U. S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
ROYAL MEEKER, Commissioner

MONTHLY REVIEW

OF THE

U. S. BUREAU OF LABOR STATISTICS

VOLUME VI—FEBRUARY, 1918—NUMBER 2

WASHINGTON
GOVERNMENT PRINTING OFFICE
1918

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MONTHLY REVIEW

OF THE

U. S. BUREAU OF LABOR STATISTICS

VOL. VI—NO. 2 WASHINGTON FEBRUARY, 1918

COST OF LIVING IN THE DISTRICT OF COLUMBIA.

FIFTH ARTICLE—WAGE-EARNING WOMEN: THEIR CLOTHING.

Cost of living studies have ascertained quite definitely the amounts and the costs of the principal articles of food consumed by the average workingman's family. Scientific dietary studies have laid down generally accepted standards of the kinds of food and the expenditure necessary to feed a family or an individual so as to maintain health and a reasonable degree of comfort. No corresponding standards in regard to clothing have ever been made. The task of working out standards of the kinds, the qualities, the quantities, and the cost of clothing indispensable for an average workingman's family or for individual workers in different occupations is well-nigh impossible. Very few attempts to set up such minimum clothing standards have ever been made, and these attempts have been confined to estimating the needs of working women. Even when so narrowed in scope, the task of setting up minimum standards of clothing requirements for working women presents very great difficulties because of wide variations in individual taste, in knowledge of materials and styles, in opportunities to buy advantageously, in capacity to make and mend garments, and in ability to consume clothes with the minimum of wear and tear. One woman can not feel decently dressed unless her head is adorned with a hat in the latest mode. Another woman will cut down on other items of expense in order to clothe her feet in silk hosiery and the latest and most astonishing things in shoes. Truly what is one woman's extravagance is another woman's economy, which brings confusion to those who wish to standardize clothing expenditures. One woman possesses the ability to sew, and by making her own clothing can dress well at much less expense than the woman who must buy all her clothing ready-made. Another woman possesses the inclination to mend and to "make over." Still

another possesses the faculty of good management and is capable of judging between wise and unwise selection even at bargain sales.

There is, however, one factor which remains fairly constant in its effect on clothing plans and expenditures. This is the occupational requirement. The standard of dress established for different occupations is scarcely a question of choice with the wage earner, but is determined by the environment in which she must work. The clothing requirements of the factory worker, laundry worker, stenographer, and saleswoman are very different. The majority of occupations open to women in Washington are those of the store and the office. The standards of dress imposed upon clerks, stenographers, and salesgirls are relatively high, and therefore in Washington a larger proportion of wage-earning women than in other cities must make a smart appearance in dress in order to feel themselves decently clothed.

Of all forms of conspicuous waste and competitive display, extravagance in dress is perhaps the most tempting and the hardest to resist. The American people, especially American women, are being almost constantly lectured about their extravagance in dress. It does not seem probable, however, that many of the wage-earning women who furnished detailed schedules of expenditures for clothing to the Bureau of Labor Statistics had been guilty of the sin of extravagance, as 42 out of the 53 spent less than $150 a year on clothes. All right-thinking people condemn extravagance. It is very difficult, however, to determine what constitutes extravagance in dress. The "creations" in form and color which are made by manufacturers and offered for sale by retailers point to the need for a Clothing Administrator to protect the public from involuntary extravagance and conspicuous ugliness and discomfort in dress. It does not seem clear that the working women themselves should be left unaided to cope with the style makers in solving the problems of what constitute sufficiency, comfort, and commendable adornment in dress, and what amount should be spent each year, on the average, to attain these ideals.

It does seem essential that emphasis be laid on the importance, especially to the working girl, of becoming clothes of good quality, kept scrupulously neat and clean. Expenditures for clothing of the right kind are really an investment on the part of the wage-earning woman. Self-respect and success in life depend in large measure upon proper clothes.

A SPECIAL STUDY OF CLOTHING EXPENDITURES.

As part of the present investigation into the cost of living in the District of Columbia an effort was made to ascertain, as nearly as

possible, the necessary cost of clothing for working women in different occupations. As noted above, most of the women wage earners in Washington are engaged in occupations such as store, office, and Government service, which require standards of dress somewhat higher than those existing in mill towns or industrial sections of manufacturing cities.

Thus, in considering the question of clothing costs, it seemed reasonable to limit attention to women engaged as saleswomen, clerks, stenographers, and in occupations of this character. Also it seemed desirable to limit this special analysis to strictly self-supporting women, living away from home, and between the ages of 19 and 35 years. The great majority of working women fall between these ages, and it is at that period of life that the character of her dress is of vital importance to the average woman whether or not she is at work.

Out of the total of 600 women covered by the investigation there were 53 who fell within the limitations mentioned and for whom information in sufficient detail was obtained to permit of careful analysis.

Eighteen of these 53 women were employed in stores, 17 in Government work, 13 in business offices, and 5 in telephone offices. Most of them were living as boarders in working girls' homes, private families, or boarding houses; but a few were renting rooms separately and doing their own food purchasing and cooking.

The total yearly incomes—including earnings, incomes from other sources, and gifts of new clothing—of these 53 women ranged from $258 to $1,096, and their yearly expenditures for clothing ranged from $22 to $260. The following table shows in detail the clothing expenditures of these women, classified by income groups:

CLOTHING EXPENDITURES OF 53 WOMEN FOR THE YEAR 1916.

Annual income.	Number of women.	Number spending on clothing per year—							
		Under $25	$25 and under $50	$50 and under $75	$75 and under $100	$100 and under $125	$125 and under $150	$150 and under $200	$200 and over.
$200 and under $300	4	.....	3	1	.....	.....	.....	.....	.....
$300 and under $400	5	.....	1	3	1	.....	.....	.....	.....
$400 and under $500	9	1	.....	1	2	3	2	.....	.....
$500 and under $600	13	.....	.....	2	3	3	3	1	1
$600 and under $700	7	.....	.....	2	2	.....	3	.....	.....
$700 and under $800	7	.....	.....	.....	2	.....	3	2	.....
$800 and under $1,100	8	.....	.....	.....	.....	.....	1	2	5
All groups	53	1	4	9	10	6	12	5	6

It is evident from this table that, even with a fairly homogeneous group of women, there are wide variations in the amount spent for

clothing. Thus, of the 13 women listed in the $500 to $600 income group the clothing expenditures varied from $50 to $75 at one extreme to more than $200 at the other extreme.

These variations in expenditures measure more or less accurately the degree in which these women were well or badly clothed. And an analysis of not only what these women spent, but also of what they got for the money, throws light on the question of the expenditure essential to maintaining a condition of dress that may be described as one of physical comfort, social decency, and agreeable outward appearance.

The following comments on this subject, it is to be emphasized, are based primarily upon the experience and opinions of the particular group of women referred to, verified to some extent by a study of store prices. The information was secured through the formal schedule obtained from each woman, supplemented in many cases by later interviews to secure data regarding the length of time clothing of different qualities may reasonably be expected to be worn, and also to secure expressions of opinion as to what they considered necessary in order to feel themselves well dressed. The prices quoted are those which were in force in 1916 and the early part of 1917.

THE COST OF BEING WELL DRESSED.

The majority of women, whose incomes are small, whose credit accounts are limited, and whose deficits, if incurred, must be met by themselves, are forced to keep their expenditures for clothing at about the same figure year after year. With some articles of clothing a system of purchases in alternate years is possible, but in the present study of the clothing expenditures it was found that, for almost all women, expenditures for the following items of dress repeat themselves each year: Hats, shoes, gloves, stockings, corsets, underwear, and certain miscellaneous articles. These items must be bought every year, the amount of "hold-over" being quite small. One woman, who, because of a $150 doctor bill, was able to spend only $22 for clothing, expended a small sum on each of these items except underwear, which was carried over from the previous year.

With outer clothing, such as suits, coats, sweaters, dresses, shirt waists, and dress skirts, the same uniformity of expenditure does not exist. For some of these items the plan of alternate years of purchase is a very satisfactory arrangement. Many of these women are highly skilled in the art of making their clothes last, but not a little complaint was heard that clothing bought nowadays does not have the wearing qualities of that bought a few years ago.

In order to allow for the optional factor, a consolidation has been made of these variable items under the heading "outside clothing,"

which includes suits, coats, sweaters, dresses, shirt waists, and dress skirts. The following table shows the average amounts spent by these 53 women for "outside clothing" and also for the separate items of dress which are common to all women and of which, as a rule, a supply must be purchased each year.

AVERAGE YEARLY EXPENDITURE FOR ITEMS OF CLOTHING, BY INCOME GROUPS.

Annual income.	Number of women.	Outside clothing (suits, coats, sweaters, dresses, waists, dress skirts).	Other articles of dress.							All clothing.
			Hats.	Shoes.	Gloves.	Stockings.	Corsets.	Underwear.	Miscellaneous.	
Under $300	4	$19.78	$5.19	$7.59	$0.77	$2.74	$2.25	$3.13	$2.99	$44.42
$300 and under $400	5	32.63	4.45	7.10	1.23	3.42	1.91	4.62	8.80	64.15
$400 and under $500	9	45.80	9.33	12.06	3.19	6.02	2.48	7.11	10.79	96.77
$500 and under $550	8	47.50	10.31	13.50	2.88	5.83	4.13	5.22	9.99	99.35
$550 and under $600	5	72.48	13.80	16.69	4.46	6.20	2.30	7.05	19.21	142.19
$600 and under $700	7	57.55	12.71	14.29	2.62	3.88	2.93	6.37	7.42	107.77
$700 and under $800	7	66.78	13.47	16.71	5.32	6.89	3.79	11.39	16.82	141.17
$800 and under $1,100	8	99.34	19.06	21.25	6.00	7.25	6.06	9.94	32.23	201.13
All groups	53	57.58	11.59	14.20	3.32	5.53	3.41	7.18	14.27	117.49

In the income groups under $400, the average expenditure for every item of clothing is below that which would permit of physical comfort and decency. Among the women with annual incomes from $400 to $800, considerable differences are found in the average amounts spent for "outside clothing" and miscellaneous items, but the average amounts spent for hats, shoes, gloves, stockings, corsets, and underwear vary only slightly between groups.

OUTSIDE CLOTHING.

Suits and coats.—The majority of working women consider a suit a necessity. Twenty-eight of the 53 women had expenditures for suits in 1916, and from later interviews with women on this subject it would appear that the others were wearing suits which were brought in 1915 or earlier. In these interviews the opinion was general that it was not economical to buy suits lower in price than $25, and many felt that it was better economy to pay from $30 to $35. Among those who bought suits in 1916, 8 paid between $16 and $20 (suits evidently marked down), 10 paid from $25 to $32.50, and 5 paid over $32.50. Most of the women interviewed on the subject were fairly well agreed that a suit of average price ($25 to $30) could reasonably be expected to last two years, and some reported that they wore suits of a higher price for three years.

The practice of buying suits and coats in alternate years seemed to be agreed upon in theory, if not always carried out in actual prac-

tice. The prices paid for coats ranged from $25 to $40, and they are worn from two to three winters. As a general rule, the women seemed to be able to wear coats longer than suits, barring radical changes in style. Some women planned to alternate the purchase of spring suits with winter coats. Others bought winter suits, and lightweight coats or sweaters. This latter was possibly a cheaper arrangement, but from the standpoint of health and comfort is less commendable, as every woman needs a warmer wrap for extreme weather than is furnished by a suit coat.

Shirt waists.—The black and white, or dark blue and white clothing required by the principal stores, which usually applies to the office force as well as to the saleswomen, creates a great demand for white shirt waists. Most of the women reported that six to eight white waists, for which they paid $1 to $1.50 each, were required for a season, with no assurance that they would last over until the beginning of the next season. Others bought about the same number at $2.50 to $3 each, and expected them to wear for two years. Still others bought one or two rather expensive silk waists, which could be washed easily, and would wear for one or two years. Aside from work waists, almost every woman planned to have at least one dress waist, perhaps of georgette or crêpe de chine, to wear with her suit. For this she usually paid from $5 to $8. Very often this waist was worn with her suit to theaters and parties, thereby taking the place of an evening dress. Thus, shirt waists for the average woman may reasonably be expected to cost from $6 to $15 a year.

Dresses and skirts.—When a suit is made to wear two years, one additional skirt or a one-piece dress was regarded as almost a necessity. Such a skirt usually cost from $5 to $10 and was worn not less than two years. One-piece dresses, however, were worn by the majority of girls, who expected a dress which cost about $15 to last one season.

The one-piece dress for summer was used by some women, but more common was the wearing of separate white skirts with white waists. The choice in white skirts varied from one $6 to $7 white corduroy skirt for dress wear, which will last two to three years, to three or four wash skirts at $2 to $3 which will wear for one season and possibly for two.

The question of afternoon and party dresses is highly individual. One woman who apparently found the greater part of her recreation in dancing stated that two light party dresses at not less than $16.50 each would be needed each year. These, she said, would soon become soiled and would not stand dry cleaning more than once or twice. The great majority of women, however, expressed themselves as well satisfied with one dress for party or afternoon wear. This would cost

about $25 and would wear two years at least. Some girls related with pleasure their ability in "fixing over" old party dresses so that they could be worn for three or four years. As mentioned before, however, the girl who had to economize closely usually dispensed with a party dress and substituted the wearing of a dress waist with a suit.

HATS, SHOES, GLOVES, STOCKINGS, UNDERWEAR, AND MISCELLANEOUS.

Hats.—The great majority of these women, who spent sufficient on clothing to be well dressed but not sufficient to be classed as extravagant, purchased two or three hats a year, usually at a total cost of from $10 to $15. The actual number of hats obtained, however, can not always be reconciled with the total expenditure for this purpose, as some women are able to, and do, make their own hats. Of the women included in this special study, 12 did all or a part of their own millinery work, one reporting four hats at a total cost for material of $8.08, and another, four hats at a cost of $6 for material.

Shoes.—Even in this selected group of women, the character of work performed makes a difference in the expenditure for shoes. Although the saleswoman would naturally need more shoes than the woman of sedentary occupation, three pairs of shoes a year was the usual number, with either two or four pairs not unusual. For high shoes, the women interviewed felt that about $6 was the minimum price which should be paid for shoes, and many felt that this minimum price was entirely too low for economy. Under these circumstances, it is not surprising that the averages for shoes should run from $12 to $17 a year.

Gloves.—In the case of gloves, two or three pairs seemed to meet the normal requirement. These were usually purchased at a total yearly cost of from $2.50 to $5. Where $2.50 or less was spent for two or three pairs of gloves, it is evident that only lisle, chamoisette, or silk gloves were used. The amounts ran higher when good kid gloves were bought.

Stockings.—Over half of the women in this special study bought between 5 and 10 pairs of stockings during the year, and slightly over one-fifth purchased between 10 and 15 pairs. The price per pair varied considerably. One of the women interviewed stated that she never paid more than 25 cents a pair for stockings and that she got along very nicely without any silk stockings. Another had found that three pairs of silk stockings at $1 per pair, mended immediately when necessary, would wear for one year. Another stated that she wore silk stockings all the time and that they were absolutely essential to her feeling of being well dressed. Still another said that she felt entitled to a pair of silk stockings "now and then" when she found

them at reduced prices. Of the total of 53 women, about equal numbers got their hosiery for less than $2.50, $2.50 to $5, $5 to $7.50, and $7.50 and over, with the general average being between $5 and $6.

Corsets.—Of the 53 women in the groups selected, 21 had bought one pair of corsets during the year, and 21 had bought two pairs. The number buying more than two pairs was negligible. No such uniformity existed as to price. Two dollars to $5 was the yearly amount spent by the majority, although a considerable number spent less than $2 and a few spent more than $5 per year.

Underwear.—Articles of underwear seem to have "hold over" qualities with some individuals, but among these women the general upkeep of underwear seemed to require a yearly expenditure of between $5 and $10. This amount covers nightgowns, white petticoats, corset covers, and all other lingerie, but $10 per year is not sufficient where silk petticoats are considered necessary to the standard of living. Although silk petticoats were reported by some, a great many did not regard them as essential.

Miscellaneous.—The miscellaneous items—such as umbrellas, rubbers, handbags, handkerchiefs, neckwear, aprons, and kimonos—usually averaged about $10. Where the amount spent on these items ran much higher than this it was due to the inclusion of furs and jewelry.

SUMMARY OF CLOTHING COSTS.

From the above analysis of clothing needs and expenditures the following summary may be drawn as to the approximate cost of clothing for a working woman who is well, but not extravagantly, dressed. The conclusions are based on the experience and opinions of the group of women referred to above.

As regards external clothing, it would appear that the average wage-earning woman who is well dressed usually chooses these items of her wardrobe from the following-priced articles: Suit or coat (alternate years), $25 to $30; shirt waists, $6 to $15; one-piece dress, $15; wool skirt, $5 to $10; summer skirts, $3 to $5; party dress (worn for two years), $25.

If close economy is necessary, a skirt at about $5 may be worn with separate waists in lieu of a $15 one-piece dress; or a dress waist, worn with a suit, may be substituted for an evening dress; or a winter coat may be worn for three seasons, or an evening dress for three or four years. In view of the range of choice, it appears that a woman may reasonably be expected to secure the outside clothing necessary for a good appearance at an expenditure of from $70 to $75.

As regards articles of dress other than outside clothing, the necessary expenditures would be distributed roughly as follows: Hats,

$10 to $15; shoes, $12 to $17; gloves, $2.50 to $5; stockings, $3 to $7; corsets, $2 to $5; underwear, $5 to $10; and miscellaneous, approximately $10. Allowing for individual variation in prices and choice, this means an annual expenditure of from $50 to $60 for these articles, which as a rule have to be replaced each year.

Combining these two amounts—outside clothing $70 to $75 and other articles of dress $50 to $60—the total yearly expenditures would range from $120 to $135, averaging approximately, say, $125.

In arriving at this sum, the assumption has been, of course, that the working woman purchases most of her wardrobe and need not devote her evenings and Sundays to the making of her own clothes. It is to be expected that such a woman will spend considerable time repairing, and to some extent, making over her clothes, but it does not seem reasonable to demand that a woman, with a full day's work to do, should spend her off-time working overtime at what would really be a second "job."

Nor in making the above computations has any allowance been made for discounts allowed by some stores on purchases made by employees. Such a system applies only to store employees and, at best, is not sufficiently general among the stores of Washington to make much difference in the clothing expenditures of working women as a class.

LAUNDRY.

Very closely related with the cost of clothing is the expenditure for laundry. Among the total of 600 wage-earning women covered by the Washington study, various laundry arrangements were found. Many of the women living at home received laundry free, others paid for it in connection with their board and lodging, and not a small number did all or a part of it themselves. Of those who had a definite expenditure for laundry, an average of 50 cents a week was about the minimum. Women whose work demanded a freshly laundered waist every day found a considerably larger expenditure necessary. From previous investigations on this subject it seems to be agreed that no wage-earning woman should be compelled by economic necessity to spend her evenings in laundry work, and if this condition is not to exist, her earnings must be sufficient to leave from $30 to $35 available for her yearly laundry expense.

COMPARISON OF STANDARD COSTS WITH AMOUNTS ACTUALLY SPENT.

The amount just derived—$125—as the approximate yearly expenditure necessary for maintaining a working woman in a "well dressed" condition in the city of Washington is somewhat higher than the minimum standards arrived at by other investigations in other cities. Part of this difference is due to the increased cost of

clothing since those investigations, part to the higher clothing standards arbitrarily set by conditions in Washington city, and part to the fact that most of the other investigations have been illiberal in their estimates of the clothing needs of a woman and optimistic in their estimates of clothing costs.

Thus, the New York State Factory Investigating Commission, in 1915, in submitting its conclusions regarding the clothing costs of working women, states that "the matter may be summed up by saying that a girl may respectably clothe herself on between $85 and $90, and that she can maintain a fairly good appearance with about $100."[1] The specimen list of clothing submitted by the commission is as follows:

Union suits, 3 at 50 cents; 3 at 75 cents	$3.75
Corsets, 2 at $1.50	3.00
Corset covers, 6 at 25 cents	1.50
Underskirts	1.50
Stockings	3.00
Wash dresses, 2	7.00
Party dress	15.00
Skirts, 1 at $2.50, 1 at $5	7.50
Shirt waists, 6 at 75 cents	4.50
Shoes, 2 pairs at at $3.50, plus $2 for repairs	9.00
Heavy waist	2.00
Hats, 1 at $5, 2 at $2.50	10.00
Coat, winter, one-half of $12	6.00
Coat, spring or rain, one-half of $8	4.00
Gloves	1.50
Rubbers, 2 pairs at 65 cents	1.30
Umbrella	1.00
Night dresses, 2 at 50 cents	1.00
Handkerchiefs	.60
Miscellaneous	4.85
	88.00
Highly desirable additions:	
Suit, one-half of $15	7.50
Slippers, one-half of $1	.50
Gloves, white, for parties	1.00
	97.00

Aside from the question of the sufficiency of the items listed, a checking up of the prices allowed in this table showed that, in most cases, it was impossible in Washington either in 1916 or 1917 to obtain the articles specified at the prices given.

The New York commission's standard of $88 per year may thus be taken as providing only the barest minimum for "decent" clothing.

[1] Fourth report of the New York State Factory Investigating Commission, 1915, vol. 4, appendix 7, pp. 1529–1531.

Thus, it is of striking significance to note that, even with this low minimum as a standard, 42 per cent of the 600 wage-earning women included in the Washington investigation had a yearly expenditure of less than that amount, and in many cases the expenditure was very much less. If the $100 standard, proposed by the New York commission as permitting "a fairly good appearance," and supported by the Wisconsin commission in 1916,[1] is taken as a minimum, then no less than 52 per cent of the 600 wage-earning women in Washington fell below that amount.

Finally, if the sum of $125, arrived at in the present study, is taken as the approximate yearly amount necessary for good dressing, then 68 per cent of the Washington wage-earning women are found to have spent less than that amount in 1916.

A detailed analysis of this subject is given in the following table, which shows, by income groups, the number and per cent of women whose yearly expenditures for clothing fell within each classified amount.

EXPENDITURES OF 600 WASHINGTON WAGE-EARNING WOMEN FOR CLOTHING IN THE YEAR 1916.

Annual income.	Number of women.	Number spending on clothing per year—									
		Under $25	$25 and under $50	$50 and under $75	$75 and under $87.50	$87.50 and under $100	$100 and under $112.50	$112.50 and under $125	$125 and under $150	$150 and under $200	$200 and over.
Under $300	133	22	25	37	11	8	10	6	7	6	1
$300 and under $400	141	5	18	25	19	15	19	8	18	12	2
$400 and under $500	107	5	9	17	12	12	11	10	18	9	4
$500 and under $600	88	1	7	13	2	14	10	6	17	10	8
$600 and under $700	53	.....	3	7	3	4	.....	7	9	10	10
$700 and under $800	43	.....	1	2	4	2	3	3	14	11	3
$800 and under $900	19	.....	1	1	1	2	.....	.....	2	5	7
$900 and under $1,000	9	.....	.....	.....	1	1	1	.....	3	2	1
$1,000 and under $1,100	7	.....	.....	.....	.....	2	.....	.....	.....	2	3
All groups	600	33	64	102	53	60	54	40	88	67	39

Annual income.	Number of women.	Per cent spending on clothing per year—									
		Under $25	$25 and under $50	$50 and under $75	$75 and under $87.50	$87.50 and under $100	$100 and under $112.50	$112.50 and under $125	$125 and under $150	$150 and under $200	$200 and over.
Under $300	133	16.5	18.8	27.8	8.3	6.0	7.5	4.5	5.3	4.5	0.8
$300 and under $400	141	3.5	12.8	17.7	13.5	10.6	13.5	5.7	12.8	8.5	1.4
$400 and under $500	107	4.7	8.4	15.9	11.2	11.2	10.3	9.3	16.8	8.4	3.7
$500 and under $600	88	1.1	8.0	14.8	2.3	15.9	11.4	6.8	19.3	11.4	9.1
$600 and under $700	53	.....	5.7	13.2	5.7	7.5	.....	13.2	17.0	18.9	18.9
$700 and under $800	43	.....	2.3	4.7	9.3	4.7	6.9	6.9	32.6	25.6	6.9
$800 and under $900	19	.....	5.3	5.3	5.3	10.5	.....	.....	10.5	26.3	36.8
$900 and under $1,000	9	.....	.....	.....	11.1	11.1	11.1	.....	33.3	22.2	11.1
$1,000 and under $1,100	7	.....	.....	.....	.....	28.6	.....	.....	.....	28.6	42.9
All groups	600	5.5	10.7	17.0	8.8	10.0	9.0	6.7	14.7	11.2	6.5

[1] Wisconsin Industrial Commission. Cost of living of wage-earning women in Wisconsin, 1916.

This table does not seem to bear out the generally current opinion that the wage-earning women of Washington as a class are inclined to gross extravagance in the matter of clothing. Of the total of 600 women 82 per cent spent less than $150 per year for this purpose; 93.5 per cent less than $200; and only 6.5 spent as much as $200. In some cases the larger annual expenditures represented a year of unusually heavy expense, due to some exceptional combination of circumstances, while in a very few extreme cases the large expenditure was plainly the result of unwise selection of clothes or of inexcusable extravagance. These latter cases occurred principally among women who were assisted by their families. Indeed, with the incomes shown in the preceding table, no flagrant extravagance in dress can very well exist.

RISK AND AVOIDANCE OF TNT POISONING.

BY ARCHIE RICE.[1]

Between 7,000 and 17,000 cases of TNT poisoning, resulting in between 135 and 475 fatalities, will probably occur among workers in American shell-loading plants during the production of the 78,000,000 rounds of cannon ammunition already ordered by the United States Government for use in the European war. These estimates, based on two standards of experience in munition plants in the United States, may be expected to hold, unless radical improvements be made in health-conservation practices.

About 5 per cent, or from 350 to 850, of the cases of poisoning will happen to workers within the first two days of their exposure; 75 per cent, or from 5,250 to 12,750, of the cases will become manifest after four to eight weeks of employment; and 20 per cent, or from 1,400 to 3,400, of the cases will develop after three months, five months, even seventeen months or more, of apparent immunity in TNT department work.

The fatalities may be expected to result within a few weeks, or may not take place until a number of months after the victim has been attacked.

These are not alarmist statements. They are deductions based on actual records compiled not during a hurried official investigation that was perhaps anticipated, but during 20 months of daily observation at a plant that did approximately one-tenth of all the TNT shell-loading work performed in the United States for various foreign governments allied against Germany.

At first glance these figures might appear unwarrantably large. But it should be understood that in the munition district there is a very great shifting of labor. The labor turnover at most munition plants is so great that it is not unusual to have from 2 to 30 different persons for each job during one year's operations.

There are interesting local problems often largely responsible for this remarkable unsteadiness of the labor supply. This article, how-

[1] Mr. Rice has been for two years connected with an American munition plant using hundreds of tons of TNT, has been among and interviewed scores of TNT workers, has himself been mildly poisoned with TNT, and has had access to voluminous confidential British reports on TNT poisoning in English munition factories. In October of 1916 he presented before the annual convention of the American Public Health Association a paper on "Munition-plant Poisons."

ever, concerns only the TNT risk. That risk might with reasonable and very inexpensive precautions and with proper medical supervision be reduced 80 to 90 per cent or even more, resulting in the preservation of life and in the safeguarding of human efficiency for labor's needs.

The sessions of the American Public Health Association's annual convention, held in Washington in October of 1917, were concluded with a six-hour discussion participated in by health officials, Federal officials, and munition makers. At that time it was intimated by representatives of the largest manufactories of TNT that there is comparatively little TNT poisoning, and that the slopping of molten TNT upon the outside of projectiles during the loading process is an unavoidable feature requiring handwork in the removal of the poisonous explosive substance.

A supplementary conference of health officials and munition makers was held in New York City during two days in December. Its purpose was finally to consider and perfect for the Council of National Defense a health and hygienic code for the munition industries. The longest and most vigorous discussion concerned TNT poisoning.

Federal officials and health officers generally voted in favor of a clause proposed as a humanitarian protection to workers known to have had an attack of TNT poisoning. The munition makers as a group voted it down. Efforts were later made for a compromise that would provide the worker with a definite memorandum that might aid him in illness later arising and after his leaving the company's employ. That effort also failed.

Opposition seemed to be of two kinds. It was argued that munition workers should not be told the real danger as it would make them unduly apprehensive. The other objection was that workers should not be given any memoranda to be used for self-protection of health or as a valuable guide to physicians possibly called upon later to treat them at places far from the plant, because such memoranda might sometime be used by adventuring lawyers as bases for troublesome suits for damages.

Contention was made for the employers that the proper procedure should be to educate all the doctors of the country in the diagnosis and cure of TNT poisoning. That might be accomplished after several years, but in the meantime TNT victims would multiply, and needlessly.

In the prediction of between 7,000 and 17,000 cases of TNT poisoning and between 135 and 475 TNT fatalities there is a wide range. This difference is due to the application of two standards. The smaller numbers, 7,000 cases and 135 deaths, are based on the general

record throughout 20 months of productive operations at the plant studied. The larger numbers, 17,000 cases and 475 deaths, are based on the record of that plant during its first seven and a half months of operations. Even during that earlier period the plant used many protective devices, some of which have not yet been introduced in other plants.

TNT poisoning is comparatively a new problem, and information on the subject is lacking or inadequate. How insidious TNT poisoning really is was not suspected until an alarming number of cases developed among munition workers in England. There tens of thousands of women are employed in the munition plants, all of which are directly under Government control, with stricter supervision of workers than has thus far been possible in the United States.

Even assuming that other American plants, during the making of munitions for the Allies, attained the degree of protection against TNT exposure that was achieved by the plant studied, then during the period of such loading there were in the United States probably 1,800 cases of TNT poisoning altogether and 43 fatalities, a majority of them perhaps not recognized as TNT poisoning and occurring at considerable distances from the plant where the workers were poisoned and perhaps weeks after they had left its employ.

That this general subject may be readily understood by persons not familiar with the manufacture of explosives or with the assembling of munitions or with medical phraseology all technical words and details are purposely avoided. For brevity various highly explosive compounds composed in whole or in part of trinitrotoluol will all be designated by the commonly used three-letter symbol TNT.

High-explosive shells are steel projectiles having a cavity which is loaded with a powerful but relatively shock-proof chemical substance that explodes by percussion of an interior metal fuse when the shell strikes. The detonation of the bursting charge must not occur in the gun or near the gun but at the instant of contact with the distant objective. The projectile, after a long curving flight, strikes anywhere from 1 to 28 miles from the cannon that hurled it. The detonation of the interior high explosive rends the shell asunder in hundreds of destructive fragments, thereby widely distributing the damage. For this reason a safe and effective bursting charge is of great importance.

Ordinary powdered sulphur, which in itself is harmless, becomes sulphuric acid when chemically treated. Ordinary harmless white chunks of niter (sometimes called saltpeter or nitrates), yielded by the inexhaustable shallow mines of Chile's highland plateaus, become nitric acid when chemically treated with sulphuric acid. Ordinary harmless sweet glycerin, which is a four-times-refined by-product

from the foul-smelling refuse grease of a soap factory, becomes, when chemically treated with nitric acid, the frightfully destructive nitroglycerin, which is an innocent-looking, oily fluid resembling white-sugar sirup such as is used for hot cakes. When nitroglycerin is soaked up in fine sawdust and placed in paraffin-treated paper tubes it is known as dynamite, and each tube as a stick of dynamite.

Nitric acid chemically combined with toluene, which is a coal-tar by-product of gas works and of dye works, becomes tri-ni-tro-tol-u-ol, hence its abbreviation TNT. But pure trinitrotoluol is not the only bursting charge loaded into steel projectiles and now known as TNT.

USE OF AMATOL IN ENGLAND.

In England 70,000,000 shells are reported to have been loaded with amatol. This is a chemical compound of nitric acid and ammonia, with a one-fifth admixture of trinitrotoluol. Ammonal, alumatol, and some other mixtures, each containing not less than one-tenth trinitrotoluol, are also used. Bearing in mind that in England all these substances of minor trinitrotoluol content are called TNT, it becomes evident that while England loaded 70,000,000 shells with amatol, the workers were handling only about as much real TNT as would be required in America for 14,000,000 shells. Among approximately 100,000 workers in all manner of munition plants in England there were discovered up to the end of the year 1916 a total of 53 TNT fatalities. The use of trinitrotoluol alone might have made the death toll several times as great. England also had 181 TNT jaundice cases. If TNT alone had been used there would have been five times as much handled and possibly a corresponding increase in TNT jaundice cases.

The record of TNT poisoning in England does not sufficiently convey an idea of the general danger of TNT for those who handle it. Amatol, as used in shell-loading plants in England, is a moist, dustless mixture of somewhat the consistency and appearance of vanilla ice cream or lemon water ice. In that form it issues from a machine and is mechanically squeezed into the shell, about as dental cream is squeezed out upon a toothbrush, and without the early incidental scattering of dust such as occurs with pure TNT. Each bursting charge of amatol, which in itself is one-fifth pure TNT mixed with four-fifths ammonium nitrate, is finally sealed over in the shell and the detonating-fuse cavity lined with molten TNT in amount not one-tenth as great as the shell would receive if loaded with pure TNT. Where less TNT alone is used and the process produces less dust there must be less contamination of the breathing atmosphere, and for this reason there is probably less TNT poisoning risk in England than in America for a like number of shells loaded.

Pure TNT is a canary yellow, powdery substance, consisting of tiny crystals almost as fine as dust. It melts at 80° centigrade (176° F.) and becomes a reddish-brown fluid resembling maple sirup. It can be dissolved in ether, in acetone, and in some other substances. It is bitter to the taste, and its presence in the atmosphere, even in scarcely detectable dust or perhaps only as invisible fume, may readily be noted by a bitter taste if the mouth be occasionally opened as in talking. This quick effect through the mouth and probably upon saliva that may later be swallowed indicates perhaps the manner in which is caused much of the TNT catarrh of the linings of the stomach and intestines. Severe frontal headache and sometimes vomiting follow soon after some comparatively short exposures to TNT atmospheres.

There were 169 cases of TNT poisoning at the plant studied. These cases consisted of 137 workers who had but the one attack, 12 who had two attacks, and 2 who had four attacks. There were three fatalities, and two of them resulted after a second attack, indicating that there was individual susceptibility and that these workers should not have been subjected again to TNT risk without careful medical supervision.

In England, where the summers are much cooler and there is relatively less escape of TNT to menace the worker, it is claimed that the number of initial cases of TNT poisoning has been materially reduced, and therefore the productive efficiency of the plant force improved, by serving free to the workers milk or hot cocoa. Possibly somewhat similar results might be achieved, and more cheaply and practically, when milk is difficult of purchase near isolated munition plants, by having all workers rinse out their mouths several times a day with warm water to remove all saliva impregnated with TNT. In England, moreover, no TNT worker is now employed longer than two weeks without being shifted for a like period to some department not exposed to the poison. The most precise clothing regulations are enforced, and neither food nor tobacco can be brought beyond the house where absolutely all clothing is removed and changed both before and after work. After a few experiments in that country it was claimed that the entry of TNT poison was not so much by inhalation of the dust and fume or by the swallowing of dust, as by actual absorption through every part of the skin or of the mucous membrane exposed to TNT dust or fume or vapor. Some deny that surface absorption of TNT is the principal means by which the poison enters the system.

TNT is not an immediate poison. It is not a direct cause of death. Its grave danger lies in the fact that it so impairs certain organs that death ensues because of the destruction of some necessary function

of the body. This article makes no claim to presenting any medical solution for the problem of TNT poisoning, but it does claim to present some new facts as to TNT risks and in a novel manner.

Imagine a loading plant with a daily possible output of 10,000 to 15,000 rounds of ammunition of three-inch caliber. A three-inch shell is but one-twentieth of an inch larger in diameter than the famous French 75-millimeter shell that is to be most extensively made by the United States. Such a plant would employ perhaps 1,000 persons, but only 300 of them would be required in actual TNT departments, 300 in production departments where workers are only occasionally exposed to TNT, and the balance of 400 workers would not be at all exposed to TNT hazards.

WASTE OF TNT.

Applying the general experience at the plant studied, such a works would lose in waste at least 400 to 600 pounds of TNT a day, and more likely from 960 to 1,440 pounds in vapor, in fume, in dust, in dirtied scrap particles, and in unrecovered spattered bits. This loss would occur mostly in proximity to the 300 TNT workers. In bulk that much powdered TNT would be about three to twelve barrelfuls.

With the 78,000,000 shells contracted for up to Christmas of 1917 the probable total loss of TNT in the loading processes incident to the making of the new Government ammunition would be at least 3,120,000 pounds, with the conserving methods used at the plant studied, and probably 7,488,000 pounds, with the percentage of waste existing at most of the other loading plants in America.

