children and their parents. Assistance is also given by committees to older children up to 17 years of age who apply to the exchange on seeking a change of employment.

The second part of the work consists in obtaining knowledge of the conditions of juvenile employment in the various trades, and of the particular vacancies which arise from time to time. The cooperation of employers is enlisted by means of circular letters and personal

¹ Great Britain Board of Trade Labor Gazette, February, 1917, pp. 48, 49.

canvass. Such a canvass is usually undertaken by the officers of the employment exchange, but it may also be carried on by a sub-committee of employers. In the third place, the committee have to bring the boys and girls desiring work into touch with the employers desiring workers. It is at this stage that the information which has been collected as to the children on the one hand and the available employment on the other is found to be of extreme value in helping each child to choose the employment which is best suited to him. A committee can often give most valuable advice which prevents a promising boy from taking up uneducative but highly paid work or from entering an occupation for which his aptitude or physical condition makes him quite unsuited. Often the child is persuaded to remain at school until a suitable vacancy arises, or, if he is placed forthwith, arrangements may be made for his attendance at continuation classes, or, again, he may be found temporary employment and record kept in order that he may be placed in skilled employment at a later date.

The last of the four parts of work referred to is that of supervising the boys and girls who have been placed, and giving them, on appropriate occasions, much needed advice designed to counteract the effects of the deteriorating industrial conditions to which they are so frequently exposed. For this purpose the committee will usually establish after-care committees and attract voluntary workers who are willing to keep in touch with boys and girls, and from time to time forward reports on their welfare to the committee. The influence of these after-care workers, exerted in a variety of ways, has been found to be extremely valuable in dealing with the difficulties of juvenile employment. It is largely directed to steadying the child during a difficult period by impressing upon him a sense of his responsibility to his employer, by deprecating frequent changes of employment without adequate reason and without the knowledge of the juvenile exchange, and by encouraging attendance at continuation classes and the practice of thrift. The visitor will concern himself, too, with the physical welfare of the child by urging parents to obtain expert advice when necessary. A special watch will be kept over the boy who has been placed in some temporary employment with a view to his becoming an apprentice in a skilled trade a year or two later.

Most committees are not content with limiting their work to the essential branches which have been indicated. They go further, and widen their activities in attempts to improve the general conditions of boys' and girls' employment. They use their influence in the direction of raising the age at which children leave school; in a number of districts exemption certificates are issued to children only after the cases have been referred to the local juvenile employment com-

mittee. They have, in some cases, secured the adoption and, in other cases, the better enforcement of by-laws under the Employment of Children Act; occasionally street trading licenses are issued only through the committee, who thereby are enabled to use their influence to dissuade parents from allowing children to take up this work. In some cases committees have induced employers to adopt a plan, which is rapidly growing in favor, of appointing in their works officers whose special duty it is to concern themselves with the welfare of the juvenile employees. The influence of many committees has been successful in inducing employers to encourage the attendance of their boy and girl workers at continuation classes, especially by allowing time off with pay during working hours, and by offering prizes or special prospects of promotion to those employees who do well at the classes.

A particularly promising avenue in which the activities of juvenile employment committees have recently been directed is that of convening conferences of employers and workpeople in various trades with a view to discussing the conditions and prospects of juvenile employment. It is satisfactory to note that a marked improvement in the arrangements for training boys and girls in the local trades has frequently resulted from such conferences.

Committees have naturally been concerned with the abnormal labor conditions arising as a result of the war. In present circumstances, boys and girls are in great demand for occupations providing no training for future employment. The high wages in these occupations, the consequent slackening of parental control—frequently accentuated by the absence from home of fathers in the army—the lengthened hours of labor, the general speeding up of industry, all have been blamed for an adverse influence resulting in less satisfactory educational and industrial training, in some injury to health, and in a marked deterioration of character. Juvenile employment committees have shown themselves fully alive to these difficulties, on which they were invited to report by the departmental committee referred to above.

The shortage of boys has resulted in numbers of occupations being entered for the first time by girls. In arranging this substitution the assistance of juvenile employment committees has been of much value.