The difference between these extremes in probable TNT waste on loading contracts for the Government is 4,368,000 pounds of TNT. And TNT was formerly sold at approximately $1 a pound. Under such conditions it would appear that for those manufacturing TNT for the loading plants the greater the waste of TNT assumed as permissible or unavoidable the greater the amount of TNT that would have to be purchased by the Government, which means the American people.

As most United States war contracts are based on actual cost of materials, plus 10 per cent allowed the contractor as profit, there is no great incentive to exercise the most exacting economy.

If the Government would take adequate precautions to lessen the amount of TNT permitted to escape and be wasted it would at the same time be lessening the TNT risk for the workers. Also there would be a saving of about $4,000,000 in TNT values. The expenditure of a very small percentage of such a saving would give ade-

quate plant and Government provision for a reduction of the TNT risk to the lowest possible percentage.

In a changing force of about 500 men at the plant studied there were during 20 months, in addition to the 169 cases of TNT poisoning and 7 or more not recorded because of insufficient data, 55 production accidents, and 80 accidents that occurred in construction, repair, and outside work or duties.

That means that 56 per cent of all the medical cases at the shell-loading plant were due absolutely to TNT poisoning, that 18 per cent were due to accidental injuries incident to production work, and that 26 per cent were connected with ordinary construction and repair work and the usual slips, knocks, and hurts where much rough manual labor is performed. Perhaps the most serious of the accidental injuries was a broken leg. One man had an arm broken in cranking a car. TNT poisoning caused three known fatalities.

The point is that medical protection for TNT workers is a much more important feature than was even suspected, and should include preventive measures suggested by a carefully observing resident physician. In all other cases at the plant medical protection implies only curative treatment after the accident has happened.

FOUR KINDS OF TNT POISONING.

TNT poisoning manifests itself in four different ways.

In its simplest form it is merely a local irritation of the exposed skin of the hands, face, or arms, with tiny watery eruptions somewhat like those caused by poison ivy. This eczema usually responds readily to simple medical treatment on the surface and does not interfere with the worker's employment, although occasionally causing some itching. The skin cases at the plant studied were only about 5 per cent of the whole number of TNT afflictions, and there appeared to be but one skin case with long-persisting effects.

The commonest form of TNT poisoning is that affecting the stomach. The stomach and intestinal effects are probably caused by TNT, in fume[1] or dust, or both, and perhaps in vapor, entering through the mouth and the nasal passages and also repeatedly swallowed in impregnated saliva or with foods touched by hands soiled with TNT. The result is that the membranous linings of the stomach and the intestines become affected with a catarrhal condition, probably due to the irritant effect of the poison. There are griping pains as in other cases of gastritis. Many of these TNT cases are accompanied by some constipation. It may be argued that the poisoning induces constipa-

[1] By fume, as here used, is meant that rather intangible essence that is not a vaporous emanation or an obvious dust. One readily detects by the fume the proximity of a glue factory, a tannery, a cesspool, even in a dry atmosphere.

tion, or that failure to keep the bowels free increases susceptibility to TNT by stopping natural channels for eliminating poisons from the system. In a milder form this stomach condition is expressed in violent frontal headache, nausea, and the usual quinine-like, bitter taste in the mouth, and is sometimes caused by a comparatively slight exposure to TNT. Such an attack lasts only 24 hours or so. Records at the plant studied showed that about 60 per cent of all the TNT cases were classified as TNT affecting the stomach. With this condition there may have been other symptoms not recorded or determined.

Another form of TNT poisoning is anemia, manifested by a progressing loss of color. This develops gradually, and reaches no obvious climax as in the skin eruptions or the griping stomach pains, both of which conditions are quite evident to the affected worker. TNT anemia is different from the deadly, pernicious anemia. The latter is the result of a lessening of the red corpuscles in the blood, but TNT anemia is said, in England, to show on post-mortem examination a lessening in the red coloring matter in the marrow within the bones. It is thought to be one of the most dangerous and insidious forms of TNT poisoning, but tendencies toward its development ought to be easily detected by the physician while making daily strolls through the TNT departments.

Perhaps the form of TNT poisoning most often having fatal results, unless it be detected in time and properly diagnosed and prescribed for, is TNT jaundice. At its worst, this develops into the always fatal acute yellow atrophy of the liver. This is a condition characterized by profound destruction of the liver cells.

Two of the TNT deaths among the workers at the plant studied were diagnosed independently by different physicians as acute yellow atrophy of the liver, and a third TNT fatality is believed to have been a TNT jaundice development rather than a TNT anemia case. Both anemia and jaundice caused by TNT are probably due to cumulative absorption of TNT fume, dust, or vapor.

Susceptibility to TNT poisoning and immunity from it vary as widely as do the dispositions and personal and hygienic habits of the individual workers. But there are persons with certain medically discoverable weaknesses and tendencies who should never be employed in TNT departments. Among those who should for their own safety be most emphatically forbidden to work in TNT atmospheres are persons using alcoholic beverages and persons who have been addicted to their use. This is so because alcohol has already affected stomach linings or the liver or is weakening these points of greatest vulnerability to TNT attacks. Persons habitually breathing through the mouth should also be excluded from TNT work.

TYPICAL CASES OF POISONING.

The following are some typical cases of poisoning of TNT workers:

A. A., an American, age 21, after five months' continuous employment and immunity in the melting department, had a gastritis attack from TNT poisoning and was ill one week, being prescribed for by the consulting physician. He then resumed the same work, apparently all right. Two and a half months after his first case he had a second attack, one and a half months later he had a third attack, and two months later a fourth attack. After 20 months in the melting department, latterly as foreman, he quit to become a Government inspector in another plant. Apparently he had suffered no permanent ill effects. He was a tall, healthy young man of exemplary habits and never drank.

L. A. T., a Frenchman, age 21, after several weeks' employment in the boring department, had an attack of TNT gastritis and TNT skin poisoning. He was away from work one week under the doctor's care. On his return to the plant he was assigned to a department handling only smokeless powder and brass cases in a building apart from TNT atmospheres. Because the pay there was less than he had been getting he shifted, after a few days, back to his old job. There, in the boring room, 17 days after his initial attack, he developed such a condition of face poisoning and swelling that he quietly quit work and disappeared. Three weeks afterward he died at his home in Canada, 400 miles from the plant. He drank.

W. S. T., an American, age 31, after several weeks' work in the boring department, developed a very severe case of TNT poisoning, with symptoms at first worse than those shown by two others who died. He went to his home in a town about 10 miles from the plant and was there visited by the company's doctor, whose instructions he and his attending wife followed carefully. Practical nursing and dietary during three weeks helped to restore him to an apparently normal condition. He then returned to the plant and was assigned to the carpentry force, with which he continued to work in good health for many months.

S. N., a Pole, age 20, after several weeks' employment in the melting department, quit work and disappeared. A fortnight or so later the company doctor heard a rumor that this man was very ill at his home in a small town 8 miles from the plant and that his relatives attributed his illness to a TNT attack which had made him decide to quit work. He was being treated by the village doctor. Two months after the original effects of the TNT poisoning this worker died of acute yellow atrophy of the liver, having had the later progressive symptoms peculiar to TNT poisoning. He had been and was addicted to beer drinking.

J. A. W., an American, age 55, had been employed many weeks in the boring department when he developed a case of TNT gastritis and other symptoms of TNT poisoning in a bad form. He lived on his farm about 15 miles from the plant. He remained there ill 20 days and under medical treatment, then returned to the plant and was assigned to carpentry work, which was mostly in the open air. Somehow he was briefly exposed to TNT again and got another attack. He then quit the plant altogether and went back to live on his farm, showing pronounced evidences of TNT jaundice, which became worse, his eyes being almost completely yellow and his face swollen. He was in the same condition, apparently doomed, but still able to be up and about 17 months after his initial attack. He had been and was a very heavy drinker. This second attack was not reported to the plant doctor.

H. F., an American, age 27, after seven months' employment at shellacking the bored-out cavity in the TNT charge in the shells had TNT gastritis, and five months later had a second attack while at the same work. Following these attacks he experienced unusual physical weakness and tired so easily that he had to sit down to rest several times during a mile walk to or from the cars. His personal theory was that by continuing while at work to chew tobacco, which he disliked, he rid his mouth of TNT-impregnated saliva. Eight months after his second attack and while at the same daily task he reported that his undershirts still showed each week deep TNT perspiration stains under the arms and that his wife had to bleach out these large reddish-brown blotches by soaping them and laying them in the sun before she ventured to hang the garments on the line where they might be seen by the neighbors.

W. P. W., an American, age 23, after three months' service in the cooling department quit work when the week ended and two days later called on the company doctor for TNT treatment, explaining that he had an attack two days previously. The doctor told him to come the following day for further treatment. The patient never returned. Not until nine days later did the doctor locate him, in a private boarding house in a city 9 miles from the plant and 14 miles from the doctor's office. The patient was ill abed. His landlady, who was attending him, was admonished not to let him get up or go out. When the doctor visited the place next day the patient was gone. The landlady reported that she had been unable to deter him from leaving, that some friends had come, and that they had all gone off together for a day's celebration at a fair in a city 20 miles away. On his return the next day the patient was removed to a hospital. There he continued to grow worse. Four weeks after his initial indisposition he died of acute yellow atrophy of the liver,

suffering toward the end considerable pain and the usual state of coma preceding death. He was addicted to beer drinking and the use of other alcoholic beverages.

C. D., an Englishman, age 28, after three months' work in the melting department had an attack of TNT poisoning and was transferred to a department where he was unexposed to TNT. There he continued to work, but 11 months after his case of TNT poisoning he still found himself unable to retain urine beyond a few moments following the first urge, and could never sit long in a movie show or elsewhere without having to get up and hurry out. This might have been due to some other bladder condition, but his kidneys were not very strong when he began the TNT work.

CASES OF APPARENT IMMUNITY.

J. W., an American, age about 40, was employed in the TNT departments during a period altogether of 20 months—as foreman and as night superintendent and then as head of the melting and pouring department. Daily he touched TNT with his bare hands. Often he ate sandwiches while his hands were unwashed of TNT and his mouth unrinsed of TNT. Later he came in proximity to TNT fume and more TNT vapor than before. The obvious immunity of this veteran powder man, who had worked for years in a dynamite plant, was often cited as an example of how almost anybody could avoid TNT poisoning by leaving liquor alone and taking good care as to health and hygienic habits. Then, after 17 months of immunity, this man got his first case of TNT poisoning, a gastritis attack. He prescribed for himself, and he neither quit work nor reported to the doctor. He swallowed two fresh raw eggs and took a laxative every day during the continuation of the perceptible effects of the TNT. Two weeks later he was similarly poisoned the second time. Two weeks after that he was poisoned the third time, and in another two weeks he was poisoned the fourth time. Each case he treated in his own way and continued with his work. He was a total abstainer, but earlier in life had indulged in alcoholic beverages.

J. J., an American employed as a driller in the boring room, worked in TNT atmospheres altogether a total of 872 hours, including one day of 12 hours' service and six days of 10 hours' application to the work. A few weeks after the period of the long working days he experienced an attack of TNT gastritis in the cold weather two days before Christmas. He was cared for at home, and did not report to the plant doctor. Except for the seven long workdays mentioned, all his service, and especially all of that following the time of his attack, was on a basis of six days a week and eight hours a day.

R. G., an American, age about 40, worked 48 consecutive weeks as a driller in the boring department, exposed to its fine dust and to its fume conditions, during a total of 2,622 working hours, without experiencing any ill effects from TNT. At first, when conditions were not good, he worked seven days a week three different weeks, putting in 74, 71, and 70 working hours those weeks. Afterwards, when conditions were improved and work was on a six-day and eight-hour basis, he put in 51 consecutive weeks, and was not affected by TNT. In that time there were two or three days of the hot and humid season when the thermometer just outside the rather closely walled and cement-bulkheaded boring room indicated 100 degrees in the shade.

M. P., an Italian, age 40, was continuously employed 20 months in the TNT melting and pouring department, but had frequent daily periods in the fresh air while passing to and from the TNT magazine. He was daily exposed to TNT dust while opening fresh boxes of the fine powder and to contact with TNT while placing in boxes scraps of TNT castings. He was also exposed to TNT vapor while personally cleaning out the big iron kettles in which the TNT is melted. Yet he was never affected by TNT in any apparent or self-discoverable manner. The only sign of his TNT employment was the regularly yellow-stained palms of his hands. Asked what he did to avert ill effects and keep himself in such evident prime physical condition, he replied: "Never drink; oh, my God, no! Never eat the sandwich with TNT on the hands. Never eat before wash the face and the hands. Wear the gloves, sure. When clean the kettles tie the handkerchief across the mouth, the nose. Eat plenty good grub. Sleep good."

At the plant studied about 95 per cent of the various and changing workers dwelt in more than 12 different towns, scattered from 2 to 12 miles from the place of their employment.

MEDICAL SUPERVISION.

At the end of 20 months of productive operations only about 7 per cent of the workers who had had TNT attacks remained in the company's employ. During those 20 months this plant had four different doctors. In the first nine months 108 TNT cases were observed and treated by a doctor whose office was in a town 5 miles from the plant and in a direction opposite to the general trend of workers' dwelling places. Three of those cases terminated fatally, and another will probably end the same way. At least seven other cases did not receive medical attention.

With the readjustment of the plant to further improve conditions, based on experience gained, patients were no longer conveyed by a

plant motor to this doctor at a distance. A young resident physician was secured for the plant, who observed and treated 43 TNT cases during his seven months' service. Two cases escaped medical notice. Another young doctor succeeded the first plant doctor and resided at the plant three months. During that time he observed eight cases of TNT poisoning. Several others did not report to the doctor. A third young plant doctor then succeeded to the work. He was resident during only the last month of this study, and he observed and treated but one case of TNT poisoning. Four or more other TNT cases occurred without reporting or seeking medical attention.

At no time was there preexamination of the physical condition of the workers, especially of those assigned to TNT departments. There was no touring by the doctor of TNT departments for a daily or weekly or any other casual observation of the appearance of individual workers. Much of the time about 70 per cent of the workers in the drilling department had bluish lips.

These conditions, it should be noted, existed at a plant where unusual efforts were made to conserve the efficiency of the workers, to protect them from dust and fume, to give them workrooms adequately warmed in the frigid season, and abundantly ventilated and well screened against mosquitoes and flies in the hot and humid season, and finally to pay them well and not to work them longer than eight hours a day. It is obvious that the risks must be greater at other plants similarly employing large numbers of shifting and little-known workers to load TNT into projectiles, but not observing similar precautions.

Very naturally it may be asked: If such conditions with respect to TNT exist in the munition industry of the United States why have they been permitted to continue? The answer is that the munition makers themselves have not yet appreciated the danger of TNT poisoning. TNT is comparatively a new commodity for extensive production in America, and the possibilities of its insidious influence upon certain peculiarly susceptible workers have not been studied or classified as an industrial problem.

As an illustration of how little is definitely known on some of these war subjects it may be mentioned that a month before Christmas of 1917 it was not generally known, even among ordnance officers, in the United States that a high explosive called amatol had already been used for three years in England and that 70,000,000 projectiles had there been loaded with amatol as the bursting charge. When a group of practical ordnance officers visited the plant studied and there witnessed the first shell loading with amatol ever attempted in the United States, the whole process was viewed with interest and surprise, and when those demonstration loads were given their

firing test at a Government range and produced a very high percentage of satisfactory bursts there was yet more enlightenment upon a subject that is three years old in England. TNT poisoning is being carefully studied in England and its risks lessened.

What effect work weariness may have in increasing susceptibility to TNT was not determined at the plant studied. But during the 20 months the record of incidence of TNT poisoning cases showed that 24 cases occurred Mondays, 15 occurred Tuesdays, 24 occurred Wednesdays, 16 occurred Thursdays, 32 occurred Fridays, 52 occurred Saturdays, and 6 occurred Sundays.

That Saturday showed 66 per cent more cases than any other day and that Friday was the next highest risk day seem more than a coincidence. It may indicate accumulating poison in the system or work weariness after four or five days of continuous exposure. A partial explanation may lie in the fact that at this plant the workers were paid off every other Friday, and that the chief and most easily available amusements were those offered by the numerous saloons sprinkled closely about the munition plants or in all of the towns where munition workers dwell. In England experiments made with TNT purposely taken into the human system in larger than a daily work-exposure possibility showed TNT in the urine within about two hours after taking. The presence of TNT continued to be manifest up to about 24 hours after taking, but after that only decreasing traces of TNT were detectable. This might indicate that when the human system is given a weekly respite of 24 hours from TNT exposure the body then has a chance to readjust itself in preparation for another period of exposure. The comparatively few Sunday cases here recorded were due to the infrequency of Sunday work.

Records seemed to indicate that the hot or perhaps the humid weather greatly increased the risk of TNT poisoning. It may be that because TNT has a great tendency to absorb moisture the atmosphere in hot and humid weather is more than usually impregnated with TNT as vapor.

Nothing of value was deducible from the insufficient data available as to comparative racial susceptibility among the TNT workers. A majority of the TNT workers were Americans, but no percentages as to race were compiled. After varied experience native Americans were preferably employed for TNT work. Of the 151 individuals making up the 169 TNT poisoning cases 105 were Americans, the next highest numbers being 18 Poles, 16 Italians, and 8 Russians. No women and no Negroes were employed, and only a few men of 18 and 19 years of age, and but two or three of them in the TNT departments.

COMPARATIVE WORKING RISKS.

One very helpful conclusion was reached as to TNT risk. The relative percentage of risk was determined for the several departments. So far as their possible exposure to TNT poisoning is concerned, the employees at a shell-loading plant may be divided into three classes. The first and almost unexposed class consists of the office force, the machinists, electricians, tinsmiths, carpenters, firemen, guards, yardmen, and chauffeurs—altogether comprising about 40 per cent of the plant force. They have nothing to do with production-department work and rarely have occasion to incur personal risks of TNT poisoning.

The second and only occasionally exposed class consists of all those workers engaged in plant-production tasks but not employed in any of the TNT departments. This group forms about 30 per cent of the plant force, comes occasionally in contact with some TNT fume or dust, and furnishes less than one-tenth of all the TNT poisoning cases.

The third and regularly exposed class includes all those workers in the TNT departments, a group generally about 30 per cent of the plant force. This class of workers comes constantly in contact with TNT or its dust or fume and furnishes more than nine-tenths of all the cases of TNT poisoning.

This narrowing of the TNT problem is a partial reply to the sweeping objections of some munition makers to proposed medical examinations and frequent inspections. The chief contention by such objectors is that it would be handicapping, delaying, and expensive to have to examine all the tens of thousands of workers in the munition plants.

Workers in the TNT departments of a shell-loading plant may be divided into four groups, according to the nature and sequence of their tasks.

In the first TNT group are those engaged in melting the powdered TNT and then stirring it and pouring it into the steel projectiles. This is a process that necessarily liberates considerable TNT vapor and much TNT fume, and also there is a relatively small escape of TNT dust into the atmosphere, incidental to the opening and emptying of the original boxes. About 40 per cent of all the TNT workers are needed in this melting and pouring department. In the plant studied the melting department, when operating under its improved conditions, showed that in a year's operations every 100 jobs yielded 64 TNT poisoning cases. To make this risk rate clearer: Here, let us say, is a department regularly requiring 100 workers a day. The personnel of the working force may and it does change, but there are only 100 jobs, even if 1,000 different persons be employed

to keep those jobs filled. The number of TNT poisoning cases produced by the 100 jobs in a year is the risk rate in that department. Some workers may have remained only one day, others may have worked weeks or months; still others may have continued throughout the year. But no matter what the varying individual experience or susceptibility, the number of TNT poisoning cases produced by those 100 jobs is here called the risk rate. If the 100 jobs could have had a new set of 100 workers each day the risk rate would have appeared very small. If the 100 jobs could have had the same 100 men throughout the year there would have been more TNT cases, and the risk rate would have appeared much larger.

In the second TNT group are those engaged in cooling the bursting-charge of TNT that has been poured into the shell, removing the petticoated funnel from the shell orifice, stripping the protective paper wrapping from the outside of the shell, and shearing or cutting off with bronze saws the excess chunk of protruding TNT above the filled shell cavity. In this process there is a little vapor, much TNT fume, and more TNT dust and contact than occur in the melting and pouring department. The cooling department requires about 10 per cent of all the TNT workers. In the plant studied, the cooling department, under improved conditions, showed a yearly risk rate of 33 TNT poisoning cases for every 100 jobs.

In the third TNT group are those employed at or about machine-run drills used in boring within the TNT charge in each shell a central cavity for the reception eventually of the detonating fuse. This boring process creates quantities of very fine TNT dust, produces some TNT fume, but is not accompanied by any TNT vapor, except such as may be in the air because of very fine dust converted in humid weather. The boring department requires the services of about 20 per cent of all the TNT process workers. In the plant studied, the boring department, after adopting improved methods, developed a yearly risk rate of 33 TNT poisoning cases for every 100 jobs, the same risk as in the cooling department. However, this risk rate for the boring department would perhaps be too low in ordinary circumstances. It was developed during more than a year's operations with an unusually well selected class of workers.

In the fourth and last TNT group are those employed in scraping free the particles of TNT adhering to the threads in the orifice of the filled shell and thereafter engaged in shellacking the TNT cavity by means of a long-barrel air-pressure pistol that sprays on the shellac. This is a departmental process that liberates a great amount of TNT fume, a medium amount of TNT dust, and a considerable amount of tiny TNT crystals. About 30 per cent of all the TNT process workers are employed in this department. In the

plant studied, the charge-shellacking department, operating under improved methods, had a yearly risk rate of 17 cases of TNT poisoning for every 100 jobs. This implied a risk about half as great as in the boring or in the cooling department and about one-fourth as great as in the melting and pouring department.

The TNT risk rate for all the other production departments combined was 3 TNT cases in every 100 jobs during a year.

Conditions at every shell-loading plant should be so amended that the risk rates just cited as obtaining in the TNT departments under improved conditions should not be exceeded and, wherever possible, should be lessened.

The earlier risk rates, and these were under conditions better than at most loading plants, were: In the melting and pouring department 84 as against the improved-period rate of 64; in the cooling department 81 as against 33; in the boring department 131 as against 33; in the charge-shellacking department 125 as against 17; in the non-TNT departments 8 as against 3.

The improved conditions included operations under further perfected sanitary conditions, with dust and fume removal by means of vacuum devices, the reduction of work periods to eight-hour shifts, a 30 per cent increase in pay and a reduction of 24 per cent in the actual number of workers employed, a materially larger plant output and at a reduced cost rate, and a lessening of the TNT risk 24 per cent in the melting and pouring department, 60 per cent in the cooling department, 75 per cent in the boring department, and 86 per cent in the charge-shellacking department, with an accompanying reduction of 78 per cent in the TNT risk rate for all the other production departments combined.

In four of the five instances cited the risk rate was reduced between 60 and 86 per cent. In the melting and pouring department it appears to have been reduced only 24 per cent. This very fact may reveal a condition of great importance in a study of the manner in which TNT poisoning affects the worker. The melting department is where TNT escapes mostly in vapor. In that department, in addition to pouring molten TNT into shells, a few of the workers are also occasionally employed in melting imperfect TNT charges out of shells rejected by scrutinizing inspectors. But during the improved period at this plant the melting department also melted the TNT charges out of 250,000 shells that had been unsatisfactorily loaded by other companies.

What this means in TNT vapor liberation will appear. During those 20 months of operations this plant showed a generally uniform unrecovered waste of 2.31 per cent of all the TNT handled in

the various stages of the loading processes. Just how much of this escaped in vapor or in fume or in spattered particles of molten and then cooled TNT, or in unrecoverable dust, is not known, but it is known that during the melting out of those 250,000 charges 10 per cent of the TNT was not recovered and presumably was lost in vapor in the open-shed annex in which the work was performed.

During the first period, which lasted 7½ months, there were 340 jobs in the production departments, 503,020 shells were loaded, 20,121 pounds of TNT was somehow dispelled or wasted and lost, 115 cases of TNT poisoning occurred, the average daily output was about 2,000 complete rounds of cannon ammunition, and the greatest single day's output was 6,300 complete rounds.

During the improved period, which had continued 12½ months when this study terminated, there were 260 jobs in the production departments, 1,242,422 shells were loaded, 250,000 shells had their loads melted out, 49,697 pounds of TNT were dispelled or lost in the loading process, and 45,750 pounds of TNT escaped in the melting-out processes, 54 cases of TNT poisoning occurred, the average daily output was about 4,000 complete rounds of cannon ammunition, and the greatest single day's output was 10,256 complete rounds.

CLIMATIC HANDICAPS IN MUNITION DISTRICT.

Climatic conditions seem to have significance in TNT liability. How much they affect the process work and how much the resisting power of the worker exposed to unusual weather conditions while in transit to and from work remain to be determined.

But because the plant studied happens to be practically at the heart of the district where TNT is used in loading shells it is a matter of special interest to know just what are the variable climatic conditions under which practically all such work will have to be performed during America's manufacture of high-explosive shells.

Charts are given at the end of this article showing both periods of operation, the maximum and the minimum temperature each day of the 20 months, the measurable rainfall and the snowfall or the trace of either occurring any day, and, in encircled figures, the number of TNT poisoning cases occurring on the days indicated.

Health and comfort for the workers and productive efficiency for the whole shell-loading industry may be better planned when it is known that those who go into this necessary work, either men or women, or both, will have to work in a zone that had 120 frigid days in the year ending in September, 1917, 12 of them when the temperature ranged from 10° F. to a little below zero. During this year there were 80 hot and humid days when the temperature mounted

above 80°, 12 of the days having temperatures between 90° and 98° in the shade and two degrees hotter in the TNT departments. Rain fell 120 days, more than one-third of those days in hot weather, and the total rainfall for the year measured 50 inches. The total depth of snowfall during the year was 52 inches, and there was snow on the ground about 40 days.

Most of the shell-loading plants are in unattractive and comparatively isolated neighborhoods, poorly supplied with habitable quarters, and there is usually long daily transit to and from work, in dirty or cold or poorly ventilated and overcrowded vehicles. Rents are unwarrantably high because of the unfounded belief that munition workers are paid fabulous wages. At the loading plant studied the maximum pay for workers in the TNT departments rose to $3.25 to $4 a day, which was about double the amount similar manual labor had been paid in that neighborhood before the war.

In order steadily to produce the enormous number of high-explosive shells needed these munition-zone problems must be better understood, and it is especially necessary, if women have to go into this industry, that general conditions be improved.

Look carefully at the charts. The frigid periods are diagonally crossmarked with parallel lines and framed by heavy dark lines. The hot and humid periods are perpendicularly crossmarked and framed by wavy lines.

For example, note the last column of the first chart and trace across from the first column opposite the ninth day of the month. It shows that September 9 had a maximum temperature of 77°, a minimum temperature of 62°, a rainfall of 0.08 of an inch, and 22 cases of TNT poisoning occurring that day. It was not a hot day, but it was preceded by a very hot day with rain, indicating much humidity, and for 10 days preceding that unusual outbreak of TNT poisoning there had been continuous hot and humid weather. Incidentally it should be known that September 9 was a Saturday immediately following one of the plant's usual semimonthly Friday pay days.

Look further down on the chart of the later period and opposite the caption "Shell output per poison case." The amounts given to the right show the relative number of shells loaded any one month to each case of TNT poisoning developed. In October there were 95,000 shell loadings but no case of TNT poisoning. The poison risk during that fine-weather fall season was remarkably small; but the risk increased with the increase of winter rains. The monthly ratio was about 30,000 loadings to each poisoning in January and February, with a poorer showing in March. That was a time when the plant was working on two different contracts for shells of pre-

cisely the same character and only distinguished by tiny differences. It was a period of much confusion and crowding. It may be that these annoying conditions reacted upon the workers to an extent that the worry affected their physical state.

Some of the biggest output days occurred when the product was moving smoothly along through the departments and workers could be heard occasionally singing snatches of song. Possibly one of the causes for the large risk rate in the melting and pouring department was the presence there for many months of a diminutive foreman of the military martinet type, skilled in TNT and energetic and educated, but possessed of a most remarkable aptitude for insulting and irritating workmen, and to such an extent that his personality was responsible for many men's quitting or refusing to work in that department.

In April and May of the second period there were altogether eight cases of TNT poisoning. Five of those eight cases occurred in the melting and pouring department, and it was during those two months that 225,000 loads were melted out of shells.

This article might now be concluded with a summary of general recommendations thought advisable for adoption by all the shell-loading plants, but enough has been suggested in the general treatment of the subject of TNT poisoning to show that it is a great industrial and medical problem, and that involved with the possible saving of several hundred lives is the possible saving for the Government of some $4,000,000 in TNT values.

Following are the charts mentioned above, showing weather conditions for each day during 20 months at the shell-loading plant studied. This establishment is located in the heart of the munition district and is considered one of the safest plants engaged in handling high explosives in the United States.

In explanation of the charts it may be stated that chart No. 1 covers the first 7½ months of the period under consideration, during which the employees worked 10-hour shifts. Many health-protective devices were used during this period and labor fluctuated greatly. The second chart represents 12½ months of improved conditions, with 8-hour shifts. Maximum and minimum temperature are indicated by the lower figures in each daily square, while the upper figures show the inches of snowfall or rainfall, those on the left showing rain and those on the right, snow. A trace of snow or rain is represented by a T.[1] Frigid periods—that is, periods when the minimum tem-

[1] This record was compiled and arranged by Archie Rice, of New Brunswick, N. J. The snowfall measurements and other climatological data were taken from records made by the New Jersey State Agricultural College.

perature was 32 degrees or lower—are diagonally cross marked by parallel lines and surrounded by heavy black lines, and hot, humid periods are perpendicularly cross marked and surrounded by wavy lines. In the lower sections of the chart are summarized by months the number of cases of TNT poisoning, the total number of shells loaded, and the average for each case of poisoning, together with cases of burns and accidents, the number of frigid and of hot, humid days, and other weather conditions.

CHART 1.—TNT POISONING CASES AS RELATED TO WEATHER CONDITIONS DURING 7½ MONTHS IN A SHELL-LOADING PLANT WITH 10-HOUR SHIFTS.

[Upper left-hand figures in squares show inches of rain and right-hand figures inches of snowfall; T=trace; lower figures show maximum and minimum temperatures.]

DAY OF MONTH.	1916							
	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
	RAIN / SNOW	RAIN / SNOW	RAIN / SNOW	RAIN	RAIN	RAIN	RAIN	RAIN
1	.25 — 62° 45°	(1) — 36° 22°	66° 37°	.81° 39°	76° 45°	84° 56°	.01 — 88° 69°	86° 56°
2	.71 1.4 — 46° 25°	.21 2.5 — 34° 26°	63° 47°	77° 50°	80° 48°	85° 58°	(3) — 80° 61°	84° 66°
3	.58 4.5 — 38° 23°	29° 15°	50° 37°	72° 53°	.01 — 74° 57°	.53 — 84° 65°	T — 82° 56°	T — 74° 46°
4	26° 11°	T T — 28° 12°	.03 — 41° 35°	71° 53°	.18 — 76° 52°	78° 61°	(2) — 85° 68°	82° 50°
5	38° 18°	34° 12°	60° 35°	.38 — 68° 53°	80° 54°	T — 72° 57°	(5) — 85° 70°	86° 61°
6	.45° 26°	.48 4 — 29° 15°	T — 56° 41°	76° 50°	76° 44°	84° 56°	93° 70°	(1) — 84° 65°
7	(2) — 41° 23°	.39 .125 — 42° 21°	.03 — 51° 32°	.14 — 73° 56°	1.33 — 69° 54°	90° 61°	(2) — 91° 74°	.10 — 84° 70°
8	23° 11°	.40 (1) 3 — 41° 27°	.67 3 — 48° 32°	.03 — 81° 50°	.39 — 58° 54°	(2) — 91° 65°	T (4) — 93° 75°	.09 — 93° 69°
9	T — 37° 22°	30° 11°	.63 3 — 41° 31°	.24 — 78° 54°	.10 — 56° 53°	(1) — 86° 64°	83° 74°	.08 (2) — 77° 62°
10	38° 25°	.05 — 41° 21°	.3 — 50° 32°	(1) — 70° 44°	.01 — 60° 52°	.63 — 77° 63°	(1) — 81° 65°	75° 50°
11	T T — 39° 23°	37° 17°	60° 33°	77° 53°	.27 — 58° 52°	88° 69°	70° 61°	72° 51°
12	.07 .4 — 34° 24°	37° 13°	.04 — 58° 45°	75° 54°	76° 54°	93° 72°	.25 (1) — 87° 65°	71° 50°
13	.40 .3 — 28° 19°	T T — 46° 30°	.02 — 57° 43°	68° 50°	.03 — 79° 57°	T (1) — 92° 74°	(2) — 84° 61°	(2) — 83° 55°
14	24° −1°	46° 30°	1.17 — 55° 41°	.03 — 69° 44°	.04 — 74° 56°	.12 (3) — 81° 69°	(4) — 79° 50°	(2) — 88° 62°
15	25° −4°	.40 .6 — 35° 17°	T — 62° 39°	T — 58° 49°	62° 54°	71° 63°	83° 56°	1.23 — 80° 66°
16	34° 16°	.14 1.5 — 25° 12°	66° 37°	.42 — 57° 49°	.06 — 69° 53°	81° 60°	(1) — 78° 61°	.02 (1) — 71° 55°
17	.10 .8 — 43° 28°	25° 15°	.07 — 60° 42°	.98 — 61° 51°	.18 — 82° 63°	.44 — 82° 67°	(3) — 88° 59°	
18	.01 — 42° 29°	22° 6°	58° 40°	60° 43°	82° 59°	82° 69°	(6) — 87° 61°	
19	40° 9°	T T — 35° 18°	62° 39°	68° 40°	.05 — 79° 59°	82° 63°	86° 60°	
20	.09 .8 — 32° 15°	T T — 33° 19°	60° 44°	.03 — 68° 49°	.13 — 77° 56°	T (1) — 82° 70°	(1) — 86° 58°	
21	.02 .2 — 32° 6°	.07 .75 — 39° 26°	62° 43°	72° 44°	.08 (1) — 76° 52°	.25 (5) — 84° 71°	(2) — 96° 57°	
22	44° 7°	.63 T — 40° 28°	.14 — 51° 43°	74° 47°	74° 49°	.80 (5) — 81° 68°	T (3) — 96° 73°	
23	42° 29°	T T — 36° 22°	.05 — 60° 42°	.48 — 61° 49°	(1) — 76° 51°	.57 — 81° 71°	1.23 — 95° 65°	
24	T — 41° 28°	40° 20°	.12 — 58° 40°	67° 53°	78° 58°	(4) — 79° 70°	78° 64°	
25	2 — 43° 32°	56° 31°	T — 56° 43°	T T — 80° 60°	.23 — 72° 68°	.25 — 76° 70°	86° 57°	
26	.19 (1) — 42° 31°	62° 32°	.44 — 61° 42°	77° 53°	79° 62°	.07 — 83° 72°	(3) — 86° 64°	
27	T T — 34° 26°	55° 34°	.07 — 55° 40°	75° 51°	.82° 65°	.99 (1) — 87° 72°	.89 — 87° 66°	
28	T .15 — 28° 16°	T T — 47° 36°	T — 56° 41°	.42 — 85° 51°	T — 82° 65°	.17 (5) — 83° 69°	.34 — 72° 57°	
29	.33 (1) — 32° 17°	45° 38°	68° 39°	.02 — 83° 64°	82° 57°	(4) — 75° 58°	74° 49°	
30	.02 — 61° 40°	70° 43°		80° 64°	80° 61°	82° 60°	80° 53°	
31		63° 38°		75° 60°		(3) — 92° 70°	86° 58°	
TNT Poisoning cases	3	3		1	2	35	43	28
Shells loaded	2,000	5,000	25,186	43,020	125,100	111,100	127,272	64,352
Shell output per poison case	700	1,600		66,200	63,000	3,200	3,000	2,400
Burned by hot TNT								
Smashed or cut by shell			2		1	6	12	2
Other accident cases	2			3		4	1	2
Rainy days	11	11	13	11	15	11	6	5
Inches of rain	4.42	3.12	3.52	3.17	3.39	6.96	2.61	1.52
Frigid days	28	26	4					
Days snow on ground	10	15	2					
Inches of snow fall	11.30	15.50	8.00					
Cloudy days	14	8	6	6	9	7	3	4
Partly cloudy days	5	9	10	6	6	9	4	3
Clear days	10	14	14	19	15	15	24	9
Hot humid days				6	8	24	25	11

CHART 2.—TNT POISONING CASES AS RELATED TO WEATHER CONDITIONS DURING 12½ MONTHS OF IMPROVED CONDITIONS, WITH 8-HOUR SHIFTS, IN THE SAME PLANT.