Further, it has, to a limited extent, been found desirable to draft boys and girls from areas where their services are not much in demand to districts where there is a scanty supply of labor for essential industries, or where opportunities for training in skilled employment are available. Where such migration has been carried out through the exchanges, special arrangements have been made to secure the welfare of the boys and girls in their new spheres.

Finally, it is certain that very important work lies before these committees during the period of industrial resettlement after the war. Difficulties may be anticipated—they are indeed already noticeable—as a result of the increasing employment of female labor in industry leading to considerable displacement of boys. By means of conferences of the kind already mentioned, information is being collected with regard to the probable openings for boy and girl labor in the altered conditions of industry. Committees have shown themselves eager to support proposals for the extension of the normal school life and the establishment of some system of compulsory day or evening continuation classes. They hope, when peace is in sight, to get into personal touch with those boys and girls who are likely to be discharged from highly paid occupations, and persuade them, where possible, to accept employment promising some future, though offering smaller initial wages.

The war has naturally made many special demands upon voluntary social workers, but committees are endeavoring to keep their organization in being in the confident hope that their knowledge and experience of the question of juvenile employment may contribute to the solution of the many difficulties attending social reconstruction which are certain to arise in the future.

EMPLOYMENT OF WOMEN AND BOYS ON MUNITION WORK IN ITALY.¹

The *Bollettino dell' Ufficio del Lavoro* (Journal of the Italian Labor Department) for October 16, 1916, publishes the text of two circulars issued by the undersecretary for arms and munitions with regard to the employment of women in munition factories. The first of these circulars is dated August 23, and is addressed to various officials and administrative bodies. Having recapitulated numerous previous circulars as being based on a desire to promote the employment of women at work which they are capable of performing, so as to release men for work requiring great strength or high skill, and also to find work and wages for the wives and other dependents of men called to the colors, the document proceeds to state that the results already attained, though considerable, are not sufficient. "More must be done by following the examples set in Great Britain and in France."

In Italy (and particularly in southern Italy and Sicily) the employment of women in munition factories has met with passive resistance in some districts on the part of employers, in others on the part of workmen, or, owing to prejudice and traditional notions, on the part of the women themselves, whose aversion has been unmistakable and persistent.

In France, where the question of staffs of male workers is even more pressing than it is in Italy, the undersecretary of state for arms and munitions has ordered (in a circular, dated July 20, 1916) that after August 20, with a preliminary eight days' notice, all the conscripted workmen, without any exceptions, who are skilled merely in work on which they can be, and should be, replaced by women, are to be withdrawn. Attached to this order is a list of all the occupations to which the new provisions are applicable. Of course, the managers and foremen are to be kept on as conscripted workpeople.

In Italy, for reasons stated above, it is not possible to contemplate an immediate and general application of a measure analogous to the French order. Yet it is the intention of the department of arms and munitions that such a measure shall be adopted gradually, with local modifications, as need arises.

The district committees on industrial mobilization (assisted by the various provincial commissions for testing munitions) are therefore to compile exact and complete lists of the factories and the departments of factories devoted to the making of fuses, parts of fuses, bombs, diaphragms (for field telephones), and projectiles of small caliber (up to 87 mm.). Definite instructions are to be given by the aforesaid authorities to the managers of these factories for the purpose of insuring that by October 31, of this year, 50 per cent of the men of military age, whether discharged men or men allocated to factory work, shall be replaced by as many women or boys. The latter are to be recruited specially from the pupils of secondary schools, to whom an appeal was recently made in a circular issued by the minister of education.

¹From British Board of Trade Labor Gazette, December, 1916, pp. 452, 453.

Moreover, the factory managers are to be instructed that by December 31 the percentage must be brought up to 80.

In regard to the actual numbers corresponding to the percentages, special modifications may be made in those districts where the girls and women are least fitted for, and least disposed toward, industrial employment. In regard to such modifications, special reports must be submitted for approval to the ministry.

It is anticipated that as a result of such instructions there will be available, at the turn of the year, a large number of men who may be utilizable for work on shells of medium and large caliber and on such other work as can not be done by women and girls. Furthermore, it may be possible to restore a considerable number of men to the fighting ranks.

The second circular published in the *Bollettino* is dated September 28, and is devoted mainly to urging the various authorities to renewed and increased activity, in order to promote the employment of women. Sufficient progress, it is asserted, has not been made, much more being absolutely necessary in order to secure the safety of the country and to avoid unnecessary bloodshed.

Much credit is due to women for what they have done. But it is by no means enough. Out of 355,349 persons employed in 882 munition works, only 45,628, or 13 per cent, are women.

It is necessary to remove the obstacles to the larger employment of women. What is required is a convinced, intelligent, widespread, and vigorous propaganda that will destroy the preconceptions of manufacturers, the opposition of trade-unions, and inertia of women—such inertia being, fortunately, restricted to one locality.

For such a propaganda much help would be afforded by an exhibition of schemes recently sanctioned for the moral and material benefit of working women. Emphasis must be laid on the fact that the employment of women is not a mere artifice to get work done at low wages for the sole profit of the employer.

The recruitment of women for industrial work will be facilitated in proportion to the provision of means to safeguard their health and well-being, particularly in those transitory cases where it is necessary, owing to the exigencies of the time, to employ women on nightwork.

Compliance with the laws made to insure decency, health, and safety from accidents—important as it is in normal times—is now more than ever necessary.

The circular adds:

It may be affirmed that as soon as manufacturers show plenty of initiative and of adaptiveness for this new type of labor and cease to cherish preconceived opinions as to the inferiority of women's work and as to the low wages that it merits, the labor of women will respond splendidly to the utmost variety of demands. This is true not merely as to the highly satisfactory results of women's work in the making of cartridges, fuses, and boxes for shells, but also in actual work on the shells themselves and on their fittings. In various workshops in Liguria and Lombardy women are intrusted not only with making shells of small caliber, but also with making those of 102 mm., 105 mm., and even those of 149 mm. Thus it is evident that the field for utilizing the working powers of women is very wide, and that the very best results may be attained by admitting them to it. * * * The department expects to see month by month a marked and continuous increase in the percentage of women employed in the workshops devoted to the manufacture of the weapons necessary for the attainment of victory.

APPENDIX.

CONTENTS OF OTHER BULLETINS RELATING TO LABOR IN GREAT BRITAIN AS AFFECTED BY THE WAR.

Bulletin No. 221. Hours, fatigue, and health in British munition factories.

Introduction.

Summary of the committee's conclusions.

Sunday labor (Memorandum No. 1).

Hours of work (Memorandum No. 5).

Output in relation to hours of work (Memorandum No. 12), report by H. M. Vernon, M. D.

Industrial fatigue and its causes (Memorandum No. 7).

Sickness and injury (Memorandum No. 10).

Special industrial diseases (Memorandum No. 8).

Tetrachlorethane poisoning (report of the British medical inspector of factories).

Dope poisoning (leaflet issued by the British factory inspector's office).

Ventilation and lighting of munition factories and workshops (Memorandum No. 9).

Effect of industrial conditions upon eyesight (Memorandum No. 15).

British treasury agreement as to trade-union rules affecting restriction of output.

Munitions of War Act, 1915, relating to labor disputes and restoration of trade-union conditions after the war.

Munitions of War (Amendment) Act, 1916.

Munitions tribunals (provisional) rules for constituting and regulating munitions tribunals in England and Wales.

Compulsory arbitration in munitions industry in France.

Bulletin No. 222. Welfare work in British munition factories.

Introduction.

Summary of committee's conclusions.

Legal regulation of welfare work in Great Britain.

Value of welfare supervision to the employer, by B. Seebohm Rowntree, director of welfare department, Ministry of Munitions.

Welfare supervision (Memorandum No. 2).

Industrial canteens (Memorandum No. 3).

Canteen construction and equipment (Memorandum No. 6).

Investigations of workers' food and suggestions as to dietary (Memorandum No. 11).

Washing facilities and baths (Memorandum No. 14).