[Upper left-hand figures in squares show inches of rain and right-hand figures inches of snowfall; T=trace; lower figures show maximum and minimum temperatures.]

DAY OF MONTH.	1916				1917								
	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
	RAIN	RAIN	RAIN	RAIN SNOW	RAIN SNOW	RAIN SNOW	RAIN SNOW	RAIN SNOW	RAIN	RAIN	RAIN	RAIN	RAIN
1		62° 34°	11 58° 48°	50° 33°	T. T. 34° 17°	43° 33°	.40 .25 83° 50°	T. T.	.23 46° 42°	.10 69° 52°	.87° 55°	.97° 79°	1.78 70° 64°
2		65° 40°	64° 39°	48° 36°	40° 30°	36° 13°	.23 .2.82 38° 27°	76° 44°	.03 59° 39°	.02 72° 54°	.93° 61°	.95° 74°	T. 80° 64°
3		71° 38°	56° .45°	43° 27°	.21 ① 44° 25°	T. T. 16° 4°	T. 35° 28°	① 55° 43°	58° 42°	81° 58°	.1.86 76° 63°	.41 85° 69°	① 78° 64°
4		68° 49°	54° 31°	61° 38°	45° 35°	36° 9°	.1.18 .6. 35° 28°	60° 35°	.07 55° 32°	77° 53°	.49 86° 65°	84° 62°	75° 55°
5		78° 43°	.09 43°	T. ① 64° 48°	.43 52° 35°	.20 2. 37° 6°	.09 2. 35° 30°	.04 57° 35°	1.33 43° 39°	80° 48°	81° 66°	81° 61°	73° 49°
6		81° 59°	T. ① 37°	59° 38°	.01 53° 42°	26° 10°	32° 17°	.98 48° 33°	.09 48° 39°	.03 79° 62°	80° 65°	85° 58°	.06 74° 56°
7		73° 59°	30°	51° 35°	48° 25°	① 37° 16°	41° 17°	48° 38°	53° 41°	.75 ① 73° 58°	79° 62°	86° 65°	.01 77° 50°
8		82° 47°	② 35°	② 45° 38°	① 44° 25°	48° 27°	.50 ① 45° 31°	45° 30°	50° 39°	T. ① 82° 61°	76° 62°	80° 62°	1.28 64° 52°
9		T. 86° 63°	T. 40°	.52 51° 34°	.05 47° 34°	.27 42° 22°	T. .05 44° 29°	.30 .7.25 42° 24°	.02 58° 41°	T. ② 83° 59°	.12 74° 63°	T. 83° 71°	70° 45°
10		74° 36°	38°	50° 27°	.02 50° 31°	22° 9°	40° 28°	46° 24°	.12 55° 42°	.05 79° 62°	.30 67° 60°	① 80° 65°	63° 55°
11		62° 33°	36°	.20 ② 38° 23°	.09 47° 15°	23° 13°	45° 31°	62° 33°	65° 41°	.14 72° 62°	1.45 63° 59°	82° 56°	62° 36°
12		66° 37°	33°	.67 ① 1.5 35° 32°	20° 7°	13° 3°	① 47° 37°	T. 60° 40°	.01 ① 63° 41°	T. 81° 63°	.03 73° 58°	84° 59°	69° 39°
13		.13 69° 44°	.09 ① 47°	34° 21°	T. T. 40° 11°	23° -1°	.01 44° 27°	.01 49° 36°	.04 58° 40°	.07 72° 59°	.83° 63°	88° 60°	74° 44°
14		.11 75° 41°	40°	35° 18°	.63 T. 54° 32°	T. 35° 17°	T. .18 .25 40° 30°	52° 30°	71° 46°	.1.67 87° 60°	.63 ① 84° 63°	82° 60°	71° 45°
15		62° 32°	② 9. 30° 28°	9.5 18° 33°	.22 .3.75 17°	36° 19°	.04 49° 32°	49° 29°	66° 47°	.02 70° 59°	1.22 81° 65°	82° 64°	.26 65° 56°
16		.01 65° 53°	T. T. 25°	.20 ② 25° 10°	T. T. 28° 18°	.13 1.75 34° 19°	① 49° 31°	53° 33°	T. ② 60° 39°	T. 70° 57°	.87° 66°	.84° 67°	.12 64° 53°
17	70° 47°	65° 50°	27°	24° 12°	29° 13°	42° 16°	.49 47° 32°	63° 31°	68° 44°	73° 52°	87° 66°	.10 67° 64°	68° 46°
18	75° 46°	55° 32°	33°	26° 11°	T. T. 38° 26°	49° 31°	T. 44° 32°	73° 36°	.20 76° 41°	80° 51°	.29 81° 69°	83° 60°	78° 51°
19	.39 66° 43°	1.13 67° 45°	28°	26° 18°	34° 24°	46° 24°	37° 18°	T. 69° 47°	76° 58°	85° 59°	T. 79° 70°	86° 57°	81° 56°
20	75° 41°	80° 66°	34°	① 34° 10°	41° 15°	42° 28°	① 54° 20°	.04 63° 45°	86° 50°	84° 60°	T. 84° 67°	88° 61°	82° 52°
21	71° 45°	70° 49°	① 27°	.57 T. 59° 27°	.18 1.75 32° 26°	41° 24°	.17 ② 54° 35°	.08 ② 76° 46°	77° 51°	T. 85° 60°	85° 70°	90° 65°	80° 52°
22	77° 51°	55° 37°	19°	.1.25 ① 39° 29°	T. T. 49° 28°	.29 8.75 44° 25°	52° 32°	.71 71° 50°	68° 47°	88° 59°	86° 67°	.04 79° 66°	70° 47°
23	.01 78° 61°	55° 38°	.49 ① 28°	② 35° 21°	34° 18°	T. 46° 18°	54° 30°	.08 79° 43°	T. 63° 48°	86° 64°	88° 68°	.03 ① 77° 67°	62° 42°
24	78° 49°	62° 36°	.59 40°	33° 29°	35° 19°	.37 50° 37°	.42 57° 42°	84° 45°	① 63° 40°	.15 85° 65°	87° 69°	.18 ① 89° 72°	60° 47°
25	64° 47°	T. 62° 34°	27°	39° 30°	.06 ① .50 39° 22°	① 36° 20°	56° 31°	.54° 35°	T. 62° 46°	81° 56°	.54 83° 71°	.07 85° 66°	72° 54°
26	74° 41°	58° 48°	21°	33° 20°	T. ① T. 32° 16°	54° 21°	59° 32°	.23 ① 46° 39°	73° 44°	79° 58°	85° 77°	77° 49°	77° 50°
27	84° 53°	53° 31°	① 51° 29°	.31 33° 24°	26° 12°	.03 56° 42°	.37 56° 43°	.02 55° 41°	79° 54°	.35 ① 84° 65°	.55 ① 86° 73°	87° 56°	76° 50°
28	83° 61°	56° 37°	48° 27°	.50 38° 32°	.15 .50 .35 ① 42° 25°	46° 29°	.14 54° 34°	56° 41°	.89 64° 49°	① 81° 66°	① 83° 64°	85° 58°	.21 74° 59°
29	.58 80° 54°	56° 34°	T. 68° 34°	① 37° 24°	.09 40° 24°		T. ② 54° 38°	.50 62° 40°	.06 60° 48°	.28 85° 64°	81° 60°	.04 89° 65°	72° 49°
30	.05 57° 45°	60° 51°	.58 57° 49°	38° 15°	.17 ① 47° 35°		54° 34°	T. 49° 44°	76° 47°	.28 80° 56°	95° 72°	.18 79° 68°	.03 68° 47°
31		64° 53°		30° 16°	T. 42° 30°		T. 69° 32°		? ?		98° 79°	74° 63°	
TNT Poisoning cases			9	12	5	3	8	4	4	3	3	2	1
Shells loaded	42,944	95,804	152,040	121,540	149,872	94,972	168,272	144,836	115,480	93,164	50,830	4,267	8,601
Shell output per poison case			17,000	10,100	30,000	32,000	21,000	36,000	29,000	31,000	16,900	2,100	8,600
Burned by hot TNT				2	2			1		1	1		
Smashed or cut by shell							1	1		1			
Other accident cases			1	4			1		3				1
Rainy days	4	4	6	11	12	8	12	10	17	12	12	9	7
Inches of rain	1.01	1.38	1.95	1.400	2.20	1.77	3.87	2.99	3.87	3.62	6.97	.87	3.63
Frigid days		3	13	23	26	25	24	6	1				
Days snow on ground				7	4	7	4	1					
Inches of snow fall				9.50	7.50	10.50	11.07	7.25					
Cloudy days	2	3	10	10	14		10	7	10	4	7	3	6
Partly cloudy days	3	8	1	11	5	9	9	10	8	8	5	11	7
Clear days	9	20	19	10	12	11	12	13	13	18	19	17	17
Hot humid days	3	4						1	1	18	24	26	4

DOPE POISONING IN THE MAKING OF AIRPLANES.

BY ALICE HAMILTON, M. D.

INTRODUCTION.

For the most part the manufacture of airplanes is quite devoid of risk to the health of the workers, consisting as it does of carpentry, upholstering, varnishing, and metal work. There is only one point at which poisons are encountered and that is when the substance called "dope" is applied to the linen which covers the body, wings, rudder, etc. The purpose of the dope is to tighten the fabric so that it is absolutely smooth fitting and to render it waterproof. A good dope must be flexible and durable and must possess the property of making the fabric taut.

A great many varieties of dope have been used for this purpose and even now new ones are brought forward from time to time and tested, so that it is probable that formulas now in use may be changed within a short time. Any description of the doping of airplanes applies necessarily only to the present time, and it must be understood that the compounds used may be different six months from now. At present the base for dopes is almost always a cellulose compound, either the acetate or the nitrate. Neither of these is at all poisonous, but both must be dissolved in various volatile compounds which are more or less poisonous, exerting their action on the central nervous system or on liver, kidneys, and heart muscle, or on the constituents of the blood. These compounds will be described in detail later.

It was during the year before the war that physicians first heard of industrial poisoning in connection with airplane doping through reports in German medical journals. A new and startling form of poisoning had appeared in certain of the Johannisthal airplane works and some of the cases were fatal. Soon after the appearance of these reports, similar cases were published in British medical journals. Dope poisoning continued to be reported from both countries up to the early months of 1915, when information from German sources ceased. The British reports, however, appeared from time to time up to January, 1917, at which time the use of that particular form of dope was largely discontinued in England.

The form of poisoning described by the British and German physicians and physiologists, who made their observations quite independently, was the same in both countries. It consists in an acute degeneration of the liver with lesions in kidneys and heart muscle. In England it is known as toxic jaundice and in symptoms and pathology it is very like the toxic jaundice caused by trinitrotoluol poisoning. All of the early cases of dope poisoning were cases of toxic jaundice, but later, when medical examinations were made of all the dopers in order to detect the early stages of poisoning, it was found that there are other less serious and striking types of dope poisoning, characterized chiefly by nervous disturbances.

Although the airplane industry in the United States has been expanding greatly since the beginning of the war, no case of dope poisoning has come to the knowledge of the medical profession. It is of course possible that scattered cases may have occurred and failed to be recognized or reported, and it is also possible that the American dopers have so far escaped poisoning because they did not work long or continuously or in an atmosphere heavily charged with fumes. It may be that as the number of men engaged in doping increases and their work grows more continuous, instances of dope poisoning may appear as they did in Germany and England, unless at the outset precautions are taken to prevent such an occurrence. For these reasons, the Bureau of Labor Statistics instituted an inquiry into the work of doping airplanes as it was done during the spring and summer of 1917, in order to discover what kinds of dope were used, what precautions taken, and whether there was any evidence of dope poisoning in American airplane works.

In the course of this inquiry 18 factories were visited, situated in Illinois, Michigan, Ohio, Florida, New York, New Jersey, Rhode Island, and Massachusetts. The greater number of these were small, some of them only experimental, and they employed no more than one man each in doping and usually for only part time. A few employed as many as 10 dopers. The industry was in process of rapid expansion and hardly any of the plants were at that time in permanent quarters; all were planning to enlarge if their expectations as to Government contracts were fulfilled. This means that the conditions found during the spring and summer of 1917 were temporary and in most cases have already changed. It is fair to say that at that time the doping rooms were passably ventilated, considering the amount of work that was being done, but in many instances the ventilation provided would not be sufficient if doping were continuous and a dangerous kind of dope were used.

The men in charge of these works all realized that there are risks involved in doping, but few of them knew which kind of dope is

the most dangerous, and most of them were willing to trust to natural ventilation to carry off the fumes. As the visits to these plants were made during mild weather, when the windows could be opened, conditions were at their best. No doping room was seen so small and crowded and close as to make one fear for serious poisoning among the dopers, but in cold weather and during a rush of work the state of things would be very different.

Before describing the factories visited it will be best to discuss the various dopes in use in this country, for, obviously, much more scrupulous care must be taken with a decidedly poisonous dope than is necessary with one less poisonous.

DESCRIPTION OF AIRPLANE DOPES.

There are at present three kinds of dope in use for airplanes. The first is the one which was in general use before the war, cellulose acetate dissolved in a mixture of solvents, the most important compound of which is tetrachlorethane. This dope has the advantage of being relatively noninflammable and therefore adapted for use on war planes. The second is acetate of cellulose dissolved in a mixture which does not contain tetrachlorethane, but consists of acetone, alcohol, and benzol. The third is cellulose nitrate dissolved in amyl acetate with usually acetone, or other ketones, alcohols, and benzol. Cellulose nitrate is inflammable and the surface doped with it must be covered with a noninflammable varnish, but even so, nitrate dopes are not considered appropriate for war planes, though they are very generally used for training planes.

These solvents differ very much in their poisonous properties for human beings, but all, with the possible exception of acetone, come under the head of volatile poisons, which produce their effect when breathed or when absorbed through the skin, as well as when swallowed.

PHYSIOLOGICAL EFFECTS OF DOPE SOLVENTS.

TETRACHLORETHANE ($C_2H_2Cl_4$).

K. B. Lehmann,[1] probably the greatest expert on volatile industrial poisons, determined by experiment the actual toxicity of this compound, several years before general attention had been called to it by poisoning in the aircraft industry. In 1911 he administered tetrachlorethane to cats, through the skin and by inhalation, and found that it set up serious disturbances of metabolism, with decided loss of weight. Bile coloring matter and albumen appeared in the urine, and sometimes hemoglobin. There was solution of red blood cor-

[1] Lehmann, K. B., Archiv. für Hygiene, 1911, vol. 74.

puscles and basophilic granulation; fatty infiltration and degeneration of the liver; the heart muscle was yellowish; the kidneys congested. Minute hemorrhages took place into mucous and serous tissues.

Lehmann found that if there was not more than 1 to 2 milligrams of the vapor to a liter of air, the cats could breathe it for a relatively long period—six or seven hours a day for 18 days spaced over four weeks—and show no more serious symptom than loss of weight and drowsiness. If the strength of the fumes was increased, the symptoms were like those following chloroform inhalation, only it is more toxic than chloroform. Tetrachlorethane is the most poisonous of the chlorine derivatives of the hydrocarbons, being four times as toxic as chloroform and nine times as much so as carbon tetrachloride (tetrachlormethane).

In December, 1913, in an airplane factory in Johannisthal,[1] four out of a force of eight dopers were affected with hematogenous jaundice of a severe type and one died. The dope was applied to the wings by spraying as well as by painting and the work was done in a poorly ventilated room. The formula of the dope was secret, but analyses carried on in the University of Berlin showed it to consist of acetate of cellulose in a solvent containing 60 per cent of tetrachlorethane.

Heffter and Joachimoglu,[2] of the Pharmacological Institute of the University of Berlin, made experiments on dogs, using two commercial dopes, "Aviatol," which contained as much as 84 per cent of tetrachlorethane, and "Quittner's Emaillite B," also a tetrachlorethane mixture, and then pure tetrachlorethane. They administered the compounds by rubbing into the skin and by exposing the animals to the vapors. From dopes and from the pure substance they obtained the same results, namely, loss of weight, vomiting, bile and blood in the urine, death with fatty degeneration of the liver and hemorrhages into serous and mucous surfaces and into the heart muscle. When inhalation experiments were made, there was, at the beginning, a narcosis, slower in onset and less marked and less lasting as the days went on, the animal gradually becoming somewhat accustomed to the effects. After several days of inhalation, the other symptoms described above appeared and the course of the case and the changes found after death were the same no matter how the poison was administered.

The fatty degeneration of the liver found after such experiments is more marked than that produced by any substance except phosphorus and it resembles that of phosphorus poisoning by being asso-

[1] Jungfer, Zentralblatt für Gewerbehygiene, 1914, vol. 2, p. 222.

[2] Grimm, Heffter and Joachimoglu Vierteljahresschrift für gerichtliche Medizine, 3 Folge. 1914, vol. 48, Supplementheft, p. 192.

ciated with a yellow, flabby heart muscle and with acute degenerative change in the kidneys. There is also a striking resemblance to delayed chloroform poisoning, in which acute hematogenous jaundice is found. Tetrachlorethane has more than seven times the blood-dissolving power—for mammalian blood—than chloroform has.

During 1914 several instances of poisoning among dopers in airplane works were reported in German medical literature. Jungfer[1] told of one factory where 10 men were poisoned and 1 died. This man had worked only two months, with a dope containing 40 per cent tetrachlorethane. Some months later Grimm[2] wrote of a factory with 15 dopers, all but one of whom had suffered from the effects of the dope and the one who had escaped had been at work only four weeks. Two had died. They were using Aviatol and Emaillite.

Grimm gives the details concerning 18 cases of dope poisoning, with two deaths, the symptoms being as follows: Gastric disturbances—nausea, inclination to vomit, tenderness over the stomach—16; jaundice, 8; bile in urine, 9; anemia—hemoglobin from 60 per cent to 80 per cent—5; muscle tremors, 5; numbness, 3; abnormal reflexes, 4; nephritis, 2; slight motor paralyses, 3; heart weakness, 1. Those who had nervous symptoms had no gastrointestinal symptoms. The dopes contained 40 per cent, 60 per cent, and 84 per cent tetrachlorethane.

He says that after these distressing occurrences, two Johannisthal plants gave up the use of these dopes, but even so, four months later one of the workmen developed toxic jaundice. This long latency and the delayed development of the symptoms of poisoning have also been noted in connection with trinitrotoluol poisoning, as described in the discussion by the British Royal Medical Society.[3] Men and women who had been away from the TNT works for weeks or months have had typical toxic jaundice, which in one case was fatal.

Koelsch,[4] writing in 1915, divides cases of tetrachlorethane poisoning into two groups, (*a*) those with pronounced gastrointestinal symptoms, nausea, vomiting, abdominal cramps, enlarged liver, and jaundice; (*b*) those with slight abdominal symptoms or perhaps none, but with nervous disturbances of various kinds, headache, paresthesia, trembling hands, reflex disturbances, slight paralyses. He speaks of two cases belonging to the first group that were mistaken for lead colic. He also mentions as a symptom an increased

[1] Jungfer, Zentralblatt für Gewerbehygiene, 1914, vol. 2, p. 222.

[2] Grimm, Heffter and Joachimoglu, Vierteljahresschrift für gerichtliche Medizine, 3 Folge, 1914, vol. 48, Supplementheft, p. 192.

[3] See MONTHLY REVIEW of U. S. Bureau of Labor Statistics, August, 1917, pp. 63–74.

[4] Koelschen, Münchner medizinische Wochenschrift, 1915, vol. 62, p. 1567.

appetite for food, coincident with a loss in weight. One of his cases belonging to the second group had only slight gastric symptoms, pain in the stomach and slightly yellowish skin. His chief complaint was of drowsiness persisting all the time he was at work, feeling of crawling in the throat, tremors of the hands, and various neurasthenic symptoms. One employer had used amylacetate dope at first but his men complained that it made them cough and their eyes smart and water, so he had substituted tetrachlorethane and after four weeks one of them developed acute inflammation of the liver.

The use of tetrachlorethane was forbidden in the Tetlow department (Kreis) temporarily by order of the factory inspection department till the effects could be more closely studied.

This report of Koelsch's cases in 1915 is the last that has come to us from Germany. At that time the factory inspectors and sanitarians were strongly in favor of prohibiting the use of tetrachlorethane dopes. We do not know whether this was done. If it was not, then the enormous expansion of the aircraft manufacture of Germany during the last two years must have been attended with a great deal of industrial poisoning.

Great Britain's experience has been very similar; but in her case we have been able to follow it to its logical end, the abandonment of tetrachlorethane dopes. The first report of poisoning from this substance in the airplane industry was in October, 1914, when a man died of acute jaundice in an airplane factory in Hendon. He was 36 years old and had worked 11 weeks when he was found to have jaundice and an enlarged liver. Three weeks later he died and the liver was found to be shrunken and green. Inquiry revealed 10 more cases of inflammation of the liver in the same plant, all men. Their ages were between 23 and 58 years, with four of them over 45 years. The shortest period of exposure before illness came on was three weeks, the longest, 16 weeks. All these cases were of the gastric type and all had jaundice. Indeed at that time no other type of dope poisoning would have been recognized.

Dr. T. M. Legge, chief medical inspector of factories, suggested that the dope was probably responsible for the illness, and experiments made on animals showed that the poisonous constituent of the dope was tetrachlorethane, capable of producing degeneration of liver and kidneys.

The second fatal case in England was a girl of 19 years, who died with all the symptoms of acute yellow atrophy of the liver. She began work in August, was jaundiced in December, and died January 2. The third, a girl of 17, had a similar history. She had worked four months. The fourth was a woman of 34 years who had been

working overtime, through the fall months. She began to feel sick in December, became jaundiced, and died in coma the first day of the year. The fifth death, reported early in 1916, was that of a man of 60 years, employed in taping, who died 13 days after he first consulted a doctor, complaining of diarrhea, vomiting, and great prostration. He had worked barely three weeks.

In February, 1916, "toxic jaundice" was made a notifiable disease in Great Britain, and "dope poisoning" was brought under the workmen's compensation act. It was stated by the Home Office then that 43 cases were known to have occurred, and seven deaths, five of them of women. The report for that month warns of the dangers to tapers, who do not use a great quantity of dope, but whose faces must be near it all the time, because the work is fine. No near-sighted person should be employed in taping. At least three deaths have occurred among tapers.

The dopes in use in Great Britain were made with cellulose acetate, dissolved in benzol, acetone, methyl alcohol, and tetrachlorethane. Wilcox,[1] senior scientific analyst to the Home Office, exposed rats to the vapor of all four of these substances. Those that were in the vapor from dope reacted in the same way as those in tetrachlorethane vapor. They grew drowsy and slept all day, not reviving entirely when taken out at the end of eight hours. After a week of this treatment they were drowsy and could not coordinate their movements, but revived later and ate normally. They did not, however, gain in weight. The rats kept in acetone vapor, and those in methyl alcohol and those in benzol, were also drowsy, but they would revive quickly each day, feed well, and gain weight, nor did they show any incoordination of muscles. All were finally killed, and while the last three groups showed no organic lesions, those exposed to tetrachlorethane vapor had fatty degeneration of the liver and kidneys. The animals which had breathed dope vapor showed the same changes, only less marked. Other rats exposed to the vapor for as long as five weeks showed decided shrinking of the liver. These experiments, as did the similar ones in Germany, established the fact that it was tetrachlorethane in dope that was responsible for this new form of industrial poisoning.[2]

Tetrachlorethane dopes continued to be used in Great Britain, but under far better conditions than formerly, for the Home Office insisted on more ample ventilation, to be provided by means of down

[1] Wilcox, in Lancet (London), 1915, vol. 1, p. 544.

[2] Wilcox gives as the distinctive features of this form of hematogenous jaundice in man: A slow, insidious onset; long duration of the disease after the onset, longer than in acute yellow atrophy of the liver; the absence of marked fever, distinguishing it from infectious jaundice, Weil's disease; the absence of such anemia as would be found in arsenical poisoning. The jaundice is deeper than that which accompanies delayed chloroform poisoning.

suction, since the vapors of tetrachlorethane are heavier than air. The Home Office inspectors found that a plenum system of ventilation simply resulted in a wide distribution of the poisonous fumes, so that workmen who were not employed in doping were forced to breathe dope fumes. They insisted that the air in the doping room must be changed 30 times an hour, and that all work, except doping, must be excluded from the doping room, and that doping of all kinds, including taping, must be done in this room. According to their observations as small an amount as 10 or 12 per cent of tetrachlorethane in dope is dangerous.

In August, 1916, a member of the Government stated in Parliament, in response to a question, that: "Considerable progress has been made in the production of satisfactory dopes of a nonpoisonous kind, and the Admiralty and War Office have recently issued instructions to contractors specifying various nonpoisonous dopes which meet their requirements. The effect of these instructions is that the use of dope containing tetrachlorethane is no longer permitted for military or naval air service unless nonpoisonous dopes can not be obtained. Of eight doping schemes approved seven are now supplied by the trade."

The latest information from England, in a letter from Dr. T. M. Legge, chief medical inspector of factories, written January 10, 1917, is to the effect that tetrachlorethane dope has been eliminated in aircraft works, and there has been little or no trouble among dopers since then. The Home Office, however, still thinks it necessary to insist on the same forms of artificial ventilation in doping rooms and on the fortnightly medical examination of dopers, inasmuch as the new dopes contain volatile poisons, though not as dangerous as tetrachlorethane.

The best solvent for cellulose acetate, if tetrachlorethane can not be used, is a mixture of methyl acetone (or methyl alcohol, methyl acetate, and acetone), benzol, and alcohol. By far the most toxic compound in such a dope is the benzol.

BENZENE OR BENZOL (C_6H_6).

This solvent, a coal-tar product, is a more powerful poison to the central nervous system than any substance used in airplane dope. Very rapidly fatal cases of industrial benzol poisoning have been reported in the literature, showing that a few minutes' exposure to heavy fumes may mean death. Less dense benzol fumes cause dizziness; roaring in the ears; excitement like that of alcoholic intoxication, sometimes angry, sometimes foolish, followed by the same depression and discomfort that come after a bout of drinking.

The amount of benzol in airplane dope is not likely to be more than 12 or 15 per cent, and we would not therefore expect severe

acute poisoning from its use. The milder forms of acute poisoning just described would be more probable and perhaps also the symptoms of chronic benzol poisoning, such as is seen among rubber workers. This chronic poisoning causes disturbed digestion, loss of weight, loss of appetite, tendency to fatigue after slight exertion, vague nervous symptoms, weakness, lowered resistance to infectious diseases. It is probable that the underlying disturbance is a profound anemia, for it is characteristic of benzol that it has a destructive action on the constituents of the blood, both the red corpuscles and the white. It also injures the blood vessels and in severe cases of both acute and chronic poisoning there may be hemorrhages under the skin or from mucous surfaces.

Industrial poisoning occurring among the users of cellulose acetate dope which has no tetrachlorethane might be due to other solvents in the dope, but the presence of benzol must always be taken into consideration, for it is the most dangerous of the solvents used.

ACETONE: OR DIMETHYL KETONE ($CO(CH_3)_2$).

This is the principal solvent used in these cellulose acetate dopes. It may be present as chemically pure dimethyl ketone, or as the so-called methyl acetone, a mixture of methyl alcohol, methyl acetate, and acetone.

Pure acetone is probably the least harmful compound used in dope solvents. Koelsch[1] could find no proof of danger in the use of acetone in industrial processes, no effect upon the workmen except possibly burning of the eyes and headache. Kobert,[2] the great authority on poisons, says that no case of acute poisoning from acetone, either deliberately or accidentally absorbed, is on record and he believes that such an occurrence is hardly possible. My own experience has been with men using acetone in the making of certain kinds of smokeless powder. They look upon it as completely harmless, not one of them attributing to its use any disturbance of health. In one factory I was told that they often used acetone to wash out a foreign particle from the eye, and in another, the factory physician told me that he took acetone for dressing minor injuries when his iodine gave out and found it a good substitute.

METHYL ALCOHOL OR WOOD ALCOHOL (CH_3HO).

In single large doses methyl alcohol is less poisonous than ethyl (grain) alcohol, but in small repeated doses it is decidedly more poisonous.[3]

[1] Koelsch, Concordia, 1912, vol. 19, p. 246.
[2] Kobert: Die Intoxikationen, p. 95.
[3] Nicloux and Placet, Comptes rendus de la Société de Biologie, 1912, vol. 2, p. 63.

It is often claimed by industrial users of wood alcohol that the ill effects following the breathing of fumes are caused by the impurities contained in commercial wood alcohol, and that the pure alcohol is harmless, but this has been conclusively disproved by Reid Hunt,[1] who found the chemically pure article producing all the characteristic symptoms of wood alcohol poisoning.

Pohl[2] says that the chronic poisoning of wood alcohol is quite different from that of the other alcohols. Ethyl, butyl, and amyl alcohol may be tolerated by animals for months, but methyl alcohol given in repeated doses can be tolerated only a few weeks. The animals cease to feed, then they fall into a coma lasting for days, and finally die, the liver having undergone extensive fatty degeneration.

In human beings the most striking effect of wood alcohol is on the eye. Lewin[3] says that this action on the eye is more characteristic and occurs with greater certainty than does the effect of almost any other poison, and this is true whether the alcohol be swallowed or breathed. There is often a conjunctivitis, which may later be purulent; the pupil dilates and does not react to light or to accommodation; the sight is blurred; the field of vision decidedly contracted, especially for certain colors. Ophthalmoscopic examination shows distension of the retinal vessels with dark blood, blurring of the disk, in severe cases marked retinitis with edema.

The clouded vision comes on suddenly and may pass away in the open air, returning again in the atmosphere of the work-room. Exposure to heavy fumes is sometimes followed by permanent impairment of sight, even total blindness. There are many cases of industrial poisoning from wood alcohol reported in American medical literature that resulted in partial or complete blindness or in death.[4]

Accompanying the eye symptoms there is usually more or less headache, a feeling of weariness and of muscular weakness, pain in stomach and back, dizziness. If the fumes are heavy, the symptoms are more serious—abdominal cramps, nausea and vomiting, chills, uncontrollable drowsiness, even coma. Delirium is rare. In ordinary wood alcohol poisoning fainting does not occur, but there is dizziness, confusion, roaring in the ears, blurred sight, staggering gait. Occasionally the fumes cause bronchial irritation, even bronchopneumonia.

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[1] Reid Hunt, Johns Hopkins Hospital Bulletin, 1902, vol. 12, No. 137.

[2] Pohl, Archiv. für experimentale Pathologie und Pharmakologie, 1893, vol. 31, p. 281.

[3] Lewin, Medizinische Klinik, Berlin, 1912, vol. 8, p. 95.

[4] For full literature on the subject of industrial wood alcohol poisoning, see the following:

Wood, Casey, and Buller, F., Journal American Medical Association, 1904, p. 992.

Wood, Casey, Journal American Medical Association, 1912, p. 1912.

Woods, Hiram, Journal American Medical Association, 1913, p. 1762.

Tyson, H. H., and Schoenberg, M. J., Journal American Medical Association, 1914, p. 915.

It is an unsettled question what proportion of wood alcohol constitutes a dangerous amount. Denatured alcohol in the United States usually contains from 4 to 10 per cent of wood alcohol and it is generally assumed that this is within the poison limits. Yet the denatured alcohol of Germany which contains only 2 per cent has caused trouble among the workers using it. According to Goldschmidt [1] there has been a great deal of complaint of ill health among workmen using denatured alcohol, so much so that petitions were sent to both the Bundesrath and the Reichstag, asking for a governmental inquiry into the harmfulness of alcohol denatured in this way. Lewy,[2] writing in 1891, gives much the same information concerning the use of denatured alcohol in industry in Austria. The Austrian formula for this alcohol calls for the addition of 2 per cent wood alcohol and one-half per cent pyridin bases.

Lewy states that the reports of sickness caused by the use of this denatured alcohol in industrial establishments in Bohemia induced the Austrian Ministry of the Interior to undertake an inquiry, the results of which confirmed the reports of ill health and blindness following work with denatured alcohol. The poisonousness of the pyridin bases and of the impurities contained in crude wood alcohol are admitted, but the effect of methyl alcohol itself is said to be predominant and to be regarded as the principal effect. In Germany and in Austria, countries in which the industrial use of denatured alcohol is very widespread, mixtures containing as little as 2 per cent of wood alcohol have been found to be dangerous.

These are the principal substances that make up the solvents for cellulose acetate when tetrachlorethane is not used. Small quantities of other compounds may be added to act as stabilizers for the dope. For instance, from 2 to 5 per cent of ethylchloracetate (CH_2 Cl COO C_2 H_5) is said to have this stabilizing effect. Ethylchloracetate has a markedly irritating action on the eyes. Other compounds which may be used for this purpose are benzyl acetate, benzyl benzoate, and acetanilid, none of which would probably be harmful when used in this way. Hexachlorethane, said to be far less poisonous than the tetra compound, is sometimes used, and also paradichlorbenzol. This last is decidedly irritating to the skin, but it is doubtful whether so small an amount as 4 per cent would do any harm.

Coming now to the cellulose nitrate dopes, which are commonly used for training airplanes, we find that the solvent that bears the same relation to cellulose nitrate as tetrachlorethane does to cellulose acetate is amylacetate, commonly called banana oil. Combined with it may be acetone, amyl alcohol (the so-called fusel oil), methyl

[1] Goldschmidt, Weyl's Handbuch der Hygiene, vol. 8, p. 830.
[2] Lewy, Medizinisch-chirurgische, Rundschau, 1891, vol. 32, p. 508.

alcohol, grain alcohol, and benzol. Of these, acetone, methyl alcohol, and benzol have already been described.

AMYL ACETATE ($C_7H_{14}O_2$).

Amyl acetate is familiar to varnishers and workers in shellac and lacquers under the name of banana oil. Many men object very much to its heavy, sweet odor, and irritating effect on eyes and throat. It is probably because of this penetratingly sweet odor that the men attribute any unpleasant effects they may experience in the use of cellulose nitrate dopes to the banana oil, though there may be much stronger volatile poisons present, such as benzol or methyl alcohol, their presence being masked or covered over by the amyl acetate.

Amyl acetate has toxic properties, but they are slight. We have no evidence of dangerous acute symptoms following the breathing of large quantities of vapors nor of organic diseases following long-continued exposure. Koelsch [1] of the Bavarian Department of Labor (*Landesgewerbearzt*), made a special study of amyl acetate, which he published in 1912. As he was able to find very little written about it, he made inquiries of the factory inspectors in Bavaria who came in contact with workers in lacquers, metal varnishes, in bookbinderies, leather works, varnishes for frames, pencils, and pen handles. These inspectors told him that it was comparatively harmless, causing in rare instances drowsiness, dizziness, and headache, cough, feeling of tightness in the chest, and nausea. All these symptoms were worse in new men, as they quickly became accustomed to the vapors. They knew of no chronic organic trouble resulting from the use of amyl acetate.

Koelsch interviewed five workmen himself, all dopers in an airplane factory, using amyl acetate-acetone dope. One of them complained of weariness and occasional nausea and headache which he attributed to the odor of banana oil. The others had no complaint to make. Then he experimented on himself, vaporizing amyl acetate and breathing the fumes. The result was an inclination to cough, a feeling of heat in the head, and a slightly more rapid pulse. Later he grew dizzy, somewhat drowsy and confused and tired, with quick, deep respirations. Going home at the end of the experiment, he found it difficult to mount the stairs.

To test it further, Koelsch made experiments on rabbits, exposing them to an atmosphere containing 0.5 to 1 per cent amyl acetate. The acute symptoms of air hunger and nervous irritation passed away quickly when the animals were taken out into fresh air. Guinea pigs, exposed day after day to such an atmosphere for 10 hours each day, developed marked nervous symptoms, ataxia, motor paralysis, but not persistent after removal to fresh air. After many days (237 and

[1] Koelsch, Concordia, 1912, vol. 19, p. 246.

340 days) they lost appetite and grew thin. Two that died had fatty liver and edema of the lungs with areas of pneumonic consolidation.[1]

Lehmann [2] finds the same comparative harmlessness of amyl acetate. He could not succeed in narcotizing rabbits completely with it, and death did not follow even so large a dose as 35 milligrams per liter of air. There was a good deal of irritation of the mucous membrane of nose, throat, eyelids and bronchial tubes, while larger doses produced alteration in gait, and partial narcosis.

His human experiments were slighter than Koelsch's. Two healthy young physicians breathed air with 5 milligrams of amyl acetate to the liter for half an hour. At first they felt an irritation of the throat, nose, and eyes, then dry burning in the throat, but no headache or nausea or change in pulse, and only a slight sense of weariness.