ADDITIONAL MATERIAL RELATING TO LABOR IN FOREIGN COUNTRIES AS AFFECTED BY THE WAR.

WOMEN IN INDUSTRY.

Woman's war work in Great Britain. Summary of British War Office report on woman's war work. (London, September, 1916. 54 pp. 72 illustrations.)

(In Monthly Review, December, 1916. pp. 88-92.)

Employment of women on munitions of war. Summary of Ministry of Munitions pamphlet entitled "Notes on the Employment of Women on Munitions of War, with an Appendix on Training of Munition Workers." (London, 1916. 94 pp., ill.)

(In Monthly Review, September, 1916. p. 105.)

Employment of women in retail stores. Summary of reports of the shops committee appointed by the Secretary of State for the Home Department to consider the conditions of retail trade which can best secure that the further enlistment of men or their employment in other national service may not interfere with the operations of that trade. (London, 1915. 10 pp.)
(In Monthly Review, July, 1916. pp. 162, 163.)

LABOR CONDITIONS AND LEGISLATION.

Effect of the war upon railway labor in Great Britain. Article based on report of the general secretary of the National Union of Railway Men in Great Britain, 1916.
(In Monthly Review, August, 1916. pp. 81, 82.)

Proposed ministry of labor in Great Britain. Article based on proceedings of British Trades-Union Congress, September 6 to 11, 1915.
(In Monthly Review, August, 1916. pp. 82, 83.)

Report of the chief inspector of factories and workshops. Summary of annual report of British factory inspector's office for 1915. (London, 1916. 15 pp.)
(In Monthly Review, December, 1916. pp. 121-123.)

Extension of unemployment insurance in Great Britain.
(In Monthly Review, November, 1916. pp. 65-68.)

Labor in Great Britain after the war. Resolutions of conference of representatives of capital and labor held in London, January, 1917.
(In Monthly Review, March, 1917. pp. 479, 480.)

Industrial unrest in Great Britain. Summary of Chapter II of Labor, Finance, and the War, edited by A. W. Kirkaldy. Published by authority of the council of the British Association for the Advancement of Science. (London, 1916.)
(In Monthly Review, April, 1917. pp. 520-525.)

New ministries in the British Cabinet.
(In Monthly Review, May, 1917. pp. 770, 771.)

Minimum-wage law in France.
(In Monthly Review, December, 1915. pp. 36-41.)

Chinese labor in France. Summary of article by "S. G. C., a Chinese correspondent," in the New Statesman, January 13, 1917. p. 343.
(In Monthly Review, March, 1917. pp. 480, 481.)

Compulsory arbitration in Norway.
(In Monthly Review, September, 1916. pp. 78, 79.)

Great Britain: The Public General Acts, 1914-16, London. Printed for F. Atterbury, King's Printer of Acts of Parliament, by Eyre & Spottiswoode (Ltd.), 1916. XII, 459 pp.

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Great Britain: Supplement No. 1, to November 2, 1914, to the Manual of Emergency Legislation. November, 1914. VII, 54 pp.

Great Britain: Supplement No. 2, to December 15, 1914, incorporating and superseding supplement No. 1, to the Manual of Emergency Legislation. December, 1914. XIII, 217 pp. Price, 1s. 6d.

Great Britain: Supplement No. 3, to April 30, 1915, in continuation of supplement No. 2, to the Manual of Emergency Legislation. May, 1915. XVIII, 219 to 697 pp. Price, 2s. 6d.