The smarting, burning, watery eyes complained of by men using nitrate dopes in airplane work are attributed by them to the fumes of amyl acetate, but it is evident from what has been said above that methyl alcohol may be the ingredient responsible. As for the general symptoms, it would be impossible to say which of the several volatile poisons, all of them with effects on the central nervous system, is the most active agent in any one case.

To sum up, workers in amyl acetate may be expected to complain of smarting eyes, running from the eyes, dryness of the throat, sense of tightness in the chest, and inclination to cough. More rarely they may feel drowsy and tired and vaguely nervous. Such symptoms as nausea, headache, vomiting, gastrointestinal distress, do not seem to be characteristic effects of amyl acetate. Nor have we so far any evidence of chronic organic disturbances in human beings as a result of long-continued exposure, though experiments on animals point to the possibility of such occurrences.

AMYL ALCOHOL OR FUSEL OIL ($C_5H_{11}OH$).

Marshall [3] gives the following list of alcohols with their fatal doses, calculated per kilogram of animal weight.

	Grams.
Methyl alcohol (CH_3OH)	6.00
Ethyl alcohol (C_2H_5OH)	7.75
Propyl alcohol (C_3H_7OH)	3.75
Butyl alcohol (C_4H_9OH)	1.85
Amyl alcohol ($C_5H_{11}OH$)	1.50

[1] Heffter and Joachimoglu in connection with their experiments on dopes tested also amyl acetate on two dogs. The animals showed irritation of the conjunctiva and at first they lost weight, but recovered. Killed on the ninth and eleventh days they showed no anatomical changes.

[2] Lehman, K. B., Archiv für Hygiene, 1913, vol. 78–79, p. 260.

[3] Marshall, quoted from Memoires des Poudres at Salpêtres, 1912, vol. 16, p. 128.

Fusel oil is therefore four times as toxic as wood alcohol and five times as toxic as grain alcohol.

Salant,[1] who tested amyl alcohol and ethyl alcohol on animals, found an even greater disparity between them. For frogs the minimum fatal dose of amyl alcohol is only one-seventh to one-eighth that of ethyl alcohol, and for rabbits one-fourth. It is a poison to the central nervous system, causing symptoms like those of ordinary alcohol, but it is more rapid in its effects, severer, and accompanied by a more decided fall in blood pressure.

All the three varieties of dope are in use at present in the United States. The large numbers of airplanes for use in training aviators are covered with nitrate dope. The war planes which are just beginning to be constructed will probably be covered with acetate dope, free from tetrachlorethane. Cellulose acetate dope with tetrachlorethane as solvent is still used in a few American factories, but it is probable that if sufficient quantities of other solvents can continue to be produced the use of tetrachlorethane will be abandoned in the near future. The United States Signal Corps gives the preference to the tetrachlorethane-free acetate dope for war planes. This is, however, the situation at the present moment. When the inquiry was made for the Bureau of Labor Statistics between April and September, 1917, only two kinds of dope were in use to any great extent, namely, cellulose acetate tetrachlorethane dope and cellulose nitrate-amylacetate dope, for at that time the airplanes in course of manufacture were either for training purposes or were purely experimental. The majority of factories used nitrate dope.

DOPE POISONING IN AMERICAN AIRPLANE WORKS.

Doping is simply painting fabric with liquid dope. Usually five or six coats are applied and there is an interval of an hour or so between coats to allow for drying. If only one part is to be doped the men go outside during this hour and do other kinds of work, but if there are several they pass on to another part and work continuously. Obviously the larger the number of parts drying the heavier the fumes in the doping room. The British regulations advise drying the doped parts in a room separate from the doping, but so far this is not done in American plants.

In one large doping room the foreman had placed all the wings that were drying in a vertical position instead of horizontally, as is done in most places, because he said that in this way not only was drying quicker, but the heavy fumes of the tetrachlorethane would sink to the floor and not poison the air.

[1] Salant, Proceedings Society Experimental Medicine & Med., New York, 1909–10, vol. 7, p. 134.

"Taping" is applying narrow strips over the stitches in the linen, the dope being used to glue the strips fast to the fabric. Some men prefer this to "big work," doping wings, but others say that holding the head close to the fabric, as one must in taping, makes one breathe in more fumes. An experienced man can save himself a good deal from the fumes in doping by placing himself in such a way that they are drawn from him, not toward him. He begins work at the end nearest the exhaust, not the far end, so that as he works back the fumes are always between him and the outlet.

When the atmospheric humidity is high, drying of the dope is delayed. The best conditions for doping are a temperature between 75° and 85° F., with a fairly low humidity and no strong currents of air. Nevertheless it is evident that these conditions are not necessary, for much of the doping in this country is still done out of doors, or in open sheds, at the mercy of the weather. No scientific air conditioning is thus far provided in any plant.

The bureau of statistics and information of the New York State Industrial Commission, in their bulletin for June, 1917, publish a report of an inquiry "into the danger of the aeroplane industry from a hygienic standpoint." The investigators were Dr. Lester Roos and Dr. Rosalie Bell, of the medical inspector's staff. They visited eight factories in the State of New York, three of which were very small, the others employing, respectively, 5, 6, 7, 12, and 40 to 50 dopers. In two factories tetrachlorethane dopes were used, with six men engaged in doping. In two of the smallest factories the nature of the dope was not ascertained, and in the other four, employing some 65 dopers, nitrate dopes were used with acetone as solvent, or mixtures of acetone and such substances as benzol, amyl acetate, fusel oil and alcohol.

Examination was made of 52 of these dopers and it is noted that some disturbance of health was present in 35. In some it was very slight, no more than a dark colored urine, or slight anemia, or yellowing of the skin, or reddening of the eyelids. About nine of the 35 could be so classed. The remaining 26 gave histories of symptoms of ill health referable to the central nervous system or to the gastrointestinal or urinary system as follows:

Dizziness	14
Headache	6
Drowsiness	6
"Overcome by fumes"	4
Attacks of semiconsciousness	2
Attacks resembling alcoholic intoxication	2
Sense of weariness	1
Nausea	12
Vomiting	4

Loss of appetite	1
Burning in the stomach	1
Dark colored urine	1
Change in odor of urine	1
Burning micturition	1

Jaundice was observed in two and a third gave a history of former jaundice. One of the men with jaundice had dark urine. "Almost one month previously he was attacked with acute vertigo, syncope. He became nauseated and vomited. All the symptoms except the vertigo lasted for one day. One week ago he suffered a similar attack. On both these occasions he was compelled to remain at home. He complains at the present time of feeling weak, and having a highly colored urine. Physical examination shows a marked jaundice." This man was using cellulose nitrate dope free from tetrachlorethane.

The second case, less markedly jaundiced, had the following history: After one week's work with tetrachlorethane dope, he was attacked with dizziness and severe nausea. "Symptoms simulating alcoholic intoxication lasted twenty-four hours. Two weeks later while at work he was overcome for a period of two hours with an attack of vertigo and sleepiness. After three weeks more he had a similar attack and again showed symptoms resembling acute alcoholism for about three hours. He has highly colored urine at all times. Physical examination shows a slight jaundice." The dope in this instance contained tetrachlorethane.

In studying these cases, it is hard to determine which is the dope solvent responsible for the various symptoms. As we have seen, the characteristic effects of tetrachlorethane are gastrointestinal disturbances and jaundice. Nervous symptoms may also occur. The characteristic effects of solvents used with nitrate of cellulose are found chiefly in the nervous system. Benzol especially may cause a rapidly developing condition resembling alcoholic intoxication. The odor of amyl acetate is nauseating to some men, and both fusel oil and methyl alcohol fumes may cause vomiting, headache, dizziness.

No evidence of serious illness was discovered among these New York workmen, and no case of typical toxic jaundice, such as is described by British and German authors.

My own experience, covering three factories in which dopes with tetrachlorethane as the solvent were being used at the moment and in which about 15 dopers were employed, did not reveal any instance of toxic jaundice. The histories related to me did not even indicate an early stage of this disease; rather the symptoms were those of temporary intoxication and were referable to the central nervous system. I also interviewed men who had formerly used tetrachlorethane dope, though at the time they were working with the nitrate. They de-

scribed cases of poisoning in their own experience, or among fellow workmen, but these too were nervous in character, never jaundice with gastric trouble.

In view of the comparative newness of tetrachlorethane in industry it may be of value to describe the symptoms experienced by these dopers who had used it, even if the type of illness from which they suffered was light. Drowsiness, especially in hot weather, was more often mentioned than any other one symptom, and it was most troublesome in the early morning, passing away as the day went on. It was also worse after a holiday, the man having to go again through the process of accustoming himself to the fumes. One doper said that he was always drowsy for a while on starting work, then it passed away, but when he quit and went out into the open air the drowsiness would come over him again. Other men said they would fall asleep as soon as they reached home.

Several men told of having been made faint by the fumes so that they could work no longer that day, but always in these cases there had been some unusual circumstance that had encouraged absorption of the fumes. The room was closed and airless, or the weather very hot and humid. One man had lain down on the floor to paint the under surface of a wing, and thus breathed in the fumes which because of their heaviness always tend to fall to the floor. In another instance described doping was being done in a greenhouse and the men worked in a narrow aisle with wings stacked close on either side, drying or in course of doping, and the sun beat on the glass roof and walls.

The nervous symptoms were sometimes fairly severe, resulting in loss of consciousness, with temporary respiratory failure. Two men were doping wings in a room that had no artificial ventilation, and one of them was taken with dizziness and faintness and fell to the floor. The other, stooping to help him, upset the pail of dope, spilling some of it on the clothes of the prostrate man. Both had to be carried out into the open air, but the second man revived fairly quickly; the first was unconscious for a short time and had an alarming respiratory failure, so that artificial respiration had to be resorted to and his dope-soaked clothing removed before he revived. However, by the time the doctor arrived he was breathing again, and neither man experienced any lasting result from the accident, though both felt weak for several days.

Nausea and headache are likely to follow one of these attacks of dizziness and faintness, but symptoms of abdominal disturbance of any seriousness were apparently not present among the dopers I had an opportunity to interview.

Constipation was complained of only occasionally. Two men spoke of an increased craving for food at the same time that they were losing weight. Men who use tetrachlorethane dope for many weeks or months are said by fellow workmen to have a dull, "dopey" look in the eyes, which makes them recognizable at once.

The men using acetone-amylacetate-benzol-methylalcohol dopes did not complain nearly so often of dizziness, drowsiness, or attacks of faintness as did the tetrachlorethane men. For instance, there were nine men among the latter who gave a history of having been overcome by fumes once or oftener, while only three of the former gave such a history, yet there were more than four times as many men employed using these dopes as there were using tetrachlorethane dopes.

Some of the men using amyl acetate dopes complained of headache during the first hours of work, of cold hands and feet, of itching eyelids, watery eyes, feeling of dryness in the throat, and that vague sensation of drowsiness, slight nausea, and weariness, which they describe under the term "dopey."

There seems to be a general impression among the men who use tetrachlorethane dopes that they are less harmful than the dopes containing amyl acetate. The disagreeable odor of the latter and its irritating effect on the eyelids and on the throat are experienced at once, while tetrachlorethane, with its less overpowering odor, has no immediate effect, and seems to the workmen comparatively harmless. This opinion is shared by some physicians also, but it is quite wrong. Amyl acetate, though disagreeable, is not at all a dangerous poison, while tetrachlorethane is a slow, insidious poison to the cells of the liver and kidneys. Nevertheless, it is not at all unusual to hear a foreman say that he tried at first to use an amyl acetate dope, but had to give it up and take one with tetrachlorethane as a solvent, because his men could not stand the banana oil.

It must be remembered that the effect of these volatile solvents on workers in American airplane factories has not really been tried out. They have been exposed to fumes only at intervals and for short periods. Fifty-three dopers were asked as to the number of weeks or months they had been employed and all but five had worked less than a year. Seventeen had been doping for less than one month, 12 from one to three months, and 11 from three to six months, leaving only 13 who had worked over six months.

This is one reason why there has been no serious poisoning from volatile dope solvents in this country up to the present time. Another reason is found in the fact that much of the doping has been done in the open air, or under a shed with open sides, and so the fumes from the solvents were rarely heavy. Naturally since our entrance into

the war these conditions have changed, and we have no reason to think that we shall escape the experience of the British and the Germans with toxic jaundice if we continue to use tetrachlorethane dopes and do not adopt vigorous measures for the protection of dopers from fumes, for from now on there will be many men at work doping throughout their full shift, and they will be in rooms filled with dope-covered fabric. Nor are the other solvents free from danger. Indeed their poisonousness may prove to be greater than we now think.

The following is a brief description of conditions in the airplane industry in the United States as they were found in the spring and summer of 1917.

Of the 18 factories visited, 2 were not yet completed and it was not possible to find out anything about their plans of work, not even the variety of dope they intended to use. Five of the remaining 16 were using acetate dope with tetrachlorethane as solvent, the other 11 were using dopes with acetone, amyl acetate, benzol, and various alcohols—ethyl, methyl, or amyl.

About 75 men were employed as dopers, but the number in some factories was to be increased very soon and probably 90 is more nearly correct at this time of writing. However, even now not all of them are employed all their time in doping. The five factories using tetrachlorethane dopes are not the largest, and employ all told only about 16 men in these departments. Dopers are always men, and it is very rare to see a woman in the doping room, though occasionally she may work there at an emergency job of covering or repairing. No lads were seen in this employment, and no man under 21 years. Though we have no reason to believe that women are more susceptible to dope poisoning than men, the British experience proves that immature workers, those under 20 years of age, are decidedly more susceptible than adult men and women, so it is a matter for congratulation that thus far we have not employed boys and girls in our doping rooms.

In describing the ventilation systems now in use in doping departments it is necessary to bear in mind the temporary character of many of the present plants. Naturally, it is hardly worth while to install expensive artificial ventilation when the intention is to move soon into larger quarters. Six factories were in this condition; they were soon to be abandoned, while four more had just moved into new quarters and were not yet fully established. Five that were in permanent quarters had installed various forms of artificial ventilation, which it may be well to describe in full.

No. 1 and No. 2 have slotted floors with down suction. In No. 1 the doping room is large, about 160 by 30 feet, and the ceiling at the

peak is 18 feet high. There is a row of windows on one side, almost touching each other, and the panes in the middle were open at the time the visit was made, a cool day in early June, yet the air was oppressively heavy with banana oil. The floor, which was decidedly dusty, is built with three-quarter-inch cracks between each seven boards, the boards being 4 inches wide. These cracks are everywhere partly filled with dust and threads of fabric. There is a solid floor about 2 inches below the slotted floor, and the shallow space between has dirt and threads partly filling it. An elaborate double system of pipes is installed to supply and remove air. The intake system runs along the middle of the ceiling, sending in air heated to about 90° F. in a horizontal stream, while the pipes for removal of the air are placed along the floor. There are nine oblong pipes, about 18 inches by 8 inches, which run from the floor level to a larger pipe placed along the ceiling at the side, which meets in the center of this side wall a main pipe connecting also with a similar branch from the other side of the room. Here there is supposed to be a motor fan to produce suction, but at the time the visit was made no draft was perceptible at any point in the floor and the fumes were certainly not being carried off.

No. 2 has the same system, but in much more satisfactory form. Here the doping room is only partly separated from the main room by walls that stop short about five feet from the ceiling, which at this point, is about 20 feet high, while at the sides it is 11 feet. Four windows are on one side, two at one end. The floor has one and a half inch cracks every four feet and three inches below is the solid floor. In the outer wall of the room is a very powerful fan which exerts suction on the interfloor space, and this suction is so efficient that a small piece of paper poked through a crack is caught at once and appears in a few moments flying from the fan. The air is said to be changed every minute and certainly no fumes were perceptible at that time.

A simpler form of this kind of ventilation, which seems to work admirably, was found in a factory using tetrachlorethane dope—the two described above use amyl-acetate-acetone dopes. This doping room is separated from the rest of the factory but has a wide doorway into the main room closed only by a heavy canvas curtain. There are six windows on one side, and the room is 22 by 50 feet, the ceiling about 12 feet high. The air intake is from the upper sashes of the windows. The air is removed by down suction in the following way: Along the whole length of the floor in the middle of the room runs a wooden flue, about a foot high and 3 feet across, with cracks about three-fourths of an inch wide and 4 feet long at intervals. The suction is provided by a motor fan placed outside the

room at one end, and as soon as it is started the rush of air through the cracks in the flue is strong enough to make the heavy canvas curtain closing the door belly inward. Wings for doping are placed diagonally across the flue, which is not wide enough to impede the doper as he works. There are also two electric fans on the inner wall for use in very hot weather.

Three factories now building are to have some form of down suction through a slotted floor. Only one of these will be using tetrachlorethane dope.

In two plants there is a simple but effective system of ventilation by means of a fan so placed as to draw the air from near the floor level. One of these plants is situated on the sea coast and the doping shed has an unobstructed supply of air off the water. Doping is done in the second story of a building at the water's edge. This room is about 150 feet by 45 feet and the ceiling is 20 feet high. There is a wide double door at each end, one of them opening out toward the sea. Just in front of the door space, which is 8 feet high and 6 feet wide, is an old airplane propeller. The fan is set low, about 2 feet from the floor. Doping is done at the end of the room near the fan and then the wings are moved back to dry. The fan was running at the time, and the air was very fresh. The only spot where tetrachlorethane could be smelled was close to the doper.

In another factory no doping was being done at the moment, so that it was not possible to be sure how efficient the system actually was. The air intake here is from windows in the saw-toothed roof, and the suction fan, about 3 feet in diameter, is placed at the floor level opposite these windows. Seven wings were drying there and the odor of amyl acetate was not at all disagreeable.

Three fairly large plants depend entirely on window ventilation, though one of them uses the dangerous tetrachlorethane dope. In all three places the management is well aware of the risks involved in doping and expects to install an artificial system of air removal after the output has increased to the point where constant employment in the doping room will be required. At present dopers work for only a few hours a day.

As a rule, doping is carried on in a room or a building quite separate from the other workrooms, but in three plants it is done in the same rooms with the construction or sewing and covering. However, two of these factories were at the time they were visited still in temporary quarters. It does happen sometimes that simply as a matter of convenience a large wing may be doped in the assembling room, because it is difficult to get it into the doping room. In this case, of course, a good many workers who are not doping are obliged to breathe dope fumes. Last summer on a very hot day a woman work-

ing about 30 feet from a large wing that was being covered with amyl acetate dope fainted and was unconscious for about 20 minutes, although the assembling room is fully three stories high, and the manager thought the ventilation was abundant. Such an accident is quite unnecessary and should not be permitted. Doping should be confined to one room.

As long as a factory is in the experimental state, doping is often done out of doors, or in an open shed, very satisfactorily as far as the air supply for the workers is concerned. Sometimes these makeshift arrangements are not so good. One company used tetrachlorethane dope in a shed huddled down beneath a hill which cut off the air on one side and there were buildings close enough on two other sides to shut off the air on those sides. Another company was using an old paint shop on a crowded city street, and another an abandoned garage, surrounded by city buildings. But all these will either close down or secure better quarters, and in the meantime the exposure to dope fumes is so intermittent and short that it is doubtful if any real risk is incurred. If such conditions were to persist after construction had reached the degree it is expected to, then there would be a serious menace to the health of the dopers, especially where tetrachlorethane dopes are used.

Fumes are the dangerous feature in doping, but personal cleanliness should not be entirely neglected, and it is to be hoped that it will receive more attention in the future than it has up to the present. Only one plant visited had really adequate washing facilities for dopers—that is, hot water, soap, and towels. Eating in doping rooms is not usual, but sometimes men do take their lunch there, and this should, of course, always be forbidden.

The working day is usually nine hours. One plant was employing a night shift for 5 nights in the week, 12 hours a night. Since acetone-amyl-acetate dope is used here, the risk involved in such long hours is not so great as it would be if tetrachlorethane dope were used.

RULES FOR PREVENTION OF DOPE POISONING.

British experience is embodied in a series of recommendations for the control of doping in airplane factories, and it must be remembered that though these recommendations were framed to protect users of tetrachlorethane dopes, they have continued to be applied in airplane works even since the use of these dopes was abandoned and safer dopes substituted.

The following is an extract from Form 356, issued by the factory inspection department of the British Home Office in February, 1916:

DOPE POISONING.

Continued incidence of poisoning in aeroplane factories has led to the addition of the main symptom caused by tetrachlorethane—toxic jaundice—to the diseases which, if contracted in a factory, must be notified to the factory department. The occupier is required to report every such case to the district inspector and to the certifying surgeon, and the medical practitioner in attendance has also to report it to the chief inspector. (S. 73, Factory Act, 1901, and Order of Nov. 27, 1915.)

Not every symptom set up by tetrachlorethane, it should be observed, is reportable. The requirement is limited to the serious sign of jaundice, and in view of its unmistakable character the difficulty of compliance should be small.[1]

The size of the aeroplane wings unfortunately makes it impracticable to remove the vapor completely, at the point of origin, by local exhaust which would carry it off without allowing any to pass into the air of the room. Reliance, therefore, in minimizing the noxious effect has to be placed on dilution of the air so as to keep down the tetrachlorethane and other vapors to a nontoxic proportion. The standard needed for securing this is 30 changes of the air of the doping room per hour. Where this standard has been secured and maintained for all processes in which tetrachlorethane in dope may be used, illness, if not altogether prevented, has ceased to cause serious anxiety. On the other hand, where it has fallen short of 20 changes, toxic jaundice has not failed eventually to show itself, except in the few factories where use of dope has been so intermittent as never to have exposed the workers to a toxic dose.

The means of ventilation must be mechanical, preferably by volume or propeller fans with free discharge to the open air. Owing to the high specific gravity of the vapor, the fans should be fixed at the floor level, or below this level where space allows the construction of large ducts under the floor. Air inlets, of the hopper type, the total area of which should be not less than three times the discharge area of the fans, should be provided at the side of the room opposite the fans at a height of about 10 feet above the floor level. Exceptionally, however, where the fresh air is supplied by a satisfactory plenum system, or direct from the erecting shop over a partition of sufficient height, screening the doping room from the rest of the shop, such air inlets may be unnecessary.

Owing to varying conditions of construction in different factories, it is impossible to standardize methods of ventilation for doping rooms, but in new works, or extension of existing plants, plans of proposed ventilating arrangements should be submitted to the inspector for dangerous trades, Home Office, before the work is put in hand.

At the commencement of the war, several cases occurred among persons employed in fabric making, erecting fittings, etc., before exhaust ventilation and separation of the process of doping from others was recognized as indispensable. These two conditions have now been secured for doping the wings, but recent experience has shown that insufficient attention has been paid in some factories to the necessity of exhaust ventilation in all processes in which tetrachlorethane dope is constantly used. This applies especially to taping—now sometimes found carried on in the general erecting shop without

[1] On the other hand, "dope poisoning," i. e., any illness attributable to the ingredients of the dope, has been added to the schedule of diseases to which section 8 of the Workmen's Compensation Act, 1906, applies.

any precautions—to which operation the three last fatal cases have been mainly due. Notwithstanding the comparatively small amount of dope used the close application required brings the face right into the fumes. And it is the same with the fuselage and other components—struts and landing gear. One attack was traced to the doping on one occasion of especially large wings in the general erecting shop because (it was alleged) the doping room proper could not accommodate them. There was a tendency in some premises before the great development of the industry was fully realized, to make the doping room too small. This should be avoided in future construction, but the risk involved by such a procedure as that described makes it incumbent on the occupier to improvise for any exceptional occasion a special exhaust system.

Pending the introduction of an efficient substitute for tetrachlorethane, it is most important that occupiers should (in addition to provision and maintenance of a high standard of exhaust ventilation) consider and apply as far as they can the following further suggestions for safeguarding the health of the workers, which are the outcome of experience gained in various works:

(1) *Exclusion of other work from the doping room.*—The need for this has already been pointed out on page 2.

(2) *Alternation of employment.*—Considerable periods of overtime or long spells in doping or taping have been noted as having preceded some of the fatal attacks. Obviously, as poisoning is a matter of dosage, and the effect of tetrachlorethane is cumulative, the object aimed at by ventilation is defeated if hours of workers are prolonged beyond that for which the ventilation has been designed. In factories where alternation of employment has been arranged, e. g., two days doping and two in other work, or one week in and one week out, improvement in health has resulted. And when such an arrangement is adopted occasional necessary overtime might, it is suggested, be undertaken by those on the out turn rather than by those who have already worked a full day in doping.

In addition to the alternation referred to, in one factory the women engaged in doping are made to spend half an hour morning and afternoon in the open air, so that no spell of work in contact with the fumes lasts longer than two hours.

(3) *Periodic medical examination.*—A fortnightly medical examination has served useful purpose, both in reassuring the workers and also in enabling those showing premonitory symptoms to be suspended or transferred to other work. The objective signs, however, which the surgeon has to guide him are few, and he can be materially assisted by information from the foreman or matron as to the state of health of the workers in the intervals between his examinations. After each visit the surgeon should state in writing the names of those (if any) whom he considers should be—

(*a*) Suspended as definitely suffering from dope poisoning necessitating absence from work until they are quite well, or

(*b*) Transferred temporarily to other work as a precautionary measure on account of equivocal signs.

Medical supervision on these lines has been adopted on their own initiative or on suggestion from the factory department in several aeroplane works, and the same course should be pressed in all where doping is continuous. It is important that it should be carried out by a medical practitioner who is familiar with the nature of the work and the symptoms to which it may give rise, preferably by the certifying surgeon, as he is in touch with the department and is thus kept informed of the latest observations on the subject. A health

register and instructions as to the conduct of the examination will be sent by the medical inspector to the medical man whom you appoint for the purpose as soon as notice of his name is received here.

A worker suffering from effects of dope should be excluded from all contact with it until he is quite well, a medical certificate to that effect being obtained. Instances are known in which premature resumption led to recurrence of symptoms in an aggravated form.

Instruction to workers.—Certain apparently small points have been noticed which have a bearing on liability to attack. Some instruction to new workers as to how they can best avoid inhalation of fumes without interfering with work is called for, especially bearing in mind the youthfulness of some of them.

(1) Doping should be commenced at the end of the wing nearest to the exhaust fans, and should proceed backwards from that point.

(2) In some factories the wings, as soon as the doped surface is "tacky," are carried to a drying room or closed chamber (separately ventilated) thus diminishing largely risk from inhalation of fumes. Where no such arrangement exists, the wings should be placed to dry in a position between the workers and the exhaust draft, but not so as to obstruct the fans.

(3) After doping, the safest position for the worker is that nearest to the fresh air inlets, but frequently men and women are seen standing close to the exhaust, and therefore breathing the air which is most highly charged with the noxious vapor; the reason being that either the flat top of the outlet duct has been found a convenient place to keep dope pots, brushes, etc., or the light is better there than at the far side. Short sightedness, unless corrected by glasses, should debar from taping if not from doping.

(4) Work should not be commenced on an empty stomach, and where tetrachlorethane is an ingredient of the dope a worker "must not be allowed to take a meal or to remain during the times allowed to him for meals in any room in which such substance is used." (Factory Act, 1901, S. 75.) Hence the need for provision of a properly equipped meal room on lines suggested by the health of munition workers' committee.[1]

Even if, as is hoped, discovery of an efficient substitute enables use of tetrachlorethane to be eliminated from the dope, exhaust ventilation will still be necessary to prevent the effects (fortunately much less noxious) from such solvents and diluents as benzene, acetone, and methylated spirit, which must necessarily continue to be used.

SUMMARY.

In the manufacture of airplanes there is one process which may involve danger of occupational poisoning, the application to the fabric of a water-proofing, tightening mixture, known as dope. This is usually a cellulose compound, the nitrate or the acetate, dissolved in various volatile substances, which are more or less poisonous to human beings.

Cellulose acetate dope was formerly made with tetrachlorethane as the principal solvent. It is now made also without tetrachlorethane, dissolved in a mixture of acetone, alcohol, and benzol. Cellu-

[1] Memorandum on Industrial Canteens, Cd. 8133, 1915, price 1d. See Bulletin of the U. S. Bureau of Labor Statistics No. 222, pp. 29–36.

lose nitrate dope is made with amyl acetate and acetone and usually various alcohols and benzol.

Dope poisoning which appeared in airplane factories in 1913 in Germany and England was caused by the presence of tetrachlorethane in the solvent. This poison is very like chloroform but four times as powerful. Acute poisoning causes drowsiness, confusion, dizziness, sometimes loss of consciousness, or nausea and vomiting and gastric pains. Repeated exposure to the fume causes more pronounced gastrointestinal symptoms and may set up an acute degeneration of the liver with jaundice. This condition, known as toxic jaundice, was the form of dope poisoning which occurred in airplane factories in Germany and Great Britain, and in several instances proved fatal. The British have in consequence recognized such dope poisoning as an occupational disease and have substituted for military and naval airplanes a dope free from tetrachlorethane.

The other solvents for cellulose acetate are acetone, alcohols (wood alcohol and grain alcohol), and benzol. These are all volatile and produce, when inhaled or when spilled on the skin, some disturbance of the central nervous system, but none has the effect on the liver and other organs which is exerted by tetrachlorethane. Benzol is the most poisonous and when inhaled in large quantities it may cause death, but in the proportion used in dope solvents such severe poisoning would not be looked for. The milder forms of acute poisoning would be more probable—dizziness, headache, slight symptoms of drunkenness, with excitement or depression, and, if exposure is long continued, symptoms of slow chronic poisoning with anemia, tendency to hemorrhages, and nervous and nutritional disturbances.

Acetone is the least dangerous of these solvents; indeed, there is no proof that acetone as used in industry is at all harmful. Methyl alcohol (or wood alcohol) may cause serious symptoms, even when present in small amount, for some people are very susceptible to it. The symptoms of chronic poisoning are much more serious than in chronic poisoning from grain alcohol, and may involve the eyes, causing permanent impairment or even loss of sight.

Cellulose nitrate dopes contain as solvents amyl acetate, acetone, or other ketones, various alcohols (ethyl, methyl, and amyl), and benzol. Amyl acetate has a disagreeable odor and an irritating action on eyes and throat, but so far as is known at present, it is not a dangerous poison. Amyl alcohol is said to be more rapid in its effects than grain alcohol and from four to seven times as poisonous.

In American airplane works the dopes used until very recently have been chiefly cellulose acetate dissolved in tetrachlorethane, or cellulose nitrate dissolved in amyl acetate and acetone. As cellulose

nitrate dope is inflammable and can not be used on war planes, and as tetrachlorethane is a dangerous poison, a third variety of dope has now come into use, which is made with cellulose acetate dissolved in a mixture of acetone, alcohol, and benzol. In the future it is probable that this dope will be used for war planes, while cellulose nitrate dope will continue to be used on airplanes being manufactured for training purposes.

There has been no serious dope poisoning in American airplane works as yet, and no authenticated case of tetrachlorethane poisoning resulting in toxic jaundice has ever been reported in this country. This is probably to be explained by the fact that though tetrachlorethane was used in our factories, the amount of dope used was usually small, doping was not continuous, and much of it was done in the open air. Moreover, dopers were continually shifting; not many remained more than a few months in the work.

The enormous increase in airplane manufacture in the United States is coincident with a gradual abandonment of tetrachlorethane as a dope solvent, so that we have no reason to expect that toxic jaundice will appear among the dopers in our factories. It is quite possible, however, that there may be more or less serious poisoning from benzol and from methyl alcohol, and it may prove that the other solvents used in nitrate and acetate dopes are not as harmless as we now think them. It is only prudent to assume that such danger is present and to provide carefully for the removal of fumes from doping rooms. The British requirements for artificial ventilation and for the medical supervision of dopers—requirements framed when tetrachlorethane was the solvent used—have remained in force now that the safer dopes have been substituted.

American airplane works are at present in process of building or remodeling. In many instances artificial ventilation is being installed; in others only natural ventilation is provided. There is little reason to expect serious poisoning among the users of dopes in these factories, but there will be opportunity for the slow, chronic effects of long-continued exposure to large quantities of amyl acetate and smaller quantities of benzol, wood alcohol, amyl alcohol, etc., among dopers, and this should be prevented by good exhaust ventilation. Doping should be strictly confined to one building. No other work should be carried on in the room. Dopers should be taught to avoid fumes by starting their work at the end nearest the exhaust vent and working back from there, for in this way the fumes will be continually drawn away from the air they breathe. Medical supervision, with periodic examination of the dopers, is

very desirable, since these poisons are comparatively unfamiliar and much valuable information as to their effects on industrial workers could be gained in this way.

In any factory where tetrachlorethane dopes are used the dopers should be protected not only by a good system of down-draft exhaust ventilation, but by shortening the hours of work, by alternanation of doping with outdoor work, and by providing periodic medical examination, with authorization to the physician to suspend from work those who show premonitory symptoms of poisoning.

TRADE AGREEMENTS IN THE WOMEN'S CLOTHING INDUSTRIES OF CHICAGO.[1]

BY BORIS EMMET, PH. D.

By reason of their geographical location, the Chicago women's garment industries never experienced the great superabundance of immigrant labor so characteristic of the New York garment trades in the days of unrestricted foreign immigration. This does not mean that Chicago garment manufacturers have ever felt any real shortage of workers. On the contrary, in spite of their great distance from the principal point of immigration, Chicago employers have always been able easily to secure workers, a fact evidenced by high peaks of seasonal employment[2] which are made possible only by the presence of a liberal supply of labor.

The cessation of immigration affected the Chicago garment industries less radically than it did similar industries in New York City. As yet no shortage of labor has been experienced. In connection with this latter statement, however, attention must be called to another difference in conditions between New York and Chicago, namely, the presence of a considerable amount of war work in New York City. To date relatively little of this war work requiring the services of needle-trade hands has found its way to Chicago.

The women's garment industries of Chicago, however, are gradually beginning to draw Government contracts. This fact tends to reveal to all concerned the effects of an almost total interruption of immigration. Those of the employers who, in addition to enjoying a normally busy season, have received or are about to receive Government contracts are beginning to wonder where the labor supply will come from when the busy spring season arrives. A similar state of mind exists among the officials of the women's garment workers' unions. Although many of their members are working only part

[1] This article is a preliminary summary of one of the phases of a study of trade agreements to be published by the bureau. Similar articles dealing with trade agreements in the women's clothing industries of New York and Philadelphia appeared in the issues of the MONTHLY REVIEW of December, 1917, and January, 1918, respectively.

[2] Cf. Bul. No. 183, U. S. Bureau of Labor Statistics, pp. 45–49.

time at present, the union offices receive daily inquiries regarding wages and hours from employers about to embark on Government work which will require the services of garment workers. There is no doubt that with the appearance of the busy spring season in these trades, and with increased numbers of orders for Government work which are bound to come, a real shortage of skilled labor will be experienced in the women's clothing industries of Chicago.

CLOAK AND SUIT INDUSTRY.

Sporadic attempts were made by the International Ladies' Garment Workers' Union to introduce collective bargaining into the cloak and suit industry in Chicago, but down to September, 1915, none of these attempts met with success. As a matter of fact, no really effective organization of the workers in the trade existed prior to the summer of 1915.

Early in the fall of 1915, after a threatened general strike, conferences were held between representatives of the union and representatives of the two cloak and suit manufacturers' associations. These conferences resulted in an agreement to submit all the differences to a board of arbitration, consisting of one representative of the union, one of the manufacturers' associations, and a third member agreeable to both sides. Such a board of arbitration was immediately organized, and as a result of hearings, at which both sides were represented by counsel, an award was made on September 24, 1915. This award became the trade agreement of the industry, to be in force from September 24, 1915, to July 1, 1917.

The basis of the 1915 award was stated by the board to be "the conditions prevailing at that time in the New York cloak and suit industry under the so-called protocol agreement." The board felt the necessity of creating "an approximate uniformity to conditions prevailing in other communities, and particularly in the city of New York." Certain differences between the Chicago and New York markets, however, had to be recognized. These were: (1) The difference in the nature of the business, the New York market being the predominating one—a market which more than any other was responsible in determining the conditions of manufacture and sale; (2) differences in the relations among the employers themselves, attributable to the fact that the New York manufacturers were better organized and more able to cope with questions arising out of the introduction of uniform labor conditions.

As finally formulated the agreement is between the joint board of Locals 18, 44, and 81 of the International Ladies' Garment Workers'

Union and two manufacturers' associations—the Chicago Cloak and Suit Manufacturers' Association and the Northwest Cloak and Suit Manufacturers' Association. The first-named association has a membership of 25 and employs from 1,500 to 1,800 workers; the second has a membership of 33 and employs between 800 and 900 people. The agreement provides for a 50-hour week, restricts overtime greatly, prohibits employers from operating their shops more than six days in any one week, and grants to the week workers seven legal holidays annually with pay. It specifies minimum weekly rates of wages for the week workers and minimum hourly rates for the pieceworkers. It obligates the employers to maintain safe and sanitary shops and prohibits home work and "team work" or inside contracting. Outside contracting is declared to be permissible, provided the standards of labor maintained by the contractors are equivalent to those specified in the agreement. Each employer is to maintain a preferential union shop—that is, a shop "in which the standards of the agreement are maintained and wherein preference in employment and lay-offs is given to members of the union." Employers retain the right of absolute discharge during the first two weeks of employment, but discharges occurring after the trial or two-week period are made subject to review by the duly constituted authorities for the adjustment of grievances.

The methods for the adjustment of grievances are as follows: Any complaint of either employer or employee is to be adjusted, in the first instance, by the union representative on the premises, called the shop chairman, and the employer. If these two can not agree, the controversy is submitted to an adjustment committee, consisting of a representative of the employers' association to which the employer concerned belongs and a representative of the union. Cases upon which the latter two can not agree are submitted for adjustment to a committee of three, one of which represents the employers, one the union, and the third member or umpire is chosen by mutual consent. In cases of inability to agree upon a third person, the latter is appointed by the board of arbitration created by the agreement. This board, consisting of three members, one representing the employers, one the union, and a third an impartial person, is given jurisdiction in all controversies arising under the agreement. It is also the court of final appeals. Decisions of the adjustment committee referred to above, if not satisfactory to either of the parties, may be appealed to it. All decisions of the board of arbitration are to be final.

The agreement prohibits the occurrence of strikes and lockouts and expressly states that all differences of opinion arising between

employer and employee are to be adjusted peaceably in the manner above indicated.

On July 1, 1917, th agreement was renewed by mutual consent for a period of one year. At the same time, certain demands of the workers upon which the parties themselves could reach no satisfactory settlement, were submitted to arbitration. The findings of the board of arbitration in this connection were announced on August 21, 1917, and were as follows:

FINDINGS OF THE BOARD OF ARBITRATION, AUGUST 21, 1917.

1. Hours and Regulation of Work.

The regular working week shall consist of 49 hours; 9 hours on each of four week days, 8 hours on one week day, preferably Friday, and 5 hours on either Saturday or Sunday, dependent upon which of those days the employee observes.

Overtime shall be allowed only during the periods of from February 15 to May 15 and August 15 to November 15. It shall not exceed 12½ hours per week, to be distributed at not to exceed 2½ hours per day on week days and 4 hours on Saturday or Sunday, except that from August 15 to September 15 there shall be no overtime on Saturday or Sunday.

Overtime on sample work may be required during all the months of the year, instead of during the limited period above provided.

Whenever the Jewish New Year or Day of Atonement falls on a week day and a holiday is granted, then the preceding or following Saturday or Sunday, as may be determined by the employer, shall be considered as a full working-day and not as a half day.

Whenever overtime is allowed under the foregoing provision it shall be the duty of the employee to work such overtime, provided notice thereof be given on the preceding day.

Overtime for week workers shall be paid at the rate of one and one-half times the regular weekly wage.

If pieceworkers are required on any day to work more than one hour overtime, they shall be allowed 30 cents for supper money, whether they actually expend the same or not.

2. Wages.

[The changes in wage rates are shown in footnote on p. 70.]

3. Sanitary Conditions.

The matter of enforcing the use of air irons is reserved for further consideration.

4. Relations Between Employers and Employees.

The following additional provisions are made:

Each employer shall promptly notify the business agent of the union of the names and addresses of all contractors, subcontractors, and subsidiary shops with whom he is in any manner dealing, and of persons to whom raw material is given or sold, or who are purchasing such material wholly or partly upon

the credit or responsibility of such employer, for the purpose of manufacturing or of selling the finished product to the employer. The board of arbitration, however, reserves the right to amend or change this requirement, and further or otherwise to regulate the relations between, and the obligations of, the employer, for the contractor, subcontractor, subsidiary shop, and also persons from whom the employer purchases made-up garments.

If after notice from the union that the subcontractor fails to observe the standards, the employer fails at once to withdraw the work then in the hands of the subcontractor, and on complaint the charge of failure to observe the standards is upheld, the employer shall pay to the union for all work done in such shop after such notice on the scale fixed by this agreement.

A reorganization in good faith shall be taken to mean a bona fide reorganization of the employer's business, necessitated by the permanent curtailment of his business, or a fundamental change in the character of the business.

A reorganization shall not be effected, however, unless 30 days' notice of the intention to reorganize shall be given to the business agent of the union.

5. Penalties.

The board of arbitration reserves the right to make award as to penalties to be enforced against either side, or the member thereof, for violation of the agreement.

6. Except as to Wages, the Foregoing Modifications Shall Be Effective as of August 19, 1917.

As to Wages of Week Workers.

Any week worker who from and after July 1, 1917, shall have received less than the minimum fixed by this modification, shall receive the difference between the amount received and such minimum for such back period.

As to Pieceworkers.

It is the intention that the increases hereby granted shall be retroactive as of July 1, 1917. It has been represented, however, that through error or agreement in some instances, the garment price has been calculated on a basis in excess of that fixed by the original award, and that perhaps in some instances it has been calculated on a lower basis. The price adjuster shall, in the first instance, determine whether any such miscalculations have been made, and if on such determination it is found that the workers have been paid less than they would have been entitled to under the new basis, they shall be paid an additional sum, based on the difference between the old and the new scale. If, however, it is found that they have already received pay based on the new basis, or in excess thereof, then no back pay shall be paid in such instance. The determination shall be made as to each garment on which complaint of underpayment on the new basis is made.

An examination of the findings shows that the principal changes introduced by the decision of the board of arbitration of August 21, 1917, were a reduction in the hours of labor; increases in the weekly

and hourly rates of wages[1]; registration of contractors with the union in order to enable union officials to determine if agreement standards are maintained in the contractors' shops.

Collective bargaining in the Chicago cloak and suit industry is not confined to establishments of the members of the two manufacturers' associations mentioned. In addition to the trade agreement with the latter, the union has at the present time, about 50 oral agreements with as many individual establishments. These employ about 1,000 workers. The terms of these agreements are practically the same as those of the agreement with the two employers' associations.

The representatives of the employees concerned are unanimous in their approval of the existing methods of collective bargaining. With a few exceptions, the members of both the employers' associations are heartily in favor of the existing trade agreement "as the best possible method for dealing with the employees" and as "the only method to standardize labor costs in the industry." When discussing the value of the agreement employers generally refer to the highly unsatisfactory conditions which existed in the industry prior to the introduction of collective bargaining. They emphasize the fact that the industry is highly seasonal and extremely competitive. A stoppage of work during the busy season may, they say, easily

[1] The following table shows the weekly and hourly rates of wages prior to and after the decision of August 21, 1917:

Weekly and hourly rates of wages prior to, and after, the decision of Aug. 21, 1917.

Occupation.		Rates of wages.	
		Prior to Aug. 21, 1917.	After Aug. 21, 1917.
WEEK WORKERS.			
Cutters:			
Full fledged, and grading patterns	per week	$27.50	$30.00
Full fledged, but not grading patterns	do	25.00	27.50
Class A, in trade not less than 3 years	do	22.50	25.00
Class B, in trade not less than 2 years	do	18.00	20.00
Class C, in trade not less than 1 year	do	15.00	17.00
Trimmers:			
Class A, in trade not less than 3 years	do	20.00	22.50
Class B, in trade not less than 2 years	do	18.00	20.00
Class C, in trade not less than 1 year	do	15.00	16.50
Canvas cutters	do	12.00	13.00
Sample makers	do	23.00	25.00
Button, hook and eye sewers, skirt-bottom basters	do	8.00	9.50
PIECEWORKERS.			
Operators and pressers:			
Operators	per hour	.70	.75
Jacket upper pressers	do	.60	.65
Skirt upper pressers	do	.55	.60
Jacket under pressers	do	.50	.55
Skirt under pressers	do	.45	.50
Finishers:			
Class A basting, felling, and supervising	do	.50	.55
Class B basting and felling	do	.40	.45
Class C felling	do	.22½	.25

result "in ruining the business of the entire season," because a failure to deliver the goods on time means "a customer lost forever." The present system protects the employer from disastrous stoppages during busy seasons, not only because such stoppages are prohibited by the agreement, but because definite channels are provided through which the employees are certain to secure an impartial adjudication of their grievances.

In discussing the present workings of the trade agreements in the Chicago cloak and suit industry mention should be made of the methods used for the adjustment of piece-rate controversies which occur almost daily in every shop, and which in the past have been the most fruitful source of strained relations between employee and employer, having resulted frequently in lockouts and strikes.

The agreement specifies that all rates to be paid to pieceworkers shall be agreed upon in advance by individual employers in consultation with, and with the approval of, a committee of their employees, and shall be adjusted as nearly as possible on the minimum basis specified by the agreement for "each hour of continuous work by a worker of average skill." It is the duty of the employer and the price committee of his employees to endeavor to agree upon the piece rates to be paid. In case of disagreement the matter is referred to two officials, one representing the manufacturers' associations and the other the unions. If neither the employer and his employees nor the officials last mentioned are able to reach an agreement, the dispute is then referred to an impartial price adjuster, who is selected and paid jointly by the two employers' associations and the unions. In his work of adjustment he is assisted by officials representing the two parties, but is not obliged to be guided by their opinion. He is expected to render an independent judgment which is final and obligatory on both parties. The agreement provides that disputes regarding piece rates are not to result in a cessation of work on the garment in question. If the service of the impartial adjuster can not be obtained immediately it is the custom for the employer and the price committee representing his employees to agree upon a low flat rate per garment, subject to back pay on the basis of the final rate determined by the adjuster.

The decisions of the impartial adjuster are made informally, on the premises of the establishment in which the controvery occurs, and in the presence of the officials of both parties, the last named acting, as already stated, in an advisory capacity only. A record of each adjustment is made, showing the number of style and the piece rate arrived at by the adjuster.

It is the usual practice of the impartial price adjuster to set four separate rates on each style of garment, to wit, for the operating,

for the finishing, for the under pressing, and for the off or final pressing. The finishing and pressing operations do not vary greatly with the changes in styles and are seldom the cause of serious piece-rate controversies. Only occasionally are the services of the impartial price adjuster required to establish piece rates for finishing or pressing. Where the employer and his price committee of employees are unable to agree such rates are usually set by the two officials representing the employer and the unions. The most serious controversies regarding piece rates occur in connection with the operating processes, for the reason that changes in styles affect the amount of labor involved in the operating far more than they affect the amount involved in finishing and pressing.

No time studies to determine the actual amount of labor involved in specific operations are ever made. As a matter of fact, however, specific time allowances, acquiesced in by both parties and utilized by the impartial adjuster in the determination of piece rates, do exist, although not committed to writing. Rates based upon established and mutually satisfactory time allowances exist for all of the basic operations on cloaks and suits, such as the making of plain bodies, ordinary collars, sleeves, belts, buttonholes, sewing on plain trimmings, pockets, etc. Basic standard piece rates, definitely acquiesced in by both parties, exist also for all the finishing and pressing operations. All these are in force from season to season and vary only with the so-called "qualitative" character of the establishment. The establishments under the agreement are unofficially classified, according to the general quality of their merchandise, into "cheap," "medium," "good," and "high grade" shops; the higher the quality of the shop the higher the piece rate set for the same basic operation. This qualitative classification of shops has been in operation in the trade so long that controversies regarding it seldom arise.

In setting a new rate each specific new feature is carefully and separately examined and a time allowance on it established. The method of appraising each minor feature separately has, it was said, a tendency to counterbalance errors made; an overestimate in the time allowance on one may easily be compensated by an underestimate on another. The amount of time required to make the standardized parts of the garment, known in advance, is supplemented by an estimate of the aggregate time required to make all the features. The sum total of time thus arrived at is multiplied by the hourly rate specified in the agreement, and the result constitutes the final piece rate set by the adjuster.

It was declared repeatedly by persons concerned in these adjustments that the personality of the adjuster determines to a great ex-

tent the confidence of the persons affected in the fairness of his decisions, and thus ultimately the success or failure of the entire system of piece-rate making. During the first six months of the application of the system not less than five adjusters were found unsatisfactory and were discharged. Besides enjoying the confidence of employer and employee, the adjuster, it is said, must be an expert at the trade and possess considerable tact and diplomatic ability, as arbitrary methods in the handling of such matters are extremely undesirable and are to be used only as a last resort.

The trade expertness of the present adjuster enables him to arrive at his decisions independently, and there is therefore no tendency on his part "to split the difference" as is sometimes done by industrial arbitrators. This fact is repeatedly referred to by employers and employees as being responsible for their confidence in the fairness of his adjustments. It is stated that the piece rates set by him, although based upon estimates, usually enable the workers to earn easily the hourly rates specified in the agreement without compelling the manufacturer to cease the production of the garment because the labor cost set upon it by the impartial adjuster would make its manufacture unprofitable.

Although the rates set by the impartial adjuster are objected to from time to time by one of the parties, the number of such instances on record is small. Generally speaking, it may be stated that thus far no great difficulties have been experienced by the respective organizations in making the parties to the controversies comply with his decisions. The confidence of the employees in the fairness of the scheme is greatly augmented by the fact that the decisions of the impartial adjuster are final. The finality of the adjudication makes it impossible for the controversy to "drag on too long."

DRESS AND WAIST INDUSTRY.[1]

A general strike, which lasted for about 10 weeks, took place in the dress and waist industry in Chicago in 1916. The strike was carried on under the auspices of the International Ladies' Garment Workers' Union, because the workers of the trade were organized in 1915 as its Local No. 100.

At the time of the declaration of the strike, the union presented the following demands: (*a*) A 48-hour week; (*b*) 6 working days per week; (*c*) restriction of overtime; (*d*) 7 legal holidays annually with pay to week workers; (*e*) equal distribution of work during

[1] Unlike the dress and waist industry of New York City, which is highly specialized and confined exclusively to the manufacture of dresses and waists, the Chicago dress and waist industry manufactures also house dresses, kimonos, and white goods. It is estimated that the industry at the present time employs about 7,000 workers.

dull seasons; (*f*) minimum weekly and hourly rates of wages;[1] (*g*) safe and sanitary workshops; (*h*) union recognition and the application of the preferential union shop; (*i*) the presence in each establishment of a representative of the union elected by the workers; (*j*) election by the workers in each establishment of a piece-rate committee to settle piece prices with the employer; (*k*) prohibition of strikes and lockouts; (*l*) peaceful adjustment of grievances by a committee on adjustment to consist of three members, one representing the workers, one the employer, and an umpire selected by mutual consent; (*m*) the maintenance by contractors employed by members of the employers' association of labor standards equivalent to those demanded of the employers themselves.

While the strike was in progress the union modified some of its demands, particularly those referring to minimum rates for week workers. The original demands were in most instances reduced by $1 and, for some occupations, by $1.50 per week.

At the beginning of the strike as well as while it was in progress the workers were ready and willing to submit their demands to arbitration. The employers, however, flatly refused to have any dealings with the union. Efforts made by local public authorities, as well as by a representative of the conciliation division of the Federal Department of Labor, were without avail. The employers applied to local courts for the issuance of injunctions to restrain the union from picketing and from paying strike benefits. Four injunctions were thus obtained. These resulted in wholesale arrests of picketers and members of the union and finally broke the resistance of the workers.

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[1] The following table shows the rates of wages demanded:

Occupation.	Weekly rates demanded in—	
	Waist, dress, and skirt industry.	Kimonos and white goods industry.
Cutters:		
Full fledged	$27.50	$22.00
4 years' experience	25.00	(*a*)
3 years' experience	22.50	20.00
2 years' experience	20.00	17.00
1 year's experience	17 00	15.00
Pressers	23.00	(*b*)
Sample makers	16.00	(*b*)
Examiners	13.00	(*b*)
Finishers	12.00	(*b*)
Cleaners	9.00	(*b*)
Operators	*c*.40	*c*.35

a No rate. *b* 20 per cent increase. *c* Per hour.

The union has at the present time no trade agreement with the organized manufacturers of the dress and waist trade of Chicago. It has, however, 42 trade agreements with as many establishments, the owners of which do not belong to any employers' association. The 42 establishments in question employ about 800 workers, and are distributed as follows: Dresses and skirts, 31 shops; kimono and house dresses, 8 shops; waists, 3 shops. The terms of the agreements with the individual establishments are essentially the same as those demanded by the union from the organized employers.

WATERPROOF-GARMENT INDUSTRY.

This industry employs about 600 workers. The raincoat makers, who constitute the principal group of workers in the trade, are organized as local 54, of the International Ladies' Garment Workers' Union. This local has, at the present time, six trade agreements with as many employers, employing in the aggregate about 200 workers.

The trade agreements are in writing. Each is to run for one year from the date of signing, and provides for the following: (1) Employment of none but members of the union; in cases of inability of the union to supply the needed help, employers are permitted to hire nonunion workers, provided the latter are willing to join the organization; (2) 49-hour week; (3) restriction of overtime; (4) time and one-half for overtime, and double time for Sunday work; (5) five legal holidays annually, with pay; (6) except during the first eight days of employment, no workers are to be discharged without sufficient cause, said cause to be communicated to the union office; (7) business agent of the union to have free entrance into employers' shops at any time on legitimate business; (8) specific minimum rates of wages; (9) equal division of work during dull seasons; (10) safe and sanitary workshops in accordance with the State laws; (11) nonemployment of workers under the age of 16; (12) prohibition of strikes and lockouts; (13) peaceful adjustment of all differences by a committee of two representing the union and the employer, and in instances of failure to agree, by a third and impartial person satisfactory to both sides.

The six agreements cover slightly over one-third of the waterproof-garment workers of Chicago, the remaining two-thirds being employed in one establishment, which is, at the present time, manufacturing military raincoats. This establishment is employing nonunion help, mostly girls, and does not maintain union conditions of labor. As a matter of fact, by the introduction of an elaborate sub-

division of labor, it has done away altogether with the services of skilled raincoat makers.

The fact that the latter establishment—the largest and the leading one of the trade—is securing relatively lower labor costs by the employment of nonunion help constitutes, in the opinion of the union officials, a perpetual menace to the existence of the raincoat-makers organization. Some of the employers, who at the present time are dealing collectively with the union, have informed the latter that unless the greater portion of the trade is unionized and labor rates throughout the industry are equalized, they will not in the future be in a position to renew the existing agreements.

LABOR AND THE WAR.

UNIFORMITY IN FEDERAL LABOR POLICY.

In order that labor policies may be made uniform all agencies for the provision, distribution, housing, and otherwise caring for workmen in war industries have been centered in the Department of Labor and the Secretary of Labor made in effect the labor administrator of the Government. This program of war-labor administration has been formulated as a result of conferences between the Department of Labor and the Council of National Defense, and has the approval of the President.

Among the agencies which are already in existence within the Department of Labor for carrying out the work are the following: (1) System of labor exchanges; (2) machinery for the adjustment of labor disputes; and (3) investigating bodies, as, for example, the Bureau of Labor Statistics. New agencies will be provided (1) for the training of workers; (2) for determining priority of labor demands; (3) for dealing with the dilution of skilled labor; (4) for securing proper conditions of labor; (5) for safeguarding living conditions, including housing and transportation; and (6) for purposes of publicity.

Supplementing these agencies the Secretary of Labor, as proposed, has called to his assistance an advisory labor council, i. e., a corps of advisers and administrators representing capital, labor, and the public.

The members of the advisory council have been appointed by the Secretary. Representing the public are ex-Gov. John Lind, of Minnesota, and Prof. L. C. Marshall, of the University of Chicago; representing employing interests are Mr. Waddill Catchings, of New York and Alabama, president of the Sloss-Sheffield Steel & Iron Co., and Mr. A. A. Landon, of Buffalo, N. Y., general manager American Radiator Co.; and representing labor are Mr. John B. Lennon, ex-president of the International Tailors' Federation, and Mr. John J. Casey, former United States Representative from Pennsylvania. Miss Agnes Nestor, president of the Chicago Women's Trade-Union League, represents the interests of women workers.

Unity of action between the departments of the Government in labor matters is assured by the intention of the Secretary to increase

the membership of the council by the appointment of representatives from the War and Navy Departments and from the Shipping Board.

STATEMENT BY THE COUNCIL OF NATIONAL DEFENSE.

The statement issued by the Council of National Defense is as follows:

As a result of a series of conferences on the subject of labor policies, the Council of National Defense submitted to the President a program for war-labor administration. This program has been approved by the President and he has, accordingly, requested the Secretary of Labor to undertake this administration and to provide for this purpose the following agencies:

1. A means of furnishing an adequate and stable supply of labor to war industries. This will include:

(*a*) A satisfactory system of labor exchanges.

(*b*) A satisfactory method and administration of training of workers.

(*c*) An agency for determining priorities of labor demand.

(*d*) Agencies for dilution of skilled labor as and when needed.

2. Machinery which will provide for the immediate and equitable adjustment of disputes in accordance with principles to be agreed upon between labor and capital and without stoppage of work. Such machinery would deal with demands concerning wages, hours, shop conditions, etc.

3. Machinery for safeguarding conditions of labor in the production of war essentials. This is to include industrial hygiene, safety, women and child labor, etc.

4. Machinery for safeguarding conditions of living, including housing, transportation, etc.

5. Fact-gathering body to assemble and present data, collected through various existing governmental agencies or by independent research, to furnish the information necessary for effective executive action.

6. Information and education division which has the functions of developing sound public sentiment, securing an exchange of information between departments of labor administration, and promotion in industrial plants of local machinery helpful in carrying out the national labor program.

Some of these agencies already exist in part in the Department of Labor. For example, the mediation service, the system of labor exchanges, and the Bureau of Labor Statistics can be utilized to the extent they are found useful in carrying out the new program.

It is the purpose of the Secretary of Labor to undertake the work outlined above on an adequate scale. He will call to his assistance as advisers and administrators a well-balanced corps of men of high standing, representing capital, labor, and the public. These persons will assist him in formulating and efficiently executing policies which will command the approval and support of employers, employees, and the public throughout the United States. The Secretary and his advisers will give early attention to the question whether congressional action shall be requested.

The Secretary of Labor will bring this new service into touch with the needs of the various departments of Government, including the Shipping Board, in order that labor policies may be made uniform and that the service thus established under the President's order shall adequately meet the needs of the present emergency.

PROGRAM OF THE ADVISORY COUNCIL APPROVED BY THE SECRETARY OF LABOR.

On January 16 announcement was made of the appointment of the advisory council. The council at once began sessions, and on January 28 its program of labor administration was approved by the Secretary of Labor. This program may be outlined as follows:

AGENCIES OF ADMINISTRATION.

A broad outline of the administration of the new work provides for the organization of six new agencies or services within the Department of Labor, in addition to the three industrial-service agencies which are already in existence and ready to function for the purposes in hand. The six supplementary services or agencies to be created, in addition to the conciliation service, the United States Employment Service, and the investigating bureaus of the department, are the following:

1. A Conditions of Labor Service to administer conditions of labor within business plants, such as safety, sanitation, etc.
2. An Information and Education Service to promote sound sentiment and to provide appropriate local machinery and policies in individual plants.
3. A Woman in Industry Service to correlate the activities of various agencies dealing with this matter.
4. A Training and Dilution Service.
5. A Service of Housing and Transportation of Workers.
6. A Service of Personnel (which may possibly be fused with the Information and Education Service.)

The scheme of organization accepts the continuance of such agencies as the industrial-service sections of the Bureau of Ordnance, the Shipping Board, the Quartermaster Corps in the War Department, and of such other departmental bureaus as may have set up satisfactory industrial-service sections as a part of their own organization. The facilities of these bureaus will be utilized, but their activities will be centralized and cleared through the appropriate controlling sections of the Department of Labor.

PLAN OF ORGANIZATION.

The administration is centralized under the Secretary of Labor. The Secretary will be assisted by his "policies board," made up of his advisory council, the heads of the industrial service sections of other governmental departments or bureaus, and the heads of the existing bureaus of his own department.

The industrial service sections of the other governmental departments or bureaus are to be organized on the same general scheme that governs the organization of the new service sections established within the Department of Labor. The chiefs of the various subsections of the industrial service sections of the other governmental departments will clear their activities through the head of the appropriate service established in the Department of Labor.

The general plan of utilizing the functions of the different industrial service sections in other governmental departments which are now in existence or will be created has back of it certain fundamental reasons:

A. It will be possible to get under way with the new administration much more rapidly if existing agencies are utilized than it will be if they are

supplanted. Promptness in getting under way is desirable both as a means of deserving the confidence of other departments of Government and as a means of facilitating the successful conduct of the war.

B. The departments of Government which have set up or which may set up industrial service sections have entered into contracts with various firms. In many cases these contracts are so drawn as to give these departments a very considerable control of the conduct of the plants. This is particularly significant in the case of labor matters. More efficient action in dealing with these firms on labor matters can, of course, be secured by the contracting department than by some other department.

C. These industrial-service sections are rapidly acquiring an efficient personnel. It is not too much to say that they are combing the country for the best men in certain lines. It will be much easier to retain this personnel in the existing organization than it will be to transfer it to another, and the personnel problem is a very serious one in labor administration.

D. Quite aside from their industrial-service sections, as such, these other departments have in their inspection forces a large personnel which can be used, and, indeed, is being used, in labor administration. For example, in the Ordnance Department their inspectors make daily or semiweekly or weekly reports concerning conditions of living, conditions of labor, labor turnover, etc. These inspection staffs could not be used to as good advantage if the administration of labor were divorced from the administration of production.

E. The system of control charts established by such bureaus as Ordnance furnishes accurate data on which administrative action may be taken, in that these charts make possible the determination of the precise character of difficulties which arise in industrial plants. It is not too much to say that very heavy expenditures by an agency outside of these production departments could not secure as accurate information concerning conditions as can be secured in ordinary administrative routine within the production department itself. This is only another way of emphasizing the fact that we must think not in vague terms of "labor," but in terms of "labor in production."

F. The plan proposed accords with generally approved theories of business administration. It secures the necessary *centralization of control* together with the wise *decentralization of administration* by agencies *which come into direct touch with the problem at issue.*

G. The plan in no way limits the freedom of the Department of Labor to set up such supplementary agencies as may be necessary. There will accordingly result a well-rounded administration and not a piecemeal administration.

H. The plan definitely locates responsibility and power of decision. These rest with the Secretary of Labor. The various activities of the industrial service sections of other departments are cleared through the bureau heads of the Department of Labor.

I. The plan is flexible in character. If, as time goes on, it should appear that these sections should lose their identity and thus become *merged* in an administration under the Department of Labor, there is nothing to prevent such action being taken. On the contrary, fusion would have been facilitated by a period of teamwork.

IMPORTANCE OF THE NEW WORK.

The advisory council states that a perfect administration of labor matters in accord with the plan outlined above is not sufficient to meet the emergency which faces the country, and continues:

"Labor matters do not stand by themselves. They are phases of production, and no centralized administration of labor can be adequate which does not go hand in hand with the centralization of administration of production, and failure to secure such centralization spells failure to secure a sound situation in labor, and failure to prosecute the war vigorously."

FARM-LABOR SPECIALISTS TO AID FARMERS IN SECURING HELP.[1]

To cooperate effectively in the farm-labor problem with the United States Department of Labor, State councils of defense, State commissioners of agriculture and labor, and other official State and local agencies concerned with supplying needed farm labor, the Department of Agriculture has divided the country into four farm-labor divisions: (1) New England and Northeastern States, (2) Southern States, (3) North Central States, and (4) Western States.

Each of these divisions is in charge of a representative of the Department of Agriculture, known as a supervising farm-help specialist, who supervises the work of the department's farm-help specialists assigned to the farm-labor work in single States or two or more adjoining States. These farm-help specialists will cooperate directly with State agencies, central and local employment agencies of the United States Department of Labor, and with the county agents and community farm-help committees.

The farm-help specialists through preliminary labor surveys will endeavor to ascertain the prospective needs for extra labor in each community. They will work with State and local agencies to supply labor deficiencies from local supplies, if possible, or from the nearest point where labor can be secured. All local sources of labor first will be drawn upon. In cases of necessity, however, arrangements will be made, through the Department of Agriculture and the Department of Labor, for interstate movement of help.

It is pointed out that the farmer in need of labor should proceed as follows: He should report his need to his county agent or to a member of the community farm-help committee. If possible, his need will be supplied from lists of men available in the county. If local labor is inadequate, the county agent or committee will report to the State farm-labor specialist, who, in cooperation with the State officials, will draw on the nearest available labor within the State.

The plan contemplates appointing a State farm-help specialist for each of the large agricultural States.

[1] From Official Bulletin for January 10, 1918.

HOURS OF LABOR IN RELATION TO OUTPUT IN BRITISH MUNITION FACTORIES.[1]

In Memorandum No. 20 on "Weekly hours of employment," issued under date of October, 1917, by the health of munition workers committee of the British ministry of munitions, it is urged "that the time is now ripe for a further substantial reduction in the hours of work." In view of the importance of this subject in connection with labor conditions in the United States, the text of this memorandum is given herewith in full.

WEEKLY HOURS OF EMPLOYMENT.

MEMORANDUM NO. 20.

1. The committee have had under consideration the recommendations made in regard to the maximum weekly hours of employment of men, women, and young persons, which were set out in their Memorandum No. 5 on "Hours of work" (issued January, 1916). When the committee commenced their labors, two years ago, they were faced with an almost complete absence of any scientific data as to the relation of hours of employment to output. They had accordingly to rely upon the general evidence of employers, workers, and other persons of experience. As explained in Memorandum No. 1 on "Sunday labor," this evidence was practically unanimous as to the need for a weekly period of rest. There was, however, revealed a marked divergence of opinion as to the limits within which weekly hours of employment should be kept. It was a matter of urgent importance that some guidance on this subject should be offered forthwith. On the other hand, it was clear that in the absence of exact and reliable data any recommendations put forward at that time must necessarily be tentative and provisional in character. Moreover, if they were to be of practical value and to secure any wide measure of acceptance it was necessary that they should satisfy two essential conditions. First, they had to be such as would be regarded as reasonable and moderate by the great mass of employers and workers, and in the second place, while taking account of the probable duration of the war, they had to have regard to the immediate urgency of output at the time. Any recommendations which might involve even a temporary diminution of output would have been doomed to failure. It was evident, in fact, that any reduction of hours proposed must be gradual, and the committee accordingly based their recommendations on what appeared

[1] Health of munition workers committee, ministry of munitions. Memorandum No. 20. Supplementary to Memorandum No. 5 (hours of work). Weekly hours of employment, October, 1917 [Cd. 8801]. 7 pp. Price, 1d. net.

Of the previous memoranda on the subject of hours of labor and output, the following are reproduced in Bulletin 221 of this bureau: Memorandum No. 1, Sunday labor; Memorandum No. 5, Hours of work; Memorandum No. 12, Statistical information concerning output in relation to hours of work (report by H. M. Vernon, M. D.). In Bulletin 230 are reprinted portions of an interim report (February, 1917) of the Health of Munition Workers Committee, which relate to "The comparative efficiencies of daywork and night work in munition factories" and "The causes and conditions of lost time," the latter by Thomas Loveday, M. A. A summary of Memorandum No. 18, "Further statistical information concerning output in relation to hours of work, with special reference to the influence of Sunday labor," is given in the MONTHLY REVIEW for November, 1917, pp. 61 and 62.

to be immediately practicable rather than on what was ultimately desirable or might be defensible on a physiological basis. Further, they found it necessary to confine themselves to suggestions as to the maximum limits within which employment should be restricted, and they did not endeavor to set out the extent to which, in their opinion, it was necessary or desirable to reduce these limits to meet varying industrial conditions.

2. The committee are of opinion that their cautious action and advice has been justified by events, and they are glad to take the present opportunity of recognizing the sympathy with which their recommendations were received, as well as the active and continuous efforts which have been made by the departments concerned to secure their general adoption. The limits of the weekly hours of employment then suggested were—

(*a*) For men, that the average weekly hours of employment should not exceed 65–67 (exclusive of meal times), i. e., a 13–14-hour working day.

(*b*) That boys under 18 should be allowed to work the same hours as men, provided that—

(1) The hours of boys under 16 should be limited to 60, so far as possible.

(2) Substantial relief at the week ends should be insisted on.

(3) Night work should be limited, as far as possible, to boys over 16.

(*c*) That for women and girls employment should be restricted within the normal legal limit of 60, i. e., a 12–hour working day, though within these limits moderate daily overtime might be allowed, and that the employment of girls under 18 at night should be limited as far as possible.

3. The committee are of opinion that the time has now come when these recommendations may properly be reviewed in the light of the following facts: First, the experience gained and the new evidence collected during the past two years; secondly, the strain involved by three years of war conditions, a strain which is likely still to continue for a considerable period; and, thirdly, the rapid increase in the number of women workers and in the variety of processes on which they are employed.

4. From the commencement of their work the committee have attached the highest importance to the collection of exact data affecting the problems at issue. The field to be covered is a very wide one, while the process of collection is slow and laborious. The committee, however, consider that the data which have already been collected on their behalf by Dr. Vernon and others are of great practical value and merit the most serious attention. The results of these investigations are the more valuable in that they have been undertaken solely in a spirit of scientific investigation and with no preconceived opinions. The selection of factories for inquiry was based solely on the likelihood of reliable data being forthcoming. Further, in none of the operations studied was there any change in the nature of the operation or the type of machinery during the period under review. The data were so chosen as to eliminate any possible disturbance due to increasing skill. There is no reason to suppose that the data quoted below were vitiated by any artificial restriction of output.

5. The results of Dr. Vernon's investigations, which covered a period of over a year, are set out in memorandum No. 18. Although that memorandum has already been submitted to the ministry and published, it appears desirable shortly to set out again the principal results of his investigations in so far as they concern the relation of weekly hours of employment to output. The following are the four sets of data which bear on this subject:

(A) WOMEN TURNING ALUMINIUM FUSE BODIES.

	Average weekly hours.		Relative hourly output.	Relative total output.
	Nominal.	Actual.		
First period.....	74.8	66.2	100	100
Second period.....	61.5	54.8	134	111
Third period.....	54.8	45.6	158	109

During the first period Sunday work (eight hours) was done on five out of six Sundays; during the second on three out of eight, the nominal weekly hours in these three weeks being 66.5 instead of 58.5, an average of 61.5; during the third period the timekeeping was bad, the normal weekly hours of work averaging about 55. Dr. Vernon accordingly suggests that with good timekeeping a nominal 50-hour week ought to yield the same actual hours of work (namely, 45.6); that is to say, that for women engaged in moderately heavy lathe work a 50-hour week yields as good an output as a 66-hour week and a considerably better one than a 75-hour week.

(B) WOMEN MILLING A SCREW THREAD.

	Average weekly hours.		Relative hourly output.	Relative total output.
	Nominal.	Actual.		
First period.....	71.8	64.9	100	100
Second period.....	64.6	54.8	121	102
Third period.....	57.3	48.1	133	99

Dr. Vernon explains that the reason why a reduction of hours did not lead to an improvement of total output similar to that in the fuse-body turning operation is that for four-fifths of the total time required to mill the screw thread on the fuse body the operative had no opportunity of quickening her working speed, since she had merely to stand idly watching her machine, whereas the lathe worker had to apply seven different cutting and boring tools in succession to each fuze body, and could quicken up her speed of work at almost every stage.

(C) MEN ENGAGED IN HEAVY WORK.

	Average weekly hours.		Relative hourly output.	Relative total output.
	Nominal.	Actual.		
First period.....	66.7	58.2	100	100
Second period.....	62.8	50.5	122	106
Third period.....	56.5	51.2	139	122

It should be noted that during the third period the nominal weekly hours were about 5–6 less than during the second period. Owing to the cessation of Sunday labor the timekeeping was so much improved that the actual hours of work were greater than during the previous period.

(E) BOYS BORING TOP CAPS.

	Average weekly hours.		Relative hourly output.	Relative total output.
	Nominal.	Actual.		
First period.....	78.5	72.5	100	100
Second period.....	61.5	54.7	117	88
Third period.....	60.5	54.5	129	97

Increase of output in this process, which is largely automatic, could only be attained by a more continuous feeding of the machines throughout working hours.

6. The above data show that a reduction in the weekly hours of actual work, varying from 7 to 20, in no case resulted in more than an insignificant diminution of total output, while on the average it produced a substantial increase. As Dr. Vernon points out, the classification of the operations according to the possibility they offer for speeding-up production demonstrates anew the self-evident fact that the alterations of hours may have very different effects in different operations. The exact measure of such alterations can not be predicted; it can only be ascertained by observation and experiment. It appears evident, however, that for processes similar to those examined by Dr. Vernon, the weekly hours can advantageously be reduced to a total of from 50 to 55, and he suggests that even lower limits might give an equally good output.