- Great Britain: Supplement No. 4, to August 31, 1915, in continuation of supplement No. 3, to the Manual of Emergency Legislation. September, 1915. XXVII, 462 pp. Price, 2s. 6d.
- Great Britain: Manual of Emergency Legislation, Defense of the Realm Regulations made to May 23, 1916. Second Edition. London. Printed for F. Atterbury by Darling & Son (Ltd.), 1916. X, 102 pp., ill.
- Canada: Copies of proclamations, orders in council, and documents relating to the European war; compiled by the department of the secretary of state of Canada. Ottawa, Government Printing Bureau, 1915. XX, 209 pp.; appendixes, 142 pp.
- Canada: First supplement to copies of proclamations, orders in council, and documents relating to the European war. Ottawa, 1915. XXXII, 526 pp.; appendixes, 350 pp.
- Canada: Second supplement to copies of proclamations, orders in council, and documents relating to the European war. Ottawa, 1916. LXVI, 527 to 1,050 pp.; appendixes, 351 to 537 pp.
- Canada: Order in council of March 23, 1916, for the extension of the provisions of the Industrial Disputes Investigation Act, 1907, other than section 63, to include employers and employees engaged in the construction, production, repairing, manufacture, transportation, and delivery of ships, vessels, works, buildings, munitions, ordnance, guns, explosives, and materials and supplies for the use of the military or naval forces.
- Canada: Order in council of November 10, 1916, respecting the high cost of living, as amended by order in council of November 29, 1916.
- Canada: Sessional paper No. 35a. The provision of employment for members of the Canadian expeditionary force on their return to Canada, and the reeducation of those who are unable to follow their previous occupations because of disability. A plan submitted by the secretary of Military Hospitals and Convalescent Homes Commission, together with appendixes dealing with similar work in England and on the continent of Europe. Ottawa, 1915. 53 pp.
- Canada: Sessional paper No. 185. Pensions granted and money allowances made to members of the Canadian expeditionary force since beginning of war to February 16, 1916. Ottawa, 1916. 83 pp.
- Canada: Ministry of Agriculture. Patriotism and Production more than Usual. Agricultural war book. Ottawa, January, 1915. 157 pp.

GOVERNMENT REGULATION OF INDUSTRIES AND COMMODITIES.

- Restrictions on output of textile establishments in Germany. Article based on material in Reichs-Arbeitsblatt, November, 1915; Soziale Praxis, November 11, 1915.
(In Monthly Review, April, 1916. Pp. 81, 82.)
- Government control of food supplies in Great Britain.
(In Monthly Review, March, 1917. Pp. 390-407.)
- Government control of food supplies in France.
(In Monthly Review, April, 1917. Pp. 525-533.)
- Government control of coal mines in Great Britain.
(In Monthly Review, April, 1917. Pp. 533, 534.)
- Government control of food supplies in Germany.
(In Monthly Review, May, 1917. Pp. 703-727.)
- Government control of food supplies in Italy.
(In Monthly Review, May, 1917. Pp. 727-744.)

WAGES.

Wages of miners in Germany during the first year of the war. Article based on material in *Soziale Praxis*, Berlin, 1915, Vol. XXV, No. 4, October 28, 1915, p. 89.

(In *Monthly Review*, April, 1916. Pp. 80, 81.)

Minimum-wage law in France.

(In *Monthly Review*, December, 1915. Pp. 33-41.)

New regulations as to wages of workers in munitions factories in France. Text of decree issued by minister of munitions on January 17, 1917.

(In *Monthly Review*, March, 1917. Pp. 332-335.)

PRICES.

Foreign food prices as affected by the war.

(In Bulletin No. 170 of the U. S. Bureau of Labor Statistics. (May, 1915.) Also summarized in *Monthly Review*, July, 1915. Pp. 42-44.)

Increase in retail prices of coal in Great Britain. Summary of British Board of Trade report of departmental committee to inquire into the causes of the present rise in the retail prices of coal sold for domestic use. (London, 1915.)

(In *Monthly Review*, July, 1915. Pp. 45-56.)

Retail prices in foreign countries.

(In *Monthly Review*, September, 1915, pp. 46-57; October, 1915, pp. 44-49; December, 1915, pp. 44-53; March, 1916, pp. 80-85; July, 1916, pp. 80-91; November, 1916, pp. 49-60; February, 1917, pp. 244-251.)

Increase in prices of commodities in Great Britain, 1916. Summary of interim report on meat, milk, and bacon of British Board of Trade. Departmental committee on prices. (London, 1916. 20 pp.)

(In *Monthly Review*, January, 1917. Pp. 51-56.)

Wholesale prices in Great Britain.

(In *Monthly Review*, April, 1917. Pp. 586-588.)