7. Two further points of importance emerge from consideration of these data. In the first place, the rate of production changed gradually, and frequently four months elapsed before an equilibrium value was reached. This gradual change appears to nullify the suggestion that the effect upon output of the change of hours was a mere consequence of the desire to earn the same weekly wages as before the hours were shortened. The explanation is rather to be traced to the worker finding unconsciously and gradually by experience that he can work more strenuously and quickly for a short-hour week than for a long-hour week. In the second place, the evidence suggests that a considerable increase in the average hourly output is possible, quite apart from any increased rapidity of working. Thus, as the result of special investigations, Dr. Vernon found that in the case of the first body of workers mentioned above the time lost in commencing and stopping work during the first period averaged 37 minutes as compared with only 26½ minutes during the third period.

8. Prof. Loveday, in his memorandum on the "Causes and conditions of lost time," which is included in the committee's interim report on "Industrial efficiency and fatigue,"[1] also supplies valuable data of a somewhat similar character. In the first place, he points out that the proportion of lost time that is due to sickness and other unavoidable causes is, as a rule, greatly underestimated in factory records and the proportion due to slackness consequently overestimated. In the second place, he expresses the view that long hours, much overtime, and especially Sunday labor exert a pernicious effect upon health, particularly of persons occupied in heavy trades. In paragraph 33 (5) of that memorandum he gives two tables, the first dealing with a body of about 180 men and the second with between 300 and 400 men employed on heavy work, their normal hours being from 65 to 70. In both these cases, when comparison is made with the figures of lost time for June, 1915, and for a year later, the fact emerges that there was a material increase in the amount of lost time and

[1] Cd. 8511.

that by far the larger portion of the increase was due to recorded sickness. In both cases throughout recorded sickness represented a noticeably high proportion of the total amount of time lost.

9. Prof. Loveday also devoted considerable space to the examination of figures concerning the amount of time lost before breakfast. He concludes:

(*a*) That if early hours be worked, the loss is likely to decrease if the start be later than 6 a. m.

(*b*) That when the total hours of the day-shift week are the same, there are likely to be more hours actually worked without than with work before breakfast, other conditions being similar.

(*c*) That a reduction of hours may be compensated for or even outweighed by the abolition of early hours, partly owing to reduced absences, partly owing to reduced waste of time, and partly to the greater vigor of work after taking food.

He quotes figures for a number of different factors which confirm these conclusions. He strongly presses the view that food should precede work. He points out the undesirability of hunger work, its bad effect upon health, and the temptation to lose time in the short early spells.

10. There can be little doubt that there is an increasing recognition on the part of both employers and workers of the broad fact which emerges from the investigations of Dr. Vernon and Prof. Loveday, namely, that substantial reduction of hours can be effected without any reduction of output. Whereas at the beginning of the war there was a general belief that longer hours necessarily produced larger output, it has now become widely recognized that a 13 or 14 hours' day for men and a 12 hours' day for women, excepting for quite brief periods, are not profitable from any point of view. Few, probably, would disagree with the statement contained in the summary prepared by the Right Hon. G. N. Barnes, M. P., of the recent reports of the commissions on industrial unrest that—

"There is a general consensus of opinion that Sunday and overtime labor should be reduced to a minimum, that holidays should not be curtailed, and that hours of work should not be such as to exclude opportunities for recreation and amusement."

It must be obvious that any reduction of hours which can be accomplished without loss of output is profitable not only to the employer, in that it reduces running expenses, but to the worker, since even if his or her daily measure of work involves the same amount of fatigue a longer period is left for recovery and for the enjoyment of adequate sleep and recreation.

11. It must be recognized that the conditions are not the same now as they were in the early days of the war; not only have large numbers of the youngest and strongest workers been withdrawn for military service, but those who remain are suffering from the strain inseparable from a continuous period of long hours of employment. To this must be added the strain caused by family and other anxieties arising out of the war. While much has been done to improve conditions of employment they are still in many cases far from ideal, notably as regards housing and transit. Further, large numbers of women are now employed on heavy work and on skilled operations involving constant thought and attention, which were considered two years ago to be quite beyond their capacity. It may be true that no serious breakdown of health has as yet been observed among the great mass of the workers, but it can not be assumed that this condition will continue indefinitely. The effects of the strain may even have been already more serious than appears on the surface, for while it is

possible to judge roughly the general condition of those working in the factory to-day, little information is available concerning the large number of workers who for one reason or another, and often because they find the work too arduous, are continually giving up their job. This is an important point which is liable to be overlooked, since the supply of labor has hitherto been adequate to fill their places. The irritability and nervousness mentioned by the commissions on industrial unrest are moreover well recognized symptoms of fatigue, while it must not be forgotten that the effects of fatigue are accumulative.

12. After careful consideration of all the circumstances, the committee are convinced that the maximum limits of weekly employment provisionally suggested are too high except for quite short periods, or perhaps in cases where the work is light and the conditions of employment exceptionally good. In the great majority of cases, however, the hours of work should now be restricted within limits lower than those quoted in paragraph 2 above. It is impossible to lay down a single rule as to the best hours in all cases; the best scheme can only be determined after a careful consideration of a number of different factors, e. g.—

(*a*) The strain involved in the work, its character (heavy or light, continuous or intermittent) and the mental demand which it makes upon the worker.

(*b*(The extent to which the pace of the work is governed by the machine.

(*c*) The factory environment—temperature, ventilation, etc.

(*d*) The individual physical capacity of the workers, and their age, sex, and experience.

(*e*) The organization of the factory (including welfare supervision.)

(*f*) The sufficiency and suitability of the worker's food, canteen accommodation, etc.

(*g*) The arrangements of the hours of work (spells, breaks, and pauses).

(*h*) Conditions outside the factory—e. g., housing and transit.

In arranging the hours of work for a factory, allowance should be made, as far as discipline and organization permit, for the fact that the best hours of employment will not be the same for all processes, even in the same factory.

13. In conclusion the committee desire to urge the view that the time is now ripe for a further substantial reduction in the hours of work. If this be effected with due regard to the varying conditions prevailing in different branches of industry, they are satisfied that reductions can be made with benefit to health and without injury to output.

Signed on behalf of the committee.

GEORGE NEWMAN, M. D., *Chairman.*

E. H. PELHAM, *Secretary.*

OCTOBER, 1917.

CHANGES IN OCCUPATIONS OF WOMEN AND GIRLS IN GREAT BRITAIN DURING THE WAR.[1]

An analysis has been made of the prewar occupations of 524,000 women and girls to whom unemployment books were issued up to January, 1917, under the National Insurance (Part II) Munition Workers Act of 1916. Of these 444,137 (380,470 women and 63,667 girls) stated their occupations definitely enough to make a tabulation possible. In the following table the numbers insured in

[1] The Labour Gazette, London, December, 1917, p. 438.

different groups of trades at January, 1917, are classified so as to show their prewar occupations:

Prewar occupations.	Occupations at January, 1917.				
	Metal trades (excluding engineering).	Chemical trades (including small arms).	Clothing trades.	Other trades.	All insured trades.
Same trade	53,249	14,634	38,256	30,399	136,538
Household duties, and not previously occupied	18,927	52,407	9,334	17,843	98,511
Textile trades	3,408	6,226	1,000	4,374	15,008
Clothing trades	4,635	17,941	8,430	8,787	39,793
Other industries	12,458	20,879	5,745	10,065	49,147
Domestic service	12,502	44,438	4,970	12,062	73,992
Other nonindustrial occupations	5,449	17,079	3,643	4,977	31,148
Total insured	110,628	173,604	71,378	88,507	444,137

Subtracting the number of persons who have remained in the same trade it will be seen that the table accounts for nearly 308,000 persons who have changed their occupations. In July, 1917 (the latest date for which figures are available), the numbers of women drawn into industrial work, using the term to include Government establishments, was 720,000, or rather more than double the number drawn into the trades here considered. The proportion of the total increase covered by these figures is therefore sufficiently large to be taken as fairly typical. Assuming that the whole of the increase of 720,000 could be accounted for in the same manner as the increase analyzed above, it would mean that it was made up of 231,000 women and girls who were previously unoccupied, 173,000 who were domestic servants, 243,000 who came from other industries, including 93,000 from the clothing trades, and 73,000 from nonindustrial occupations other than domestic service. These figures can, of course, only be taken as a rough indication of the change that has taken place, but they must be sufficiently near the truth to be of considerable interest.

The fact that so many persons have left a trade can not be taken to indicate that the numbers employed have decreased by an equal amount, as these trades in their turn have drawn in workers from the outside. Thus, in January, 1917, at the date to which these figures refer, taking the clothing trades as a whole, the numbers of women and girls employed had decreased by 32,000, whereas it appears from the above table that the newly insured trades alone had drawn in nearly 40,000 females from the clothing trades, which must therefore have found at least 8,000 workers from outside. In the textile trades the loss shown in the table is 15,000, although at

that time the textile trades had increased the numbers of female employees by 25,000.

To turn to the individual trades insured under this act, by far the largest are the chemical trades, under which heading the manufacture of explosives and small arms is classified, and which, consequently, include large numbers of women in Government establishments. Next to these in size come the metal trades; but it must be remembered that persons engaged in the engineering trades were already insured under the act of 1911, and consequently, are not included in the above figures. The figures for the chemical trades, on the other hand, cover the large majority of women who are now working in those industries, and are therefore of very considerable importance. It is noticeable that they have drawn in workers from other industries to a far greater extent than the metal trades. This is illustrated more clearly in the following table, which shows what percentage of the total classified for each group of insured trades had been previously employed in the same occupation and what percentage had been drawn from the various other occupations.

Prewar occupations.	Occupations at January, 1917.				
	Metal trades.	Chemical trades.	Clothing trades.	Other trades.	All insured trades.
Same trade	48.1	8.4	53.6	34.3	30.7
Household duties, and not previously occupied	17.1	30.2	13.1	20.2	22.2
Textile trade	3.1	3.6	1.4	4.9	3.4
Clothing trade	4.2	10.3	11.8	9.9	9.0
Other industries	11.3	12.0	8.0	11.4	11.1
Domestic service	11.3	25.6	7.0	13.7	16.6
Other nonindustrial occupations	4.9	9.9	5.1	5.6	7.0
Total insured	100.0	100.0	100.0	100.0	100.0

It will be seen that 48.1 per cent of the women and girls in the metal trades insured under the act had been previously employed in the same trade, 51.9 per cent being drawn in from other occupations. In the chemical trades, on the other hand, as many as 91.6 per cent of the total had come from other occupations. The difference in this respect between the two trades is, of course, due to the great developments in the manufacture of explosives and in the filling factories, in which much of the work is entirely new, or on which only a very small number of persons were engaged before the war. The chemical trades have, therefore, been forced to recruit largely from outside; over 30 per cent of the total employed were unoccupied before the war or were engaged in household duties, nearly 26 per cent were drawn from industries, and an almost equal number from domestic service. If all the insured trades be taken together, 31 per

cent of the women classified had not changed their occupations, 22 per cent were previously unoccupied or were engaged in household duties, 23 per cent came from other industries, and 17 per cent from domestic service; that is to say, of the women and girls then employed in the munition trades which come under the insurance act over half of the total had been previously unoccupied or had been in the same trades, while nearly a quarter had had other industrial experience, the remainder being drawn from nonindustrial occupations, primarily domestic service.

PRICES AND COST OF LIVING.

RETAIL PRICES OF FOOD IN THE UNITED STATES.

PRICES IN DETAIL, DECEMBER, 1917.

The increase in the retail price of food, as a whole, in December, 1917, over November, 1917, was 1 per cent. Of the 27 articles for which prices are received by the Bureau of Labor Statistics, 8 articles decreased in price, 3 remained the same, and 16 increased as compared with the prices for November.

Onions show the greatest decrease, or 14 per cent; bread decreased 5 per cent; potatoes 3 per cent; pork chops, flour, and prunes 2 per cent each. Sugar and beans each show a decrease of 1 per cent. Eggs show the greatest increase, or 9 per cent. Butter and hens each increased in price 3 per cent. Rice, milk, lard, and chuck roast each show an increase of 2 per cent.

The following table shows the course of prices in the United States in November and December, 1917:

AVERAGE MONEY RETAIL PRICES AND RELATIVE RETAIL PRICES OF FOOD ON NOV. 15 AND DEC. 15, 1917.

[The relative price shows the per cent that the average price on the 15th of each month was of the average price for the year 1916.]

Article.	Unit.	Average money price.		Relative price.	
		Nov. 15, 1917.	Dec. 15, 1917.	Nov. 15, 1917.	Dec. 15, 1917.
Sirloin steak	Pound	$0.317	$0.320	116	117
Round steak	do	.296	.300	121	122
Rib roast	do	.250	.253	118	119
Chuck roast	do	.212	.215	123	125
Plate beef	do	.163	.164	127	128
Pork chops	do	.345	.338	152	149
Bacon	do	.482	.487	168	170
Ham	do	.426	.435	145	148
Lard	do	.326	.333	186	190
Hens	do	.295	.304	125	129
Salmon, canned	do	.287	.290	142	144
Eggs	Dozen	.581	.634	155	169
Butter	Pound	.528	.543	134	138
Cheese	do	.346	.345	134	134
Milk	Quart	.128	.131	141	144
Bread	16-oz. loaf[1]	.088	.083	135	128
Flour	Pound	.068	.067	155	152
Corn meal	do	.071	.071	209	209
Rice	do	.114	.116	125	127
Potatoes	do	.032	.031	119	115
Onions	do	.058	.050	118	102
Beans, navy	do	.189	.188	172	171
Prunes	do	.166	.164	124	122
Raisins, seeded	do	.148	.150	115	116
Sugar	do	.095	.094	119	118
Coffee	do	.302	.303	101	101
Tea	do	.617	.621	113	114
All articles combined				136	138

[1] 16 ounces, weight of dough.

In the year from December 15, 1916, to December 15, 1917, prices of food as a whole advanced 24 per cent. Potatoes and onions are the only articles that show a decline. Potatoes decreased in price 10 per cent and onions 12 per cent. The article showing the greatest increase is corn meal, which was 80 per cent higher in December, 1917, than in December, 1916. In this year, bacon increased 63 per cent; pork chops, 52 per cent; beans, 32 per cent; milk and ham, 31 per cent, each; lard, 28 per cent; rice, 27 per cent; hens, 26 per cent; flour, 23 per cent; eggs and bread, 20 per cent, each.

Food as a whole was 52 per cent higher on December 15, 1917, than on December 15, 1913, and 50 per cent higher than on either December 15, 1914, or December 15, 1915. During this four-year period, corn meal advanced 127 per cent; lard, 111 per cent; flour, 108 per cent; bacon, 83 per cent; sugar, 76 per cent; pork chops and potatoes, 67 per cent, each; ham, 64 per cent; milk, 44 per cent; butter, 37 per cent; and eggs, 33 per cent. No article declined in price.

A table showing the average and relative retail prices in December of each year from 1913 to 1917 follows:

AVERAGE MONEY RETAIL PRICES AND RELATIVE RETAIL PRICES OF FOOD ON DEC. 15 OF EACH YEAR, 1913 TO 1917, INCLUSIVE.

The relative price shows the per cent that the average price on December 15 of each year was of the average price for the year 1916.]

Article.	Unit.	Average money price Dec. 15—					Relative price Dec. 15—				
		1913	1914	1915	1916	1917	1913	1914	1915	1916	1917
Sirloin steak	Pound	$0.251	$0.257	$0.251	$0.268	$0.320	92	94	92	98	117
Round steak	do	.225	.230	.225	.240	.300	92	94	92	98	122
Rib roast	do	.199	.199	.197	.210	.253	94	94	93	99	119
Chuck roast	do	.....	.165	.160	.169	.215	.....	96	93	98	125
Plate beef	do	.....	.125	.119	.128	.164	.....	98	93	100	128
Pork chops	do	.202	.195	.184	.222	.338	89	86	81	98	149
Bacon	do	.267	.278	.273	.298	.487	93	97	95	104	170
Ham	do	.265	.268	.270	.332	.435	90	91	92	113	148
Lard	do	.158	.154	.145	.259	.333	90	88	83	148	190
Hens	do	.208	.201	.203	.241	.304	88	85	86	102	129
Salmon, canned	do	.....	.....	.198	.212	.290	.....	.....	98	105	144
Eggs	Dozen	.476	.476	.465	.529	.634	127	127	124	141	169
Butter	Pound	.398	.394	.386	.449	.543	101	100	98	114	138
Cheese	do	.....	.....	.237	.310	.345	.....	.....	92	120	134
Milk	Quart	.091	.090	.089	.100	.131	100	99	98	110	144
Bread	16-oz. loaf[1]	.....	.058	.062	.070	.083	.....	89	95	107	128
Flour	Pound	.032	.037	.037	.055	.067	73	84	85	124	152
Corn meal	do	.031	.032	.032	.039	.071	92	95	95	116	209
Rice	do	.....	.....	.090	.091	.116	.....	.....	99	100	127
Potatoes	do	.019	.015	.019	.035	.031	69	54	69	128	115
Onions	do	.....	.....	.035	.057	.050	.....	.....	71	116	102
Beans, navy	do	.....	.....	.089	.143	.188	.....	.....	81	130	171
Prunes	do	.....	.....	.133	.138	.164	.....	.....	99	103	122
Raisins, seeded	do	.....	.....	.125	.139	.150	.....	.....	97	108	116
Sugar	do	.054	.060	.067	.083	.094	67	75	84	104	118
Coffee	do	.....	.....	.299	.299	.303	.....	.....	100	100	101
Tea	do	.....	.....	.546	.546	.621	.....	.....	100	100	114
All articles combined	.....	.....	.....	.....	.....	.....	**91**	**92**	**92**	**111**	**138**

[1] 16 ounces, weight of dough.

The two tables which follow give average retail prices for 29 articles in 45 cities.

For 16 cities, average prices are shown for December 15, 1913, December 15, 1916, and for November 15 and December 15, 1917. No

prices are given for meats in Atlanta, Ga., as less than 80 per cent of the butchers of that city sent in their reports for December, 1917, to the bureau.

For 29 cities, average prices are given for December 15, 1917. No prices are given for groceries in Charleston, S. C., since less than 80 per cent of the grocers of that city sent in their reports to the bureau.

It is manifestly unfair to attempt any comparison of prices between cities widely separated or between localities where qualities and market conditions vary greatly. For no article is it possible to quote prices on an identical grade throughout the 44 cities, as the grade varies not only from city to city but also from firm to firm within the same city and from month to month within the same store. Stores which vary in a marked degree the grade of articles handled from day to day or from month to month have not been included, but in every store there is necessarily some variation in grade. Methods of cutting beef differ considerably in different cities, and to some extent this affects retail prices. Emphasis should be placed upon the fact that, according to the method of cutting followed in Boston, Mass., Manchester, N. H., Philadelphia, Pa., and Providence, R. I., no cut corresponds to the cut known as sirloin in other cities. In these four cities the cut known as sirloin corresponds to the cut described above as porterhouse, and in this report the quotations of prices for the cities just named are for the cut known locally as sirloin. The cut commonly known as sirloin is sold in Fall River, Mass., under the name of "rump" steak, and in this report the prices quoted for that city are for the article known locally as "rump" steak. While the grade of beef quoted is not identical throughout the 44 cities, nor is the grade always identical in a store throughout the period for which prices are quoted, the article quoted is the best grade of meat on sale at the date of each quotation in the store selected, and the stores selected are those patronized largely by the families of American, English, Irish, German, and Scandinavian wage earners.

Below are given a few "remarks" taken from bakery reports of December 15. On many of the slips the note was made that the changes in weights and prices were due to the recent Government regulation.

Owing to the new formula now in use, our retail price has been reduced 1 cent per loaf this month.

Our change in weight complies with the rules of the Food Administration, the price to conform with ingredients.

Weights are changed to conform with Government regulation. Prices are the same per pound. Scaling weight is increased because of reduction of sugar

and shortening. Increased weight of dough, together with malt extract, have more than offset saving in sugar and shortening.

AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD FOR 16 SELECTED CITIES FOR DEC. 15, 1913, 1916, AND 1917, AND NOV. 15, 1917.

[The average prices shown below are computed from reports sent monthly to the bureau by retail dealers. As some dealers occasionally fail to report, the number of quotations varies from month to month.]

Article.	Unit.	Atlanta, Ga.				Baltimore, Md.				Boston, Mass.			
		Dec. 15, 1913.	Dec. 15, 1916.	1917		Dec. 15, 1913.	Dec. 15, 1916.	1917		Dec. 15, 1913.	Dec. 15, 1916.	1917	
				Nov. 15.	Dec. 15.			Nov. 15.	Dec. 15.			Nov. 15.	Dec. 15.
Sirloin steak	Lb	(1)	(1)	(1)	(1)	$0.223	$0.246	$0.311	$0.319	$0.330	$0.383	$0.418	$0.427
Round steak	Lb	(1)	(1)	(1)	(1)	.208	.230	.304	.310	.343	.358	.421	.427
Rib roast	Lb	(1)	(1)	(1)	(1)	.175	.212	.253	.262	.237	.268	.307	.309
Chuck roast	Lb	(1)	(1)	(1)	(1)	.153	.164	.220	.227	.162	.208	.249	.253
Plate beef	Lb	(1)	(1)	(1)	(1)	.....	.138	.175	.181	.....	.....	.....	.....
Pork chops	Lb	(1)	(1)	(1)	(1)	.170	.204	.333	.336	.219	.238	.353	.349
Bacon, sliced	Lb	(1)	(1)	(1)	(1)	.205	.247	.451	.458	.243	.270	.458	.453
Ham, sliced	Lb	(1)	(1)	(1)	(1)	.275	.335	.468	.477	.307	.358	.443	.453
Lard	Lb	(1)	(1)	(1)	(1)	.148	.205	.327	.330	.158	.224	.329	.341
Lamb	Lb	(1)	(1)	(1)	(1)	.175	.233	.313	.324	.202	.244	.336	.335
Hens	Lb	(1)	(1)	(1)	(1)	.207	.242	.296	.310	.240	.273	.326	.335
Salmon, canned	Lb	.....	$0.174	$0.235	$0.235	.....	.175	.255	.254	.....	.198	.300	.302
Eggs, strictly fresh	Doz	$0.433	.505	.501	.571	.404	.504	.580	.620	.575	.665	.737	.775
Eggs, storage	Doz	.....	.407	.435	.438	.331	.390	.440	.446	.360	.398	.477	.480
Butter	Lb	.404	.462	.551	.552	.402	.479	.539	.568	.379	.451	.517	.520
Cheese	Lb	.....	.317	.347	.350	.....	.323	.358	.351	.....	.290	.326	.328
Milk	Qt	.108	.125	.175	.177	.087	.092	.120	.128	.089	.096	.140	.140
Bread	16-oz.[2]	.....	.076	.090	.088	.....	.063	.082	.076	.....	.068	.081	.076
Flour	Lb	.034	.053	.071	.071	.031	.054	.068	.066	.036	.059	.075	.075
Corn meal	Lb	.026	.032	.054	.052	.025	.031	.064	.061	.036	.043	.076	.079
Rice	Lb	.....	.079	.111	.112	.....	.098	.114	.116	.....	.098	.118	.120
Potatoes	Lb	.023	.040	.040	.039	.018	.033	.030	.030	.017	.035	.035	.035
Onions	Lb	.....	.061	.059	.059	.....	.058	.049	.054	.....	.062	.058	.058
Beans, navy	Lb	.....	.135	.188	.188	.....	.145	.190	.187	.....	.139	.184	.189
Prunes	Lb	.....	.133	.180	.177	.....	.128	.173	.175	.....	.146	.168	.172
Raisins	Lb	.....	.149	.161	.167	.....	.138	.146	.151	.....	.140	.150	.151
Sugar	Lb	.055	.090	.110	.104	.049	.078	.096	.095	.053	.081	.102	.101
Coffee	Lb	.....	.281	.292	.288	.....	.235	.281	.286	.....	.345	.344	.344
Tea	Lb	.....	.617	.784	.790	.....	.550	.649	.653	.....	.600	.648	.637

Article.	Unit.	Buffalo, N. Y.				Chicago, Ill.				Cleveland, Ohio.			
Sirloin steak	Lb	$0.216	$0.245	$0.311	$0.310	$0.241	$0.262	$0.297	$0.292	$0.246	$0.250	$0.290	$0.297
Round steak	Lb	.188	.225	.289	.290	.212	.221	.265	.260	.217	.222	.270	.278
Rib roast	Lb	.164	.184	.243	.243	.197	.220	.245	.242	.186	.198	.226	.238
Chuck roast	Lb	.150	.164	.220	.219	.157	.165	.206	.205	.170	.172	.206	.217
Plate beef	Lb	.....	.133	.166	.171	.....	.131	.162	.159	.....	.121	.156	.163
Pork chops	Lb	.176	.236	.349	.349	.179	.201	.312	.298	.194	.220	.331	.323
Bacon, sliced	Lb	.206	.246	.460	.457	.320	.318	.497	.492	.279	.299	.467	.467
Ham, sliced	Lb	.263	.327	.424	.432	.318	.344	.445	.429	.363	[3].226	.441	.444
Lard	Lb	.142	.200	.315	.328	.150	.207	.309	.319	.164	.226	.332	.330
Lamb	Lb	.154	.204	.276	.280	.194	.221	.282	.286	.180	.138	.288	.290
Hens	Lb	.198	.244	.297	.307	.177	.220	.258	.265	.193	.247	.294	.308
Salmon, canned	Lb	.....	.182	.280	.283	.....	.233	.301	.295	.....	.188	.291	.279
Eggs, strictly fresh	Doz	.476	.567	.595	.650	.400	.483	.496	.588	.480	.590	.605	.660
Eggs, storage	Doz	.314	.380	.428	.426	.320	.381	.411	.438	.343	.438	.431	.443
Butter	Lb	.391	.439	.506	.536	.383	.436	.492	.530	.422	.477	.530	.564
Cheese	Lb	.....	.297	.334	.336	.....	.329	.374	.366	.....	.308	.348	.346
Milk	Qt	.080	.100	.140	.138	.080	.090	.119	.119	.080	.090	.120	.120
Bread	16-oz.[2]	.....	.070	.087	.077	.....	.071	.090	.080	.....	.070	.089	.078
Flour	Lb	.030	.051	.064	.061	.029	.051	.064	.061	.031	.057	.069	.068
Corn meal	Lb	.026	.038	.074	.075	.029	.040	.069	.069	.029	.041	.076	.076
Rice	Lb	.....	.093	.113	.115	.....	.094	.114	.115	.....	.093	.118	.124
Potatoes	Lb	.017	.042	.032	.031	.017	.034	.027	.026	.020	.039	.033	.030
Onions	Lb	.....	.046	.056	.054	.....	.053	.045	.044	.....	.059	.055	.051
Beans, navy	Lb	.....	.138	.196	.193	.....	.147	.190	.189	.....	.155	.194	.194
Prunes	Lb	.....	.136	.166	.167	.....	.142	.163	.160	.....	.134	.179	.176
Raisins	Lb	.....	.122	.140	.141	.....	.147	.150	.148	.....	.139	.143	.146
Sugar	Lb	.051	.079	.099	.097	.051	.073	.085	.084	.054	.085	.097	.094
Coffee	Lb	.....	.285	.295	.295	.....	.300	.287	.283	.....	.288	.295	.291
Tea	Lb	.....	.475	.539	.542	.....	.533	.588	.593	.....	.475	.556	.622

[1] Prices not shown; less than 80 per cent of reports from butchers for December, 1917, received by bureau.
[2] Loaf; 16 ounces, weight of dough.
[3] Whole.

AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD FOR 16 SELECTED CITIES FOR DEC. 15, 1913, 1916, AND 1917, AND NOV. 15, 1917—Continued.

Article.	Unit.	Denver, Colo.				Detroit, Mich.				Milwaukee, Wis.			
		Dec. 15, 1913.	Dec. 15, 1916.	1917		Dec. 15, 1913.	Dec. 15, 1916.	1917		Dec. 15, 1913.	Dec. 15, 1916.	1917	
				Nov. 15.	Dec. 15.			Nov. 15.	Dec. 15.			Nov. 15.	Dec. 15.
Sirloin steak	Lb	$0.229	$0.230	$0.282	$0.283	$0.248	$0.260	$0.294	$0.296	$0.234	$0.245	$0.280	$0.287
Round steak	Lb	.207	.190	.262	.262	.204	.224	.268	.268	.216	.214	.269	.275
Rib roast	Lb	.167	.184	.220	.223	.202	.218	.235	.237	.188	.191	.229	.233
Chuck roast	Lb	.150	.160	.197	.197	.154	.162	.193	.193	.164	.169	.205	.216
Plate beef	Lb	.....	.105	.138	.139	.....	.124	.154	.154	.....	.124	.152	.158
Pork chops	Lb	.200	.209	.346	.339	.182	.204	.326	.318	.174	.206	.310	.301
Bacon, sliced	Lb	.280	.325	.506	.536	.223	.253	.458	.456	.274	.297	.475	.488
Ham, sliced	Lb	.300	.338	.468	.467	.280	[1].220	.420	.430	.278	.306	.430	.441
Lard	Lb	.161	.223	.344	.345	.160	.207	.333	.336	.160	.218	.324	.331
Lamb	Lb	.156	.194	.298	.286	.160	.212	.286	.290	.185	.227	.298	.296
Hens	Lb	.199	.211	.278	.281	.186	.242	.293	.298	.172	.215	.238	.259
Salmon, canned	Lb	.....	.185	.269	.275	.....	.200	.293	.292	.....	.219	.278	.274
Eggs, strictly fresh	Doz	.471	.510	.528	.564	.453	.548	.582	.634	.400	.484	.483	.579
Eggs, storage	Doz	.360	.367	.444	.438	.335	.374	.411	.436	.330	.373	.414	.416
Butter	Lb	.379	.440	.485	.533	.389	.428	.505	.539	.388	.436	.498	.531
Cheese	Lb	.....	.320	.351	.359	.....	.300	.342	.339	.....	.317	.344	.338
Milk	Qt	.083	.083	.120	.120	.090	.100	.120	.140	.070	.080	.110	.110
Bread	16-oz. [2]	.....	.075	.089	.086	.....	.070	.082	.075	.....	.075	.088	.086
Flour	Lb	.026	.044	.057	.055	.031	.052	.066	.064	.030	.056	.064	.062
Corn meal	Lb	.025	.034	.061	.061	.028	.038	.083	.084	.032	.047	.077	.076
Rice	Lb	.....	.093	.116	.114	.....	.085	.118	.117	.....	.095	.115	.116
Potatoes	Lb	.016	.031	.029	.025	.016	.034	.027	.027	.017	.035	.028	.027
Onions	Lb	.....	.048	.049	.049	.....	.054	.055	.053	.....	.055	.048	.048
Beans, navy	Lb	.....	.115	.186	.184	.....	.144	.191	.185	.....	145	.195	.194
Prunes	Lb	.....	.135	.182	.170	.....	.120	.164	.160	.....	.150	.158	.159
Raisins	Lb	.....	.138	.143	.142	.....	.124	.136	.139	.....	.142	.147	.148
Sugar	Lb	.052	.085	.089	.088	.051	.081	.088	.086	.055	.081	.088	.087
Coffee	Lb	.....	.300	.300	.295	.....	.280	.299	.293	.....	.283	.270	.265
Tea	Lb	.....	.510	.577	.576	.....	.430	.576	.549	.....	.540	.586	.586

Article.	Unit.	New York, N. Y.				Philadelphia, Pa.				Pittsburgh, Pa.			
Sirloin steak	Lb	$0.257	$0.277	$0.326	$0.335	$0.300	$0.322	$0.374	$0.382	$0.270	$0.280	$0.345	$0.344
Round steak	Lb	.253	.269	.335	.342	.260	.278	.344	.370	.228	.243	.318	.318
Rib roast	Lb	.213	.228	.279	.285	.218	.232	.283	.288	.218	.223	.265	.265
Chuck roast	Lb	.158	.166	.218	.222	.178	.192	.237	.249	.167	.173	.231	.232
Plate beef	Lb	.....	.159	.209	.218	.....	.130	.169	.176	.....	.121	.168	.169
Pork chops	Lb	.184	.230	.339	.345	.206	.243	.356	.354	.208	.229	.250	.348
Bacon, sliced	Lb	.255	.268	.459	.461	.250	.299	.469	.466	.288	.317	.494	.502
Ham, sliced	Lb	[1].195	[1].230	[1].309	[1].325	.291	.357	.482	.486	.290	.352	.456	.461
Lard	Lb	.161	.218	.331	.337	.152	.217	.330	.338	.156	.213	.331	.341
Lamb	Lb	.154	.195	.265	.277	.188	.243	.311	.306	.207	.257	.342	.344
Hens	Lb	.207	.253	.295	.307	.226	.280	.322	.323	.248	.295	.338	.357
Salmon, canned	Lb	.....	.244	.340	.346	.....	.189	.263	.261	.....	.211	.299	.311
Eggs, strictly fresh	Doz	.543	.586	.647	.731	.483	.558	.593	.663	.492	.516	.553	.644
Eggs, storage	Doz	.367	.403	.446	.471	.347	.398	.434	.449	.351	.408	.453	.451
Butter	Lb	.411	.448	.516	.548	.466	.502	.567	.593	.420	.476	.528	.569
Cheese	Lb	.....	.292	.338	.346	.....	.314	.357	.370	.....	.321	.351	.349
Milk	Qt	.090	.099	.140	.140	.080	.088	.122	.122	.092	.103	.127	.127
Bread	16-oz. [2]	.....	.072	.088	.078	.....	.057	.078	.076	.....	.068	.090	.081
Flour	Lb	.032	.055	.077	.076	.031	.037	.072	.073	.032	.055	.070	.070
Corn meal	Lb	.034	.049	.083	.085	.028	.038	.072	.071	.030	.043	.087	.090
Rice	Lb	.....	.094	.119	.117	.....	.097	.123	.123	.....	.094	.112	.121
Potatoes	Lb	.024	.038	.036	.038	.023	.040	.038	.036	.019	.039	.033	.031
Onions	Lb	.....	.065	.060	.058	.....	.063	.054	.056	.....	.064	.053	.049
Beans, navy	Lb	.....	.151	.187	.186	.....	.141	.184	.187	.....	.149	.195	.200
Prunes	Lb	.....	.139	.169	.174	.....	.141	.167	.166	.....	.136	.172	.172
Raisins	Lb	.....	.134	.147	.151	.....	.131	.133	.135	.....	.143	.146	.148
Sugar	Lb	.049	.084	.100	.099	.050	.077	.096	.097	.055	.088	.105	.097
Coffee	Lb	.....	.262	.261	.275	.....	.285	.279	.279	.....	.271	.298	.297
Tea	Lb	.....	.445	.532	.515	.....	.536	.585	.571	.....	.575	.715	.720

[1] Whole.

[2] Loaf; 16 ounces, weight of dough.

AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD FOR 16 SELECTED CITIES FOR DEC. 15, 1913, 1916, AND 1917, AND NOV. 15, 1917—Concluded.

Article.	Unit.	St. Louis, Mo.				San Francisco, Cal.			
		Dec. 15, 1913.	Dec. 15, 1916.	1917		Dec. 15, 1913.	Dec. 15, 1916.	1917	
				Nov. 15.	Dec. 15.			Nov. 15.	Dec. 15.
Sirloin steak	Lb.	$0.266	$0.256	$0.296	$0.299	$0.210	$0.207	$0.240	$0.238
Round steak	Lb.	.236	.240	.289	.289	.200	.197	.236	.236
Rib roast	Lb.	.195	.203	.249	.252	.217	.208	.234	.227
Chuck roast	Lb.	.159	.164	.205	.204	.150	.146	.167	.168
Plate beef	Lb.	.....	.128	.167	.168	.....	.134	.162	.163
Pork chops	Lb.	.178	.194	.301	.291	.242	.243	.363	.362
Bacon, sliced	Lb.	.250	.270	.480	.477	.344	.367	.537	.532
Ham, sliced	Lb.	.273	.288	.456	.451	.340	.400	.488	.486
Lard	Lb.	.127	.190	.315	.296	.180	.223	.322	.334
Lamb	Lb.	.183	.229	.295	.294	.166	.217	.289	.281
Hens	Lb.	.173	.206	.348	.265	.245	.275	.334	.349
Salmon, canned	Lb.	.....	.187	.285	.287	.....	.179	.250	.252
Eggs, strictly fresh	Doz.	.408	.450	.471	.584	.533	.475	.638	.596
Eggs, storage	Doz.	.288	.400	.393	.428	.417	.375	.451	.441
Butter	Lb.	.396	.465	.522	.559	.386	.413	.501	.538
Cheese	Lb.	.....	.311	.353	.351	.....	.250	.324	.329
Milk	Qt.	.088	.097	.130	.130	.100	.100	.121	.121
Bread	16-oz.[1]	.....	.069	.092	.088	.....	.062	.083	.085
Flour	Lb.	.029	.044	.061	.061	.034	.051	.061	.062
Corn meal	Lb.	.026	.034	.064	.062	.035	.044	.074	.070
Rice	Lb.	.....	.086	.112	.111	.....	.084	.108	.112
Potatoes	Lb.	.017	.033	.031	.030	.019	.030	.031	.029
Onions	Lb.	.....	.054	.044	.045	.....	.046	.034	.030
Beans, navy	Lb.	.....	.144	.187	.183	.....	.138	.174	.163
Prunes	Lb.	.....	.138	.170	.166	.....	.124	.147	.139
Raisins	Lb.	.....	.160	.168	.167	.....	.127	.132	.137
Sugar	Lb.	.051	.075	.088	.086	.054	.078	.081	.081
Coffee	Lb.	.....	.242	.281	.280	.....	.317	.305	.301
Tea	Lb.	.....	.543	.626	.636	.....	.517	.539	.539
		Seattle, Wash.				Washington, D. C.			
Sirloin steak	Lb.	$0.236	$0.220	$0.267	$0.267	$0.265	$0.260	$0.360	$0.363
Round steak	Lb.	.206	.200	.253	.253	.226	.230	.332	.345
Rib roast	Lb.	.200	.186	.221	.220	.210	.213	.277	.285
Chuck roast	Lb.	.156	.140	.183	.183	.173	.180	.237	.249
Plate beef	Lb.	.....	.109	.154	.155	.....	.136	.184	.185
Pork chops	Lb.	.240	.226	.396	.383	.199	.230	.370	.370
Bacon, sliced	Lb.	.330	.320	.522	.524	.249	.278	.492	.496
Ham, sliced	Lb.	.300	.310	.434	.443	.210	.325	.432	.468
Lard	Lb.	.169	.211	.307	.320	.150	.210	.325	.335
Lamb	Lb.	.180	.200	.296	.301	.194	.245	.337	.351
Hens	Lb.	.246	.223	.283	.294	.220	.244	.311	.329
Salmon, canned	Lb.	.....	.196	.288	.288	.....	.175	.269	.285
Eggs, strictly fresh	Doz.	.542	.456	.666	.605	.421	.550	.645	.679
Eggs, storage	Doz.	.370	.370	.488	.484	.350	.398	.453	.462
Butter	Lb.	.438	.447	.542	.549	.423	.470	.534	.570
Cheese	Lb.	.....	.275	.308	.305	.....	.290	.354	.356
Milk	Qt.	.098	.098	.120	.125	.090	.100	.140	.140
Bread	16-oz.[1]	.....	.073	.092	.087	.....	.074	.090	.075
Flour	Lb.	.029	.045	.059	.058	.038	.056	.073	.072
Corn meal	Lb.	.033	.039	.074	.075	.026	.030	.067	.069
Rice	Lb.	.....	.084	.111	.108	.....	.091	.121	.123
Potatoes	Lb.	.015	.024	.022	.020	.018	.032	.033	.033
Onions	Lb.	.....	.047	.045	.042	.....	.054	.052	.048
Beans, navy	Lb.	.....	.139	.187	.183	.....	.138	.201	.199
Prunes	Lb.	.....	.133	.144	.145	.....	.150	.177	.175
Raisins	Lb.	.....	.131	.134	.145	.....	.123	.150	.149
Sugar	Lb.	.061	.084	.088	.088	.050	.081	.096	.097
Coffee	Lb.	.....	.326	.311	.310	.....	.293	.286	.285
Tea	Lb.	.....	.500	.554	.548	.....	.515	.630	.612

[1] Loaf; 16 ounces, weight of dough.

AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD FOR 29 CITIES ON DEC. 15, 1917.

[The average prices shown below are computed from reports sent monthly to the bureau by retail dealers As some dealers occasionally fail to report, the number of quotations varies from month to month.]

Article.	Unit.	Average retail prices, Dec. 15, 1917.									
		Birmingham, Ala.	Bridgeport, Conn.	Butte, Mont.	Charleston, S. C.	Cincinnati, Ohio.	Columbus, Ohio.	Dallas, Tex.	Fall River, Mass.	Indianapolis, Ind.	Jacksonville, Fla.
Sirloin steak	Lb.	$0.350	$0.404	$0.302	$0.279	$0.269	$0.317	$0.304	$0.428	$0.304	$0.327
Round steak	Lb.	.323	.372	.274	.260	.263	.291	.294	.367	.298	.302
Rib roast	Lb.	.250	.310	.248	.238	.236	.249	.250	.283	.225	.265
Chuck roast	Lb.	.211	.261	.206	.183	.190	.224	.220	.238	.208	.199
Plate beef	Lb.	.168	.167	.137	.143	.158	.177	.184	.....	.159	.154
Pork chops	Lb.	.361	.345	.352	.369	.314	.310	.350	.339	.332	.351
Bacon, sliced	Lb.	.539	.514	.580	.500	.461	.470	.516	.452	.488	.493
Ham, sliced	Lb.	.455	.492	.490	.444	.443	.449	.460	.436	.441	.428
Lard	Lb.	.332	.340	.335	.347	.313	.340	.316	.318	.327	.335
Lamb	Lb.	.325	.305	.312	.330	.278	.315	.320	.321	.283	.296
Hens	Lb.	.300	.325	.308	.331	.309	.294	.259	.346	.259	.329
Salmon, canned	Lb.	.288	.356	.350	(1)	.265	.261	.277	.277	.234	.294
Eggs, strictly fresh	Doz.	.590	.771	.700	(1)	.584	.598	.532	.765	.571	.617
Eggs, storage	Doz.	.471	.455	.521	(1)	.448	.444	.483	.488	.434	.473
Butter	Lb.	.575	.506	.550	(1)	.553	.547	.521	.497	.555	.554
Cheese	Lb.	.344	.344	.350	(1)	.356	.334	.358	.327	.376	.351
Milk	Qt.	.152	.140	.150	(1)	.130	.110	.155	.128	.107	.160
Bread	16-oz.[2]	.088	.082	.108	.090	.079	.089	.085	.088	.077	.084
Flour	Lb.	.070	.072	.079	(1)	.071	.066	.065	.075	.067	.074
Corn meal	Lb.	.050	.083	.083	(1)	.067	.061	.072	.087	.063	.059
Rice	Lb.	.127	.124	.128	(1)	.122	.118	.120	.119	.124	.106
Potatoes	Lb.	.033	.035	.025	(1)	.030	.029	.035	.033	.027	.039
Onions	Lb.	.059	.059	.051	(1)	.051	.054	.053	.052	.050	.057
Beans, navy	Lb.	.192	.188	.184	(1)	.186	.189	.181	.181	.203	.193
Prunes	Lb.	.153	.165	.168	(1)	.159	.159	.177	.166	.173	.177
Raisins	Lb.	.150	.157	.152	(1)	.155	.152	.149	.154	.172	.174
Sugar	Lb.	.109	.101	.101	(1)	.091	.091	.100	.103	.094	.101
Coffee	Lb.	.331	.319	.416	(1)	.266	.292	.348	.326	.295	.329
Tea	Lb.	.764	.600	.770	(1)	.733	.756	.810	.505	.753	.735

Article.	Unit.	Average retail prices, Dec. 15, 1917.									
		Kansas City, Mo.	Little Rock, Ark.	Los Angeles, Cal.	Louisville, Ky.	Manchester, N. H.	Memphis, Tenn.	Minneapolis, Minn.	Newark, N. J.	New Haven, Conn.	New Orleans, La.
Sirloin steak	Lb.	$0.311	$0.294	$0.266	$0.290	$0.430	$0.289	$0.238	$0.359	$0.403	$0.271
Round steak	Lb.	.283	.269	.240	.272	.398	.275	.228	.360	.368	.237
Rib roast	Lb.	.228	.244	.223	.229	.267	.253	.203	.292	.305	.237
Chuck roast	Lb.	.195	.197	.188	.201	.236	.200	.172	.255	.259	.180
Plate beef	Lb.	.155	.169	.158	.169	.....	.174	.137	.187	.....	.157
Pork chops	Lb.	.317	.338	.380	.322	.316	.342	.306	.351	.325	.364
Bacon, sliced	Lb.	.493	.524	.544	.509	.457	.490	.475	.449	.500	.514
Ham, sliced	Lb.	.450	.450	.529	.433	.417	.453	.444	[3].342	.494	.424
Lard	Lb.	.346	.351	.330	.330	.342	.320	.327	.348	.337	.333
Lamb	Lb.	.257	.292	.295	.305	.325	.322	.233	.321	.331	.299
Hens	Lb.	.263	.280	.348	.320	.338	.288	.231	.326	.334	.303
Salmon, canned	Lb.	.291	.293	.317	.246	.301	.306	.318	.345	.329	.323
Eggs, strictly fresh	Doz.	.523	.533	.591	.554	.747	.585	.561	.752	.804	.530
Eggs, storage	Doz.	.451	.475	.456	.460	.458	.449	.394	.471	.460	.425
Butter	Lb.	.511	.550	.517	.560	.541	.531	.497	.579	.518	.550
Cheese	Lb.	.347	.371	.342	.357	.335	.329	.323	.355	.335	.348
Milk	Qt.	.126	.160	.120	.133	.120	.150	.110	.140	.128	.138
Bread	16-oz.[2]	.089	.094	.074	.091	.077	.087	.073	.071	.083	.074
Flour	Lb.	.062	.069	.063	.069	.072	.068	.058	.075	.070	.077
Corn meal	Lb.	.068	.061	.077	.058	.078	.052	.060	.083	.081	.070
Rice	Lb.	.111	.110	.117	.119	.108	.104	.103	.117	.116	.108
Potatoes	Lb.	.045	.035	.027	.035	.033	.028	.025	.037	.033	.056
Onions	Lb.	.054	.052	.034	.047	.053	.047	.042	.060	.056	.047
Beans, navy	Lb.	.183	.183	.167	.193	.190	.190	.194	.185	.188	.176
Prunes	Lb.	.145	.172	.150	.171	.155	.161	.144	.168	.176	.166
Raisins	Lb.	.154	.149	.148	.152	.156	.144	.143	.148	.155	.152
Sugar	Lb.	.097	.093	.085	.094	.100	.098	.090	.101	.106	.097
Coffee	Lb.	.286	.326	.303	.261	.342	.288	.310	.304	.335	.266
Tea	Lb.	.600	.789	.600	.726	.583	.717	.495	.555	.546	.621

[1] Prices not shown, less than 80 per cent of reports from grocers for December, 1917, received by bureau.
[2] Loaf; 16 ounces weight of dough.
[3] Whole.

AVERAGE RETAIL PRICES OF THE PRINCIPAL ARTICLES OF FOOD FOR 29 CITIES ON DEC. 15, 1917—Concluded.

Article.	Unit.	Average retail prices, Dec. 15, 1917.			
		Omaha, Nebr.	Portland, Oreg.	Providence, R. I.	Richmond, Va.
Sirloin steak	Lb.	$0.300	$0.253	$0.519	$0.326
Round steak	Lb.	.282	.240	.414	.304
Rib roast	Lb.	.221	.230	.332	.256
Chuck roast	Lb.	.200	.181	.295	.228
Plate beef	Lb.	.150	.145	.....	.190
Pork chops	Lb.	.305	.311	.358	.359
Bacon, sliced	Lb.	.485	.523	.470	.484
Ham, sliced	Lb.	.444	.468	.511	[1] .367
Lard	Lb.	.343	.345	.345	.340
Lamb	Lb.	.292	.272	.346	.306
Hens	Lb.	.249	.268	.352	.296
Salmon, canned	Lb.	.281	.346	.290	.238
Eggs, strictly fresh	Doz.	.563	.614	.723	.550
Eggs, storage	Doz.	.435	.491	.445	.468
Butter	Lb.	.516	.555	.538	.575
Cheese	Lb.	.349	.310	.336	.355
Milk	Qt.	.123	.127	.130	.140
Bread	16-oz. [2]	.087	.078	.083	.087
Flour	Lb.	.060	.057	.070	.071
Corn meal	Lb.	.066	.072	.076	.061
Rice	Lb.	.108	.113	.116	.116
Potatoes	Lb.	.029	.022	.033	.037
Onions	Lb.	.046	.043	.050	.060
Beans, navy	Lb.	.177	.158	.185	.207
Prunes	Lb.	.168	.132	.173	.151
Raisins	Lb.	.156	.137	.145	.149
Sugar	Lb.	.092	.089	.101	.100
Coffee	Lb.	.312	.310	.339	.282
Tea	Lb.	.596	.565	.573	.691

Article.	Unit.	Average retail prices, Dec. 15, 1917.				
		Rochester, N. Y.	St. Paul, Minn.	Salt Lake City, Utah.	Scranton, Pa.	Springfield, Ill.
Sirloin steak	Lb.	$0.302	$0.273	$0.272	$0.334	$0.308
Round steak	Lb.	.288	.239	.254	.299	.303
Rib roast	Lb.	.249	.227	.235	.270	.237
Chuck roast	Lb.	.235	.188	.197	.224	.219
Plate beef	Lb.	.177	.138	.155	.166	.181
Pork chops	Lb.	.346	.304	.358	.350	.330
Bacon, sliced	Lb.	.447	.481	.507	.473	.494
Ham, sliced	Lb.	.426	.438	.436	.440	.444
Lard	Lb.	.343	.321	.358	.335	.340
Lamb	Lb.	.291	.245	.290	.326	.320
Hens	Lb.	.332	.233	.306	.345	.230
Salmon, canned	Lb.	.293	.294	.295	.293	.280
Eggs, strictly fresh	Doz.	.738	.499	.618	.700	.558
Eggs, storage	Doz.	.427	.405	.490	.440	.442
Butter	Lb.	.527	.504	.542	.516	.570
Cheese	Lb.	.341	.332	.339	.329	.381
Milk	Qt.	.125	.100	.104	.130	.125
Bread	16-oz. [2]	.074	.084	.099	.085	.093
Flour	Lb.	.067	.060	.054	.072	.066
Corn meal	Lb.	.081	.066	.074	.....	.071
Rice	Lb.	.123	.116	.105	.119	.125
Potatoes	Lb.	.027	.025	.020	.030	.028
Onions	Lb.	.049	.040	.045	.060	.048
Beans, navy	Lb.	.202	.197	.190	.189	.203
Prunes	Lb.	.176	.167	.152	.164	.172
Raisins	Lb.	.148	.145	.143	.147	.173
Sugar	Lb.	.101	.092	.093	.101	.090
Coffee	Lb.	.295	.319	.350	.315	.295
Tea	Lb.	.505	.531	.634	.581	.686

[1] Whole.

[2] Loaf; 16 ounces weight of dough.

RELATIVE PRICES, 1907 TO DECEMBER, 1917.

To afford an opportunity to compare average yearly retail prices of food back over a period of years, index numbers, computed from data collected by the United States Bureau of Labor Statistics, are given in the table following. In this table the average price for 1913 is taken as the basis, or 100. These index numbers are simply percentages in which comparison is made with the average price in 1913. Interpreted in dollars, the food that cost $1 in 1913 cost $1.46 in 1917, while the same food cost but $0.82 in 1907, $0.84 in 1908, etc.

The increase in the retail price of food in 1917 over 1916 was 29 per cent. Comparing 1917 with 1907, there is an advance in the index number from 82 to 146, an increase of 64 points, which number, 64, is 78 per cent of 82, making the increase 78 per cent.

Prices for chuck roast, plate boiling beef, and bread were secured first in 1914; and those for cheese, rice, beans, coffee, tea, salmon, onions, prunes, and raisins in 1915. Relative numbers for these articles, therefore, can not be computed on the 1913 base.

Beginning with 1914, chuck roast, plate boiling beef, and bread, and beginning with 1915, cheese, rice, coffee, and tea, have been included in the index numbers for all articles combined, weighted according to amount of consumption. As the bureau has no figures of the family consumption of beans, salmon, onions, prunes, and raisins, these articles have never been included in the weighted index tables.

The effect of the war on food prices can be followed in this table from year to year and from month to month.

RELATIVE RETAIL PRICES, PER CENT OF INCREASE OR DECREASE OF THE PRINCIPAL ARTICLES OF FOOD IN THE UNITED STATES, 1907, TO DECEMBER, 1917, BY ARTICLES.

[Average price for 1913=100.]

Year and month.	Relative prices.															All articles combined.		
	Sirloin steak.	Round steak.	Rib roast.	Pork chops.	Bacon.	Ham.	Lard.	Hens.	Eggs.	Butter.	Milk.	Flour.	Corn meal.	Potatoes.	Sugar.	Relative price.	Per cent of increase or decrease in each year or month as compared with—	
																	1913.	Each year or month preceding.
1907	71	68	76	74	74	76	81	81	84	85	87	95	88	105	105	82	−18	.....
1908	73	71	78	76	77	78	80	83	86	86	90	102	92	111	108	84	−16	+ 2
1909	77	74	81	83	83	82	90	89	93	90	91	109	94	112	107	89	−11	+ 6
1910	80	78	85	92	95	91	104	94	98	94	95	108	95	101	109	93	− 7	+ 4
1911	81	79	85	85	91	89	88	91	93	88	96	102	94	130	111	92	− 8	− 1
1912	91	89	94	91	91	91	94	93	99	98	97	115	102	132	115	98	− 2	+ 7
1913	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	.....	+ 2
1914	102	106	103	105	102	102	99	102	102	94	100	104	105	108	108	102	+ 2	+ 2
1915	101	103	101	96	100	97	93	97	99	93	99	126	108	89	120	101	+ 1	− 1
1916	108	110	107	108	106	109	111	111	109	103	102	135	113	155	146	114	+14	+13
1917	124	130	126	152	152	142	175	134	139	127	125	211	192	253	169	146	+46	+28
1913: Av. for year.	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	.....	.....
January	94	92	95	89	94	93	97	95	108	107	100	100	99	91	106	98	− 2	− 1
February	94	93	95	90	95	94	98	97	91	108	100	100	98	90	100	97	− 3	− 1
March	97	96	98	97	97	97	99	100	77	108	100	100	98	88	99	97	− 3	± 0
April	101	99	101	103	99	99	100	104	73	106	100	100	98	87	98	98	− 2	+ 1
May	101	100	101	100	100	99	100	104	76	94	99	101	98	91	97	97	− 3	− 1
June	102	101	102	99	101	102	100	103	81	92	99	101	98	104	97	98	− 2	+ 1
July	104	104	102	103	104	104	101	102	87	91	99	101	98	110	100	100	± 0	+ 2
August	104	104	102	104	105	106	102	101	96	92	99	100	100	109	102	101	+ 1	+ 1
September	103	104	101	108	104	104	102	101	109	98	100	100	102	110	104	102	+ 2	+ 1
October	101	104	101	107	103	102	101	100	121	100	101	99	103	106	101	104	+ 4	+ 2
November	100	102	100	102	101	100	101	97	144	101	102	99	104	107	99	105	+ 5	+ 1
December	99	101	100	97	99	99	100	98	138	104	102	99	104	106	98	104	+ 4	− 1
1914: Av. for year.	**102**	**106**	**103**	**105**	**102**	**102**	**99**	**102**	**102**	**94**	**100**	**104**	**105**	**108**	**108**	**102**	+ 2	.....
January	99	102	100	99	98	98	100	100	126	104	102	98	104	108	95	104	+ 4	± 0
February	99	102	101	100	98	99	99	104	106	93	102	99	103	108	94	101	+ 1	− 3
March	100	103	101	100	99	99	99	105	90	92	101	99	103	107	93	99	− 1	− 2
April	100	103	102	103	99	99	99	108	74	86	100	99	103	105	91	97	− 3	− 2

May	102	105	102	106	99	99	98	106	77	85	100	99	103	112	91	98	− 2	+ 1
June	103	106	103	103	100	100	97	103	82	88	100	99	103	132	93	99	− 1	+ 1
July	106	109	105	106	101	103	97	103	87	89	100	98	103	155	95	102	+ 2	+ 3
August	110	113	108	119	107	108	99	104	96	94	100	106	105	111	143	107	+ 7	+ 5
September	107	110	105	113	108	108	99	103	107	98	100	113	109	105	145	107	+ 7	± 0
October	103	107	104	110	106	105	98	100	113	98	101	111	109	89	132	105	+ 5	− 2
November	100	105	103	104	104	102	99	97	131	103	101	112	109	83	113	105	+ 5	± 0
December	101	103	101	93	103	100	97	94	139	103	101	113	107	84	110	105	+ 5	± 0
1915: Av. for year.	**101**	**103**	**101**	**96**	**100**	**97**	**93**	**97**	**99**	**93**	**99**	**126**	**108**	**89**	**120**	**101**	**+ 1**	.....
January	100	102	101	88	101	98	97	95	129	101	101	124	109	85	110	103	+ 3	−2
February	98	100	100	85	99	96	97	97	98	98	100	138	110	84	118	101	+ 1	−2
March	97	99	99	85	98	95	96	99	74	94	99	136	110	82	120	98	− 2	−3
April	99	100	100	94	98	94	96	100	75	94	99	137	109	86	122	99	− 1	+1
May	101	103	101	99	98	95	96	101	76	91	99	139	109	89	124	100	± 0	+1
June	103	105	103	98	99	97	95	98	78	90	98	130	109	99	126	100	± 0	±0
July	105	107	104	100	100	98	93	97	81	90	98	125	108	85	127	100	± 0	±0
August	104	107	104	103	100	98	89	97	88	88	99	124	108	82	123	100	± 0	±0
September	104	106	103	107	100	97	88	97	101	88	99	117	108	79	118	101	+ 1	+1
October	103	104	102	110	101	99	91	97	117	92	100	113	108	94	111	103	+ 3	+2
November	101	102	101	99	101	100	92	95	133	95	100	113	107	97	119	104	+ 4	+1
December	99	101	100	87	101	100	92	95	135	101	100	114	107	106	124	105	+ 5	+1
1916: Av. for year.	**108**	**110**	**107**	**108**	**106**	**109**	**111**	**111**	**109**	**103**	**102**	**135**	**113**	**155**	**146**	**114**	**+14**	.....
January	101	102	101	89	101	109	111	101	123	100	100	120	107	136	123	107	+ 7	+2
February	101	102	102	92	101	110	112	104	101	99	100	125	108	141	125	106	+ 6	−1
March	104	104	104	104	103	113	115	107	82	105	100	120	107	140	137	107	+ 7	+1
April	106	108	106	107	104	116	119	111	79	108	99	119	108	138	145	109	+ 9	+2
May	109	112	110	109	105	118	127	113	82	97	99	119	108	140	156	109	+ 9	±0
June	113	117	113	110	107	119	130	114	87	95	99	117	108	167	158	112	+12	+3
July	113	116	112	111	107	120	132	113	93	93	100	116	108	134	160	111	+11	−1
August	112	115	111	116	108	121	133	112	105	95	101	134	110	141	155	113	+13	+2
September	111	115	110	125	110	123	141	113	120	102	102	148	113	161	141	118	+18	+4
October	108	111	108	118	110	123	147	114	132	109	105	155	117	165	149	121	+21	+3
November	106	108	106	111	111	123	162	112	149	114	109	174	126	198	157	126	+26	+4
December	106	107	106	106	110	123	164	112	154	118	112	167	131	198	151	126	+26	±0
1917: Av. for year.	**124**	**130**	**126**	**152**	**152**	**142**	**175**	**134**	**139**	**127**	**125**	**211**	**192**	**253**	**169**	**146**	**+46**	.....
January	109	111	109	113	110	114	136	119	158	118	112	171	132	225	146	128	+28	+2
February	113	117	114	125	114	118	138	126	147	122	112	171	136	290	148	133	+33	+4
March	116	119	118	133	123	125	151	129	101	121	112	174	137	297	160	133	+33	±0
April	125	130	127	146	141	136	167	136	112	133	114	206	154	339	175	145	+45	+9
May	127	133	130	146	155	144	176	138	116	122	117	266	178	352	183	151	+51	+4
June	129	135	132	148	158	145	177	136	119	123	119	246	182	366	170	152	+52	+1
July	129	137	130	151	159	147	174	131	122	120	125	220	195	246	166	146	+46	−4
August	130	138	129	164	160	147	176	131	134	124	128	229	219	206	181	149	+49	+2
September	131	133	131	185	164	152	188	142	152	129	132	223	272	172	179	153	+53	+3
October	130	138	130	185	178	159	198	146	160	133	143	214	232	178	177	157	+57	+3
November	124	133	127	165	179	159	207	138	168	138	144	208	235	183	174	155	+55	−1
December	126	134	128	161	181	161	211	143	184	142	147	205	235	178	172	157	+57	+1

WHOLESALE PRICES IN THE UNITED STATES.

PRICE CHANGES FOR IMPORTANT COMMODITIES SINCE JULY, 1914.

Figures compiled by the Bureau of Labor Statistics show the wholesale prices of food and other commodities for a date just prior to the outbreak of the European war, and subsequent dates indicating the movement of prices as affected by the war. During the latter half of 1917 many of these commodities had more than doubled and others were three times as much as in July, 1914. Among the articles showing the largest increases were hogs; bacon; lard; sheep; mutton; butter; eggs; wheat flour; corn; corn meal; cotton, woolen, and leather goods; coke; coal (bituminous); pig iron; steel billets; tinplate; lead; crude petroleum; and gasoline. Many of these commodities, however, declined in price during the closing months of the year, due largely to Government regulation.

A comparison of wholesale prices of important commodities in representative markets since July, 1914, is contained in the two tables which follow. The average money prices for the specified month are shown in the first table. The relative prices in the second table are based on the actual prices, the prices for July, 1914, being taken as 100.

WHOLESALE PRICES, JULY, 1915 AND 1916, AND JANUARY TO DECEMBER, 1917, COMPARED WITH JULY, 1914.

Actual Money Prices.

Article.	Unit.	July.			1917							
		1914	1915	1916	Jan.	Apr.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
FOODSTUFFS.												
(a) Animal.												
		$	$	$	$	$	$	$	$	$	$	$
Cattle, good to choice steers.	100 lbs.	9.219	9.213	9.985	10.530	12.310	12.560	13.175	14.988	14.675	14.388	13.235
Beef, fresh, good native steers.	Lb.	.135	.132	.141	.138	.160	.164	.171	.190	.190	.190	.185
Beef, salt, extra mess	Bbl.	17.250	17.500	18.250	23.250	26.250	30.500	29.500	29.500	30.700	31.500	31.500
Hogs, heavy	100 lbs.	8.769	7.281	9.825	10.955	15.795	15.460	17.331	18.325	17.590	17.456	16.850
Bacon, short clear sides	Lb.	.141	.111	.157	.165	.218	.248	.263	.280	.321	.319	.314
Hams, smoked, loose	Lb.	.177	.161	.190	.195	.240	.240	.241	.268	.286	.290	.302
Lard, prime, contract	Lb.	.102	.081	.131	.161	.213	.201	.227	.242	.247	.279	.254
Pork, salt, mess	Bbl.	23.625	18.500	27.167	32.250	39.000	42.250	44.438	46.938	48.300	49.000	52.750
Sheep, ewes	100 lbs.	4.538	5.469	6.545	9.260	11.715	8.600	8.906	10.063	10.525	10.188	10.325
Mutton, dressed	Lb.	.095	.109	.131	.137	.165	.145	.157	.180	.191	.178	.188
Butter, creamery, extra	Lb.	.270	.261	.276	.380	.428	.376	.400	.425	.431	.442	.481
Eggs, fresh, firsts	Doz.	.187	.169	.223	.411	.319	.318	.339	.374	.372	.432	.484
Milk	Qt.	.030	.030	.031	.051	.049	.050	.060	.060	.072	.077	.072
(b) Vegetable.												
Wheat, No. 1 northern	Bu.	0.897	1.390	1.170	1.917	2.381	2.582	2.788	2.221	2.170	2.170	2.170
Wheat flour, standard patent.	Bbl.	4.594	7.031	6.100	9.215	11.619	12.750	13.069	11.263	10.500	10.225	10.131
Corn, No. 2, mixed	Bu.	.710	.783	.808	.982	1.397	2.044	1.921	2.071	1.968	2.056	1.709
Corn meal, fine yellow	100 lbs.	1.425	1.725	1.900	2.650	3.100	4.000	5.175	4.950	4.900	4.900	4.750
Oats, standard, in store	Bu.	.369	.529	.405	.557	.652	.764	.596	.588	.591	.661	.756
Rye, No. 2	Bu.	.618	1.036	.966	1.448	1.854	2.226	1.818	1.854	1.811	1.785	1.822
Rye flour, pure, medium straight.	Bbl.	2.975	5.388	5.150	7.380	9.400	11.620	9.738	9.294	9.625	9.625	9.663
Barley, fair to good malting.	Bu.	.533	.743	.746	1.180	1.335	1.391	1.303	1.323	1.306	1.281	1.473
Rice, Honduras, head	Lb.	.054	.049	.046	.048	.049	.071	.072	.070	.077	.078	.079
Potatoes, white	Bu.	1.206	.444	.863	1.795	2.669	2.375	1.458	1.094	1.188	1.136	1.088
Sugar, granulated	Lb.	.042	.058	.075	.066	.082	.075	.082	.082	.082	.082	.080

WHOLESALE PRICES, JULY, 1915 AND 1916, AND JANUARY TO DECEMBER, 1917, COMPARED WITH JULY, 1914—Continued.

Actual Money Prices—Concluded.

Article.	Unit.	July.			1917							
		1914	1915	1916	Jan.	Apr.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
TEXTILES AND LEATHER GOODS.												
		$	$	$	$	$	$	$	$	$	$	$
Cotton, upland, middling.	Lb.....	.131	.092	.130	.176	.203	.261	.259	.227	.281	.299	.306
Cotton yarn, carded, 10/1.	Lb.....	.215	.160	.253	.340	.360	.450	.440	.420	.420	.470	.495
Sheeting, brown, Pepperell.	Yd.....	.070	.060	.078	.110	.120	.140	.140	.140	.145	.155	.165
Bleached muslin, Lonsdale.	Yd.....	.085	.075	.088	.110	.113	.160	.160	.170	.170	.170	.180
Wool, fine fleece, scoured.	Lb.....	.575	.652	.761	1.000	1.152	1.478	1.630	1.690	1.652	1.652	1.696
Worsted yarn, 2–32's...	Lb.....	.650	.850	1.100	1.250	1.300	1.600	1.650	1.700	1.800	1.900	2.000
Clay worsted suitings, 16-oz.	Yd.....	1.328	1.508	2.000	2.125	2.675	3.250	3.650	3.650	3.650	3.800	4.029
Storm serge, all-wool, 50-in.	Yd.....	.505	.539	.760	.907	.907	1.176	1.250	1.250	1.250	1.250	1.250
Hides, packers', heavy native steers.	Lb.....	.194	.258	.270	.335	.305	.330	.320	.330	.338	.353	.350
Leather, chrome calf....	Sq. ft...	.275	.280	.460	.705	.595	.540	.540	.505	.540	.560	.560
Leather, sole, oak.....	Lb.....	.475	.495	.635	.835	.835	.815	.830	.830	.830	.840	.840
Shoes, men's, Goodyear welt, vici calf, blucher.	Pair....	3.150	3.250	3.750	4.750	4.750	4.750	4.750	4.750	4.750	4.750	4.750
Shoes, women's Goodyear welt, gun metal, button.	Pair....	2.260	2.350	2.750	3.500	3.500	3.500	3.500	3.500	3.500	3.500	3.500
MINERAL AND METAL PRODUCTS.												
Coal, anthracite, chestnut.	2,240 lbs	5.241	5.200	5.507	5.739	5.236	5.933	6.011	6.218	6.232	6.242	6.585
Coal, bituminous, run of mine.	2,000 lbs	2.200	2.200	2.200	4.500	5.000	5.000	4.400	3.300	3.300	3.750	3.750
Coke, furnace, prompt shipment.	2,000 lbs	2.000	1.750	2.750	9.500	7.500	15.000	10.000	11.750	6.000	6.000	6.000
Copper, electrolytic.....	Lb.....	.134	.199	.265	.295	.340	.318	.290	.253	.235	.235	2.350
Copper wire, bare, No. 8.	Lb.....	.148	.210	.325	.368	.368	.338	.318	.298	.298	.288	.278
Pig iron, Bessemer.....	Ton[1]...	14.900	14.950	21.950	35.950	42.200	57.450	54.750	48.025	37.250	37.250	37.250
Steel billets.....	Ton[1]...	19.000	21.380	41.000	63.000	73.750	100.000	86.000	66.250	49.375	47.500	47.500
Tin plate, domestic coke.	100 lbs.	3.350	3.175	5.875	7.000	8.000	12.000	12.000	12.000	.....	7.750	7.750
Pig tin.....	Lb.....	.311	.391	.389	.430	.543	.620	.639	.610	.605	.660	.820
Pig lead.....	Lb.....	.039	.058	.069	.075	.094	.114	.109	.104	.080	.061	.065
Spelter.....	Lb.....	.051	.220	.113	.098	.108	.093	.088	.083	.084	.080	.080
Petroleum, crude.....	Bbl....	1.750	1.350	2.600	2.850	3.050	3.100	3.100	3.500	3.500	3.500	3.500
Petroleum, refined, water-white.	Gal....	.120	.120	.120	.120	.120	.120	.120	.130	.130	.130	.140
Gasoline, motor.....	Gal....	.140	.120	.240	.220	.240	.240	.240	.240	.240	.240	2.400

[1] 2,240 pounds.

WHOLESALE PRICES, JULY, 1915 AND 1916, AND JANUARY TO DECEMBER, 1917, COMPARED WITH JULY, 1914—Concluded.

Relative Prices.