EMPLOYMENT.

Employment conditions in foreign countries.

(In *Monthly Review*, July, 1915, pp. 60-80; August, 1915, pp. 16-20; October, 1915, pp. 49-52; December, 1915, pp. 53-71; March, 1916, pp. 86-89; July, 1916, pp. 92-98; January, 1917, pp. 133-149.)

Land settlement and unemployment in England. Summary of introduction and Part I of the final report of the British departmental committee appointed by the president of the Board of Agriculture and Fisheries to consider the settlement or employment on the land in England and Wales of discharged sailors and soldiers. (London, 1916. 30 pp., fold., chart.)

(In *Monthly Review*, April, 1916. Pp. 11-13.)

Employment of discharged soldiers and sailors on the land in Great Britain. Summary of Part II of the final report of the British departmental committee appointed by the president of the Board of Agriculture and Fisheries to consider the settlement and employment on the land in England and Wales of discharged sailors and soldiers. (London, 1916. 39 pp.)

(In *Monthly Review*, September, 1916. Pp. 87-90.)

INDUSTRIAL DISEASES.

A nonpoisonous dope for airplanes. Parliamentary statement by British War Office and Admiralty.

(In *Monthly Review*, January, 1917. pp. 97, 98.)

INDUSTRIAL FATIGUE.

Some new studies of industrial fatigue. Summary of the following reports:

Interim report on an investigation of industrial fatigue by physiological methods, by A. F. Stanley Kent, professor of physiology, University of Bristol. Great Britain, Home Department, London, August, 1915. 34 pp. [Cd. 8056.]

Second interim report on an investigation of industrial fatigue by physiological methods, by A. F. Stanley Kent, professor of physiology, University of Bristol. Great Britain, Home Department, London, August, 1916. 76 pp., 18 charts. [Cd. 8335.]

The question of fatigue from the economic standpoint.—Interim report of the committee, consisting of Prof. J. H. Muirhead (chairman), Miss B. L. Hutchins (secretary), Mr. P. Sargent Florence (organizing secretary), Miss A. M. Anderson, Prof. Bainbridge, Mr. E. Cadbury, Prof. Chapman, Prof. Stanley Kent, Dr. Maitland, Miss M. C. Matheson, Mrs. Meredith, Dr. C. S. Myers, Mr. C. K. Ogden, Mr. J. W. Ramsbottom, and Dr. J. Jenkins Robb. Report submitted at the Manchester meeting of the British Association for the Advancement of Science in 1915. Manchester, 1915. 67 pp.

The question of fatigue from the economic standpoint.—Second interim report of the committee. Report submitted at the Newcastle meeting of the British Association for the Advancement of Science. Newcastle, 1916. 24 pp.

(In Monthly Review, December, 1916. pp. 97-105.)

WELFARE WORK.

Welfare work in Great Britain. Summary of book on welfare work. Employers' experiments for improving welfare work in factories, by E. Dorothea Proud. (London, G. Bell & Sons (Ltd.), 1916. XVII, 363 pp. 7s. 6d. net.)

(In Monthly Review, December, 1916. pp. 81-88.)

COAL-MINING INDUSTRY.

Organization in coal mines to increase output in Great Britain. Summary of report of British Home Office committee to inquire into the conditions prevailing in the coal-mining industry. (London, 1915. Cd. 7939.)

(In Monthly Review, July, 1915. pp. 56-58.)

Compulsory cartel or monopoly in the German coal-mining industry.

(In Monthly Review, November, 1915. pp. 83-85.)

Conditions prevailing in the coal-mining industry in Great Britain. Summary of second report of British Home Office committee to inquire into the conditions prevailing in the coal-mining industry.

(In Monthly Review, July, 1916. pp. 151-153.)

Effect of the war on the coal-mining industry in Great Britain. Summary of third report of British Home Office committee to inquire into the conditions prevailing in the coal-mining industry. (London, 1916. 17 pp.)

(In Monthly Review, April, 1917. pp. 534, 535.)

Increase in retail prices of coal in Great Britain. (See Prices.)