Article.	July.			1917							
	1914	1915	1916	Jan.	Apr.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
FOODSTUFFS.											
(a) Animal.											
	$	$	$	$	$	$	$	$	$	$	$
Cattle, good to choice steers	100.0	99.9	108.3	114.2	133.5	136.2	142.9	162.6	159.2	156.1	143.6
Beef, fresh, good native steers	100.0	97.4	104.7	101.9	118.5	121.5	126.7	140.7	140.7	140.7	137.0
Beef, salt, extra mess	100.0	101.4	105.8	134.8	152.2	176.8	171.0	171.0	178.0	182.6	182.6
Hogs, heavy	100.0	83.0	112.0	124.9	180.1	176.3	197.6	209.0	200.6	199.1	192.2
Bacon, short clear sides	100.0	78.8	111.3	117.3	154.8	175.9	186.5	198.6	227.7	226.2	223.4
Hams, smoked, loose	100.0	91.0	107.3	110.2	138.4	135.6	136.2	151.4	161.6	163.8	170.6
Lard, prime, contract	100.0	79.1	128.3	157.1	208.3	197.1	222.5	237.3	242.2	273.5	249.0
Pork, salt, mess	100.0	78.3	115.0	136.5	165.1	178.8	188.1	198.7	204.4	207.4	223.3
Sheep, ewes	100.0	120.5	144.2	204.1	258.2	189.5	196.3	221.7	231.9	224.5	227.5
Mutton, dressed	100.0	114.7	137.9	144.2	173.7	152.6	165.3	189.5	201.1	187.4	197.9
Butter, creamery, extra	100.0	96.7	102.2	140.7	158.5	139.3	148.1	157.4	159.6	163.7	178.1
Eggs, fresh, firsts	100.0	90.4	119.3	219.8	170.6	170.1	181.3	200.0	198.9	231.0	257.8
Milk	100.0	100.0	103.3	170.0	163.3	166.7	200.0	200.0	240.0	256.7	240.0
(b) Vegetable.											
Wheat, No. 1 northern	100.0	155.0	130.5	213.6	265.5	287.8	310.8	247.6	241.9	241.9	241.9
Wheat flour, standard patent	100.0	153.1	132.8	200.6	252.9	277.5	284.5	245.2	228.6	222.6	220.5
Corn, No. 2 mixed	100.0	110.2	113.7	138.2	196.7	287.9	270.6	291.7	277.2	289.6	240.7
Corn meal, fine yellow	100.0	121.1	133.3	186.0	217.5	280.7	363.2	347.4	343.9	343.9	333.3
Oats, standard, in store	100.0	143.4	109.8	150.9	176.7	207.0	161.5	159.3	160.2	179.1	204.9
Rye, No. 2	100.0	167.6	156.3	234.3	300.0	360.2	294.2	300.0	293.1	272.7	294.8
Rye flour, pure, medium straight	100.0	181.1	173.1	248.1	316.0	390.6	327.3	312.4	323.5	323.5	324.9
Barley, fair to good malting	100.0	139.4	140.0	221.4	250.5	261.0	244.5	248.2	245.0	240.3	276.4
Rice, Honduras, head	100.0	90.7	85.2	88.9	90.7	131.5	133.3	129.6	142.6	144.4	146.3
Potatoes, white	100.0	36.8	71.5	148.8	221.2	196.9	121.1	90.7	98.5	94.2	90.2
Sugar, granulated	100.0	138.6	178.6	157.6	194.0	178.6	195.2	195.2	195.2	195.2	190.5
TEXTILES AND LEATHER GOODS.											
Cotton, upland, middling	100.0	70.1	99.3	134.3	154.8	199.2	197.7	173.3	214.5	228.2	233.6
Cotton yarn, carded, 10/1	100.0	74.4	117.4	158.1	167.4	209.3	204.7	195.3	195.3	218.6	230.2
Sheeting, brown, Pepperell	100.0	85.7	111.4	157.1	171.4	200.0	200.0	200.0	207.1	221.4	235.7
Bleached muslin, Lonsdale	100.0	88.2	103.5	129.4	132.9	188.2	188.2	200.0	200.0	200.0	211.8
Wool, fine fleece, scoured	100.0	113.5	132.4	174.1	200.6	257.0	283.5	293.9	287.8	287.3	295.0
Worsted yarn, 2-32's	100.0	130.8	169.2	192.3	200.0	246.2	253.8	261.5	276.9	292.3	307.7
Clay worsted suitings, 16-ounce	100.0	113.6	150.6	160.0	201.4	244.7	274.8	274.8	274.8	286.1	302.9
Storm serge, all-wool, 50-inch	100.0	106.7	150.5	179.6	179.6	232.9	247.5	247.5	247.5	247.5	247.5
Hides, packers', heavy native steers	100.0	133.0	139.2	172.7	157.2	170.1	164.9	170.1	174.2	182.0	180.4
Leather, chrome calf	100.0	101.8	167.3	256.4	216.4	196.4	196.4	183.6	196.4	203.6	203.6
Leather, sole, oak	100.0	104.2	133.7	175.8	175.8	171.6	174.7	174.7	174.7	176.8	176.8
Shoes, men's, Goodyear welt, vici-calf, blucher	100.0	103.2	119.0	150.8	150.8	150.8	150.8	150.8	150.8	150.8	150.8
Shoes, women's, Goodyear welt, gun metal, button	100.0	104.0	121.7	154.9	154.9	154.9	154.9	154.9	154.9	154.9	154.9
MINERAL PRODUCTS.											
Coal, anthracite, chestnut	100.0	99.2	105.1	109.5	99.9	113.2	114.7	118.6	118.9	119.1	125.6
Coal, bituminous, run of mine	100.0	100.0	100.0	204.5	227.3	227.3	200.0	150.0	150.0	170.5	170.5
Coke, furnace, prompt shipment	100.0	87.5	137.5	475.0	375.0	750.0	500.0	500.0	300.0	300.0	300.0
Copper, electrolytic	100.0	148.4	197.8	220.1	253.7	237.3	216.4	188.8	175.4	175.4	175.4
Copper wire, bare, No. 8	100.0	141.9	219.6	248.6	248.6	228.4	214.9	201.4	201.4	194.6	187.8
Pig iron, Bessemer	100.0	100.3	147.3	241.3	283.2	385.6	367.4	322.3	250.0	250.0	250.0
Steel billets	100.0	112.5	215.8	331.6	388.2	526.3	452.6	348.7	259.9	250.0	250.0
Tin plate, domestic, coke	100.0	94.8	175.4	209.0	238.8	358.2	358.2	358.2	.....	231.3	231.3
Pig tin	100.0	125.7	125.0	138.3	174.4	199.4	205.5	196.1	194.2	212.2	257.2
Pig lead	100.0	147.4	175.6	192.3	239.7	292.3	279.5	266.6	205.1	156.4	166.6
Spelter	100.0	435.6	222.8	193.1	212.9	182.4	172.5	162.7	164.7	156.9	156.9
Petroleum, crude	100.0	77.1	148.6	162.9	174.3	177.1	177.1	200.0	200.0	200.0	200.0
Petroleum, refined, water-white	100.0	100.0	100.0	100.0	100.0	100.0	100.0	108.3	108.3	108.3	116.6
Gasoline, motor	100.0	85.7	171.4	157.1	171.4	171.4	171.4	171.4	171.4	171.4	171.4

INDEX NUMBERS, BY GROUPS OF COMMODITIES, 1913 TO 1917.

The great increase that has taken place in the wholesale prices of important commodities in the United States since 1913, the year preceding the outbreak of war in Europe, is shown by information collected by the Bureau of Labor Statistics of the United States Department of Labor. This increase has been particularly great among farm products, foods, clothing, metal products, and drugs and chemicals. During 1914 the prices of most commodities increased between January and September, but declined rapidly in the closing months of the year, due to the prevailing business stagnation brought about by the war. Among articles classed as fuel and lighting, metals and metal products, and lumber and building materials prices declined throughout the year.

In 1915 a reaction occurred and prices again advanced, reaching high levels late in the year. Since January, 1916, the rise in wholesale prices has been unprecedented. The bureau's weighted index number, based on 292 separate articles or price series, stood at 181 in December, 1917, as compared with 110 in January, 1916, and 100 as the average for the 12 months of 1913. In the same period, January, 1916, to December, 1917, the index number of farm products increased from 108 to 204, that of food articles from 114 to 185, and that of cloths and clothing from 110 to 206. These facts are clearly brought out in the table which follows:

INDEX NUMBERS OF WHOLESALE PRICES, BY GROUPS OF COMMODITIES AND BY YEARS AND MONTHS, 1913 TO 1917.

[1913=100.]

Year and month.	Farm products.	Food, etc.	Cloths and clothing.	Fuel and lighting.	Metals and metal products.	Lumber and building materials.	Drugs and chemicals.	House furnishing goods.	Miscellaneous.	All commodities.
1913: Av. for year	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
January	97	99	100	99	107	100	101	100	100	99
February	97	98	101	102	105	101	100	100	100	100
March	98	97	101	102	102	101	100	100	99	99
April	97	96	100	99	102	101	100	100	99	98
May	98	95	100	99	102	101	100	100	99	98
June	100	99	99	100	100	101	99	100	100	100
July	101	101	100	100	98	101	99	100	102	101
August	101	104	100	100	99	99	99	100	101	101
September	104	105	100	100	99	99	100	100	101	102
October	103	102	100	100	99	98	100	100	100	101
November	101	105	100	99	96	98	101	100	100	101
December	100	101	99	96	92	98	101	100	99	99
1914: Av. for year	**103**	**103**	**98**	**92**	**87**	**97**	**103**	**103**	**97**	**99**
January	101	102	99	99	92	98	101	103	98	100
February	102	100	99	99	92	99	101	103	98	99
March	102	97	100	99	92	99	101	103	99	99
April	103	95	100	98	91	99	101	103	99	98
May	104	96	100	93	87	98	101	103	99	98
June	104	100	100	90	86	98	101	103	98	98
July	104	103	100	90	85	97	101	103	97	99
August	109	112	100	89	85	97	100	103	97	102
September	108	116	99	87	86	96	106	103	98	103
October	103	107	98	87	83	96	109	103	95	99
November	101	106	97	87	81	95	108	103	95	98
December	99	105	97	87	83	94	107	103	96	97
1915: Av. for year	**105**	**104**	**100**	**87**	**97**	**94**	**113**	**101**	**98**	**100**
January	102	106	96	86	83	94	106	101	98	98
February	105	108	97	86	87	95	104	101	97	100
March	105	104	97	86	89	94	103	101	97	99
April	107	105	98	84	91	94	102	101	97	99
May	109	105	98	83	96	94	102	101	96	100
June	105	102	98	83	100	93	104	101	96	99
July	108	104	99	84	102	94	107	101	96	101
August	108	103	99	85	100	93	109	101	96	100
September	103	100	100	88	100	93	114	101	96	98
October	105	104	103	90	100	93	121	101	99	101
November	102	108	105	93	104	95	141	101	100	102
December	103	111	107	96	114	97	146	101	103	105
1916: Av. for year	**122**	**126**	**127**	**115**	**148**	**101**	**143**	**110**	**120**	**123**
January	108	114	110	102	126	99	140	105	107	110
February	109	114	114	102	132	100	144	105	106	111
March	111	115	117	104	141	101	147	105	109	114
April	114	117	119	105	147	102	150	109	111	116
May	116	119	122	104	151	102	153	109	114	118
June	116	119	123	105	149	101	150	109	121	118
July	118	121	126	105	145	98	143	111	122	119
August	126	128	128	107	145	100	132	111	123	123
September	131	134	131	110	148	100	132	111	126	127
October	136	140	137	128	151	101	135	114	132	133
November	145	150	146	150	160	103	142	115	135	143
December	141	146	155	163	185	105	143	115	136	146
1917: Av. for year	**188**	**177**	**181**	**169**	**208**	**124**	**185**	**155**	**153**	**175**
January	147	150	161	170	183	106	144	128	137	150
February	150	160	162	178	190	108	146	129	138	155
March	162	161	163	181	199	111	151	129	140	160
April	180	182	169	178	208	114	155	151	144	171
May	196	191	173	187	217	117	164	151	147	181
June	196	187	179	193	239	127	165	162	152	184
July	198	180	187	183	257	132	185	165	150	185
August	204	180	193	159	249	133	198	165	155	184
September	203	178	193	155	228	134	203	165	154	182
October	207	183	194	143	182	134	242	165	162	180
November	211	184	202	151	173	135	232	175	164	182
December	204	185	206	153	173	135	230	175	164	181

COMPARISON OF PRICE CHANGES, WHOLESALE AND RETAIL, IN THE UNITED STATES.

Figures compiled by the Bureau of Labor Statistics furnish a comparison of wholesale and retail price changes among a number of important food articles since 1913. In collecting data for the comparison it was found that in some instances slight differences of grade or quality existed between the articles for which wholesale prices were obtainable and those for which retail prices could be secured. It was found impracticable, also, in most instances to obtain both kinds of quotations for the same date. The retail prices shown are uniformly those prevailing on the 15th of the month, while the wholesale prices are for a variable date, usually several days in advance of the 15th. For these reasons exact comparison of retail with wholesale prices can not be made. The figures are believed to be of interest, however, in showing price variations in the retail as compared with the wholesale markets.

In the following table the wholesale price is in each case the mean of the high and the low quotations on the date selected as published in leading trade journals, while the retail price is the average of all prices reported directly to the bureau by retailers for the article and city in question. The initials W. and R. are used to designate wholesale and retail prices, respectively.

WHOLESALE AND RETAIL PRICES OF IMPORTANT FOOD ARTICLES IN SELECTED CITIES.

[The initials W=wholesale; R=retail.]

Article and city.	Unit.	1913: Average for year.	July.			1917.					
			1914	1915	1916	Jan.	Apr.	July.	Oct.	Nov.	Dec.
Beef:											
Steer loin ends (hips), Chic..W.	Lb..	$0.168	$0.175	$0.160	$0.205	$0.200	$0.200	$0.190	$0.235	$0.235	$0.325
Sirloin steak, Chicago.....R.	Lb..	.232	.260	.258	.281	.265	.293	.302	.306	.297	.392
Beef:											
Steer rounds, No. 2, Chic....W.	Lb..	.131	.145	.143	.145	.120	.155	.170	.190	.180	.170
Round steak, Chicago.....R.	Lb..	.202	.233	.228	.241	.227	.256	.266	.273	.265	.260
Beef:											
Steer ribs, No. 2, Chicago....W.	Lb..	.157	.165	.145	.175	.160	.210	.200	.230	.190	.200
Rib roast, Chicago.....R.	Lb..	.195	.212	.213	.229	.223	.241	.246	.247	.245	.242
Beef:											
No. 2 loins, New York.....W.	Lb..	.158	.183	.170	.200	.180	.190	.190	.275	.220	.220
Sirloin steak, New York.....R.	Lb..	.259	.274	.282	.294	.284	.318	.337	.356	.326	.335
Beef:											
No. 2 rounds, New York....W.	Lb..	.121	.135	.135	.145	.130	.170	.175	.190	.183	.180
Round steak, New York.....R.	Lb..	.249	.270	.271	.289	.275	.315	.337	.360	.335	.342
Beef:											
No. 2 ribs, New York.....W.	Lb..	.151	.165	.160	.180	.160	.200	.190	.275	.225	.225
Rib roast, New York.....R.	Lb..	.218	.225	.227	.243	.238	.270	.279	.298	.279	.286
Pork:											
Loins, Chicago.....W.	Lb..	.149	.165	.150	.165	.165	.240	.250	.330	.250	.245
Chops, Chicago.....R.	Lb..	.190	.204	.201	.217	.227	.285	.292	.358	.312	.298
Pork:											
Loins, Western, New York..W.	Lb..	.152	.163	.153	.165	.170	.235	.235	.300	.260	.270
Chops, New York.....R.	Lb..	.217	.230	.217	.239	.248	.319	.326	.399	.339	.345
Bacon:											
Short clear sides, Chicago....W.	Lb..	.127	.139	.113	.159	.158	.218	.247	.318	.316	.321
Sliced, Chicago.....R.	Lb..	.294	.318	.315	.328	.316	.395	.439	.475	.497	.492

WHOLESALE AND RETAIL PRICES OF IMPORTANT FOOD ARTICLES IN SELECTED CITIES—Concluded.

Article and city.	Unit.	1913: Average for year.	July.			1917					
			1914	1915	1916	Jan.	Apr.	July.	Oct.	Nov.	Dec.
Ham:											
Smoked, Chicago.....W.	Lb..	$0.166	$0.175	$0.163	$0.190	$0.188	$0.243	$0.243	$0.283	$0.283	$0.303
Smoked, sliced, Chicago.....R.	Lb..	.266	.338	.328	.349	.333	.382	.414	.439	.445	.429
Lard:											
Prime contract, New York..W.	Lb..	.110	.104	.080	.133	.159	.215	.201	.246	.280	.261
Pure, tub, New York.....R.	Lb..	.160	.156	.151	.168	.213	.263	.274	.313	.331	.337
Lamb:											
Dressed, round, Chicago.....W.	Lb..	.149	.170	.190	.190	.200	.220	.260	.270	.230	.240
Leg of, yearling, Chicago.....R.	Lb..	.198	.219	.208	.231	.232	.263	.287	.314	.282	.286
Poultry:											
Dressed fowls, New York...W.	Lb..	.182	.188	.175	.215	.220	.265	.248	.285	.235	.250
Dressed hens, New York.....R.	Lb..	.214	.220	.219	.256	.261	.293	.287	.323	.295	.307
Butter:											
Creamery, extra, Chicago....W.	Lb..	.310	.265	.265	.275	.370	.440	.375	.435	.438	.475
Creamery, extra, Chicago....R.	Lb..	.362	.312	.322	.335	.438	.484	.432	.487	.492	.530
Butter:											
Creamery, extra, New York.W.	Lb..	.323	.280	.270	.285	.395	.459	.395	.443	.445	.493
Creamery, extra, New York .R.	Lb..	.382	.328	.336	.346	.460	.513	.453	.515	.516	.548
Butter:											
Creamery, extra, San Fran..W.	Lb..	.317	.245	.265	.255	.355	.390	.385	.460	.435	.450
Creamery, extra, San Fran..R.	Lb..	.388	.329	.338	.333	.425	.452	.455	.545	.501	.538
Cheese:											
Whole milk, Chicago.....W.	Lb..	.142	.133	.145	.145	.218	.223	.216	.246	.228	.221
Full cream, Chicago.....R.	Lb..	.....	.....	.229	.242	.321	.327	.339	.368	.374	.366
Cheese:											
Whole milk, State, N.Y.....W.	Lb..	.154	.144	.146	.151	.220	.245	.238	.255	.225	.228
Full cream, American, N.Y..R.	Lb..	.....	.....	.229	.228	.301	.335	.328	.340	.338	.346
Cheese:											
Fancy, San Francisco.....W.	Lb..	.159	.125	.115	.135	.180	.215	.200	.220	.230	.230
Full cream, San Francisco...R.	Lb..	.....	.....	.200	.229	.242	.297	.297	.316	.324	.329
Milk:											
Fresh, Chicago.....W.	Qt..	.038	.036	.037	.036	.045	.054	.047	.074	.070	.070
Fresh, bottled, Chicago.....R.	Qt..	.080	.080	.080	.081	.100	.100	.100	.129	.119	.119
Milk:											
Fresh, New York.....W.	Qt..	.035	.030	.030	.031	.051	.049	.050	.072	.077	.072
Fresh, bottled, New York...R.	Qt..	.090	.090	.090	.090	.100	.109	.114	.138	.140	.140
Milk:											
Fresh, San Francisco.....W.	Qt..	.039	.039	.038	.038	.038	.038	.043	.059	.059	.059
Fresh, bottled, San Fran....R.	Qt..	.100	.100	.100	.100	.100	.100	.100	.121	.121	.121
Eggs:											
Fresh, firsts, Chicago.....W.	Doz.	.226	.188	.168	.218	.485	.305	.310	.370	.415	.485
Strictly fresh, Chicago.....R.	Doz.	.292	.261	.248	.296	.525	.376	.406	.469	.496	.588
Eggs:											
Fresh, firsts, New York.....W.	Doz.	.249	.215	.200	.241	.505	.330	.350	.400	.470	.555
Strictly fresh, New York....R.	Doz.	.397	.333	.326	.372	.667	.424	.477	.627	.647	.731
Eggs:											
Fresh, San Francisco.....W.	Doz.	.268	.230	.220	.240	.380	.280	.320	.435	.520	.450
Strictly fresh, San Francisco..R.	Doz.	.373	.338	.310	.333	.480	.374	.392	.608	.638	.596
Flour:											
Winter patent, Kansas City..W.	Bbl.	4.012	3.550	6.225	4.750	8.950	11.450	11.150	10.500	10.500	10.000
Aristos, Kansas City.....R.	Bbl.	5.923	5.733	7.800	6.700	10.600	13.689	13.680	13.066	12.760	12.150
Flour:											
Standard patent, Minn.....W.	Bbl.	4.584	4.500	7.025	6.050	9.450	11.025	12.000	10.550	10.200	10.150
Pillsbury's Best, Minn.....R.	Bbl.	5.600	5.800	8.200	7.000	10.800	13.200	13.424	11.984	11.456	11.300
Flour:											
Fancy patent, St. Louis.....W.	Bbl.	4.181	3.700	5.800	4.925	8.675	11.375	11.375	11.250	11.100	10.525
Gold Medal, St. Louis.....R.	Bbl.	6.077	6.000	8.187	6.933	10.587	12.853	13.200	13.100	12.267	12.300
Meal, corn:											
Fine, yellow, New York.....W.	Lb..	.014	.014	.017	.019	.027	.031	.040	.049	.049	.048
Fine, yellow, New York.....R.	Lb..	.034	.034	.035	.042	.051	.057	.070	.082	.083	.085
Beans:											
Medium, choice, N.Y.....W.	Lb..	.040	.040	.058	.098	.108	.130	.154	.138	.149	.141
Navy, white, New York.....R.	Lb..	.....	.....	.081	.113	.149	.162	.188	.185	.187	.186
Potatoes:											
White, good to choice, Chic..W.	Bu..	.614	1.450	.400	.975	1.750	2.800	2.625	1.135	1.950	1.080
White, Chicago.....R.	Bu..	.900	1.640	.700	1.856	2.370	3.455	2.975	1.660	1.623	1.562
Rice:											
Head, New Orleans.....W.	Lb..	.050	.054	.049	.046	.048	.049	.071	.077	.078	.079
Head, New Orleans.....R.	Lb..	.....	.....	.075	.074	.074	.088	.101	.100	.101	.108
Sugar:											
Granulated, New York.....W.	Lb..	.043	.042	.059	.075	.066	.081	.074	.082	.082	.080
Granulated, New York.....R.	Lb..	.049	.046	.063	.079	.074	.087	.034	.097	.100	.099

Relative wholesale and retail prices, expressed as percentages of the average money prices for 1913, are contained in the table which follows. A few articles included in the preceding table are omitted from this one, owing to lack of satisfactory data for 1913. It will be seen from the table that since the beginning of the present year the retail prices of most of the commodities included in the exhibit have fluctuated at a relatively lower level, as compared with their 1913 base, than have the wholesale prices. This is particularly noticeable in the case of bacon, lard, dressed lamb, butter, milk, eggs, flour, corn meal, and potatoes. Comparing December prices with the average for 1913, it is seen that only 2 articles of the 28 included in the table show a larger per cent of increase in the retail than in the wholesale price. These are dressed poultry and granulated sugar at New York. In most of the other months of 1917 the retail prices of these articles were relatively lower than were the wholesale prices.

RELATIVE WHOLESALE AND RETAIL PRICES OF IMPORTANT FOOD ARTICLES IN SELECTED CITIES (AVERAGE FOR 1913=100).

[The initials W=wholesale; R=retail.]

Article and city.	1913: Average for year.	July.			1917					
		1914	1915	1916	Jan.	Apr.	July.	Oct.	Nov.	Dec.
Beef:										
Steer loin ends (hips), Chicago..W..	100	104	95	122	119	119	113	140	140	140
Sirloin steak, Chicago.....R..	100	112	111	121	114	126	130	132	128	126
Beef:										
Steer rounds, No. 2, Chicago....W..	100	111	109	111	92	118	130	145	137	130
Round steak, Chicago.....R..	100	115	113	119	112	127	132	135	131	129
Beef:										
Steer ribs, No. 2, Chicago.....W..	100	105	92	111	102	134	127	146	121	127
Rib roast, Chicago.....R..	100	109	109	117	114	124	126	127	126	124
Beef:										
No. 2 loins, city, New York.....W..	100	116	108	127	114	120	120	174	139	139
Sirloin steak, New York.....R..	100	106	109	114	110	123	130	137	126	129
Beef:										
No. 2 rounds, city, New York...W..	100	112	112	120	107	140	145	157	151	149
Round steak, New York.....R..	100	108	109	116	110	127	135	145	135	137
Beef:										
No. 2 ribs, city, New York.....W..	100	109	106	119	106	132	126	182	149	149
Rib roast, New York.....R..	100	103	104	111	109	124	128	137	128	131
Pork:										
Loins, Chicago.....W..	100	111	101	111	111	161	168	221	168	164
Chops, Chicago.....R..	100	107	106	114	119	150	154	188	164	157
Pork:										
Loins, western, New York.....W..	100	107	101	109	112	155	155	197	171	178
Chops, New York.....R..	100	106	100	110	114	147	150	184	156	159
Bacon:										
Short, clear sides, Chicago.....W..	100	109	89	125	124	172	194	250	249	253
Sliced, Chicago.....R..	100	108	107	112	107	134	149	162	169	167
Hams:										
Smoked, Chicago.....W..	100	105	98	114	113	146	146	170	170	183
Smoked, sliced, Chicago.....R..	100	127	123	131	125	144	156	165	167	161
Lard:										
Prime, contract, New York.....W..	100	95	73	121	145	195	183	224	225	237
Pure, tub, New York.....R..	100	98	94	105	133	164	171	196	207	211
Lamb:										
Dressed, round, Chicago.....W..	100	114	128	128	134	148	174	181	154	161
Leg of, yearling, Chicago.....R..	100	111	105	117	117	133	145	159	142	144
Poultry:										
Dressed fowls, New York.....W..	100	103	96	118	121	146	136	157	129	137
Dressed hens, New York.....R..	100	103	102	120	122	137	134	151	138	143
Butter:										
Creamery, extra, Chicago.....W..	100	85	85	89	119	142	121	140	141	153
Creamery, extra, Chicago.....R..	100	86	89	93	121	134	119	135	136	146

RELATIVE WHOLESALE AND RETAIL PRICES OF IMPORTANT FOOD ARTICLES IN SELECTED CITIES (AVERAGE FOR 1913=100)—Concluded.

Article and city.	1913: Average for year.	July.			1917					
		1914	1915	1916	Jan.	Apr.	July.	Oct.	Nov.	Dec.
Butter:										
Creamery, extra, New York.....W..	100	87	84	88	122	139	122	137	138	153
Creamery, extra, New York.....R..	100	86	88	91	120	134	119	135	135	143
Butter:										
Creamery, extra, San Francisco.W..	100	77	84	80	112	123	121	145	137	142
Creamery, extra, San Francisco .R..	100	85	87	86	110	116	117	140	129	139
Milk:										
Fresh, Chicago.....W..	100	95	97	95	118	142	124	195	184	184
Fresh,bottled,delivered,Chicago.R..	100	100	100	101	125	125	125	161	149	149
Milk:										
Fresh, New York.....W..	100	86	86	89	146	140	143	206	220	206
Fresh, bottled, delivered, N. Y..R..	100	100	100	100	111	121	127	153	156	156
Milk:										
Fresh, San Francisco.....W..	100	100	97	97	97	97	110	151	151	151
Fresh, bottled, San Francisco...R..	100	100	100	100	100	100	100	121	121	121
Eggs:										
Fresh, firsts, Chicago.....W..	100	83	74	96	215	135	137	164	184	215
Strictly fresh, Chicago.....R..	100	89	85	101	180	129	139	161	170	201
Eggs:										
Fresh, firsts, New York.....W..	100	86	80	97	203	133	141	161	189	223
Strictly fresh, New York.....R..	100	89	82	94	168	107	120	158	163	184
Eggs:										
Fresh, San Francisco.....W..	100	86	82	90	142	105	119	162	194	168
Strictly fresh, San Francisco....R..	100	91	83	89	129	100	105	163	171	160
Flour:										
Winter patent, Kansas City....W..	100	89	155	118	223	235	278	262	262	249
Aristos, Kansas City.....R..	100	97	132	113	179	231	231	221	215	205
Flour:										
Standard patent, Minneapolis..W..	100	98	153	132	206	241	262	230	223	221
Pillsbury's Best, Minneapolis...R..	100	104	146	125	193	236	240	214	205	202
Flour:										
Fancy patent, St. Louis.....W..	100	88	139	118	207	272	272	269	265	252
Gold Medal, St. Louis.....R..	100	99	135	114	174	212	217	216	202	202
Meal, corn:										
Fine, yellow, New York.....W..	100	100	121	136	193	221	286	350	350	343
Fine, yellow, New York.....R..	100	100	103	124	150	168	206	241	244	250
Potatoes:										
White, good to choice, Chicago..W..	100	236	65	159	285	456	428	185	191	176
White, Chicago.....R..	100	182	78	151	263	384	331	184	180	174
Sugar:										
Granulated, New York.....W..	100	98	137	174	153	188	172	191	191	186
Granulated, New York.....R..	100	94	129	161	151	178	171	198	204	202

CHANGES IN COST OF ARMY AND NAVY RATION.

As an index of the rise in prices in the United States fluctuations in the annual and per diem cost of the Army and Navy ration may be of interest. A brief tabular statement showing the changes of the actual annual and per diem cost per man for subsistence in the United States Army and Navy has been compiled from the annual report of the Quartermaster General of the Army and of the Paymaster General of the Navy, and the result is presented in the following table:

CHANGES IN COST OF THE ARMY AND NAVY RATION, 1911 TO 1917.

Year.	Cost of Army ration.		Cost of Navy ration.		Relative: 1917=100.	
	Annual.	Daily.	Annual.	Daily.	Army.	Navy.
		Cents.		*Cents.*		
1911	.....	.....	$134.72	36.91	.....	84.2
1912	.....	.....	133.55	36.59	.....	83.4
1913	$108.75	29.79	137.28	37.61	89.6	85.8
1914	111.03	30.42	135.45	37.11	91.5	84.7
1915	100.38	27.50	133.41	36.55	82.7	83.4
1916	102.17	27.99	137.42	37.65	84.2	85.9
1917	121.36	33.25	159.91	43.81	100.0	100.0

COURSE OF RETAIL PRICES OF FOOD IN THE UNITED KINGDOM, 1914 TO 1917.

The following table, taken from the Labor Gazette of the British Ministry of Labor for December, 1917, shows by months the percentage of increase in retail prices of food in the United Kingdom since July, 1914. The figures are a correct measure of the general level of prices, on the assumption that the prewar quantities of the various articles were bought throughout the period covered, but as it is well known that the articles were not always obtainable in the same quantity it is quite clear that the figures should not be used as a measure of the rise in the actual expenditure on food.

AVERAGE PERCENTAGE INCREASE SINCE JULY, 1914, IN RETAIL PRICES OF FOOD.

Month (beginning of).	1914	1915	1916	1917
January	.....	18	45	87
February	.....	22	47	89
March	.....	24	48	92
April	.....	24	49	94
May	.....	26	55	98
June	.....	32	59	102
July	.....	32½	61	104
August	[1] 15	34	60	102
September	10	35	65	106
October	12	40	68	97
November	13	41	78	106
December	16	44	84	105

[1] This percentage relates to prices on Aug. 8, 1914. On that date they were not so high as three or four days earlier.

The average percentage of increase on December 1, 1917, as compared with July, 1914, for certain specified articles of food in the descending order of the magnitude of the increase is shown in the following statement:

	Per cent.		Per cent.
Fish	191	Eggs (see text)	95
Sugar (granulated)	188	Cheese	92
Meat, imported	[1] 115 to 161	Meat, British	[1] 75 to 100
Bacon	134	Margarine	65
Tea	107	Bread	54
Butter	99	Flour	52
Milk	96	Potatoes	39

For eggs the percentage shown relates to July, 1917, and not to December, 1917, as the seasonal change in prices of eggs is so great that the December percentage would be valueless for comparative purposes. With regard to meat it may be remarked that the diversity in percentages arises from the disparity in the prices of different cuts, and that the actual amount of average increase shows much less variation, the range 6½d. to 8¼d. (13 to 17 cents) per pound covering six of the eight cuts included in the figures.

[1] According to description.

The figures showing the percentage of increase between July 14, 1914, and December 1, 1917, in the retail prices of a number of groceries of less importance in working-class dietaries are given in the following statement:

	Per cent.		Per cent.
Lentils, split (red)	230	Milk, condensed	120
Peas, split (yellow)	210	Beans, butter	110
Sago	190	Jam	110
Tapioca	160	Rice, Rangoon	100
Sirup	160	Cocoa (loose)	95
Beans, haricot	140	Coffee	30
Oatmeal, Scotch	140		

The average rise with these secondary items is clearly greater than with the principal foodstuffs.

CAUSES FOR INCREASE OF PRICES OF CERTAIN COMMODITIES IN GREAT BRITAIN.

In 1916 a departmental committee of the British Board of Trade was appointed to determine the causes for the increase of prices of certain commodities since the beginning of the war. On September 22, 1916, this committee submitted an interim report on meat, milk, and bacon prices, a summary of which appeared in the MONTHLY REVIEW for January, 1917 (pp. 51 to 56). On November 15 and December 31, following, the second and third (final) interim reports, respectively, were filed with the president of the Board of Trade, the two reports constituting a single pamphlet of 22 pages.[1] As a part of the second report, which takes up the prices of bread, flour, and wheat, the committee has made a statement concerning the closely connected problems of the shortage of shipping and the increase in freight charges. The third interim report deals with potato, tea, and sugar prices.

Before the war the average price of a 4-pound loaf of bread, according to the report, was slightly over 5¾d. (11.7 cents). A material advance, beginning in December, 1914, and continuing until the following June, raised the average price to 8½d. (17.2 cents) per four pounds. A gradual fall in price then occurred, succeeded by another advance during the winter of 1915–16, when the average price was nearly 9d. (18.3 cents), and by a still further advance in November, 1916, when the average price was just over 9½d. (19.3

[1] Great Britain. Departmental committee on prices. Committee appointed by the Board of Trade to investigate the principal causes which have led to the increase of prices of commodities since the beginning of the war. Second and third interim reports. Bread, flour, and wheat prices; freight charges; and potato, tea, and sugar prices. London, 1917. 22 pp. Price 3d., net.

cents), or an increase of approximately 65.2 per cent over the prewar price.

A rise in the price of flour is given as the principal cause for this increase in the price of bread. A table in the report shows that at Liverpool, in the period January to July, 1914, the price of bakers' grade flour had advanced from 25s. 8d. ($6.25) per sack of 280 pounds to 53s. ($12.90) in October, 1916, an increase of 106.4 per cent. By the beginning of November, 1916, it is stated, the average retail price of household flour in the United Kingdom, which had been about 10½d. (21.3 cents) per 7 pounds before the war, had risen to 1s. 6d. (36.5 cents), an increase of 71.4 per cent. The increase in the wholesale price, in turn affecting the retail price, is declared to have been due to the great advance in the cost of wheat to the millers. The same table noted above shows an increase in the prices of wheat ranging from 32s. 3d. ($7.85) for British wheat before the war to 60s. 7d. ($14.74) in October, 1916, an increase of 87.8 per cent; and from 35s. 7d. ($8.66) for Canadian wheat at London before the war to 77s. ($18.74) for the same wheat at London in October, 1916, an increase of 116.4 per cent.

This advance in wheat prices the report attributes to several factors, among which are inaccessibility of the supplies of Russia and the Balkan States, heavy consumption by the armies, the necessity of accumulating emergency stocks in the countries of the entente, combined with the requirements of several neutral countries, and the decrease in tonnage available to transport wheat resulting in a rise in ocean freight charges.

The committee found in its investigation of the matter of freight rates as related to the increase in the prices of wheat and flour, and indirectly bread, a wide difference in tariffs in the period January to March, 1914, as compared with the period July to September, 1916. To illustrate, a table is given showing that the ocean freight rate on grain from New York was 1s. 2d. (28.4 cents) per quarter (28 pounds) in the first period and 9s. 8d. ($2.35) in the second period, an increase of 729 per cent; and that the rate on grain from Argentina (down river) was 9s. 10d. ($2.39) per ton during the first period and 140s. 6d. ($34.19) during the second period, an increase of 1,329 per cent. The chief reasons ascribed by the committee for this condition are shortage in the amount of shipping available for mercantile purposes due principally to its diversion to naval and military uses, the increased cost of working the ships, the withdrawal of the German mercantile marine, and the shortage of labor and congestion at the docks. The committee at this point gives a brief review of the measures taken by the Government to control British shipping, thus effecting a reduction in freight rates, many of the rates being

considerably below the market quotations. The advisability of further governmental control is suggested. The second interim report of the committee concludes with the following recommendations:

1. Since the sharp rise in the price of home-grown supplies of wheat will, in our opinion, continue unless there is prompt Government action, we recommend that the Government should immediately fix such a maximum price to the producer for marketable home-grown wheat as will protect the public, while securing to the farmer a reasonable profit.

2. That simultaneously with this measure, fair contract prices, at which the farmers of the United Kingdom should be asked to grow wheat and oats for the Government in the cereal year 1916–17, should be fixed and published.

3. That maximum prices, corresponding with the cost of wheat, both home-grown and imported, as determined by the Government, should be immediately fixed and announced for home-milled flour and offals in the cereal year 1916–17.

4. That the Government should add control of the import of maize to its control of the import of wheat.

5. That the Government of India should at once take steps to induce native cultivators to place as large an area as possible under cultivation for wheat to be harvested in the cereal year 1916–17, and that, if necessary, the home Government should guarantee a contract price.

6. That the Government of the United Kingdom should consider the desirability of discussing with the Government of Egypt the suitability for Egypt of a policy similar to that recommended for India, including a guarantee by the Government of the United Kingdom.

7. That the British mercantile marine should be further controlled by the Government to the end that foods and the raw materials of essential industries shall have precedence of other goods, and be carried at fair and reasonable rates.

8. The congestion of shipping in British ports, referred to in our previous report, has not, we fear, been wholly remedied. A more serious congestion, further, appears to have arisen in certain allied ports. We therefore urge anew that much waste of tonnage occurs through such congestion, and that it is the pressing duty of our own and the allied Governments specially concerned to remedy the evil.

THIRD INTERIM REPORT.

The third interim report of the departmental committee on prices, submitted on December 30, 1916, is confined to a consideration of increases in the prices of potatoes, tea, and sugar. As to potatoes, it seems that no serious increase occurred after the outbreak of the war until April, 1916, when the average price was 151s. 6d. ($36.86) per ton, as compared with 87s. 6d. ($21.29) in June, 1914, an increase of 73 per cent. This price rose to 245s. ($59.61) in June, 1916, an increase of 180 per cent over the June, 1914, price. This rise in price, the committee states, was due to reductions in the quantity brought to market, the feeding of potatoes to live stock, bad weather when the crop was ready for digging, military drain on farm labor, a falling off in the acreage planted, an increase in the cost of production, and, possibly, a certain amount of speculation, combined with undue withholding of supplies from market by large growers and dealers.

The retail price of tea was found to have increased, since the war began, approximately 50 per cent, inclusive of import duty, the average price just preceding the report of the committee being rather more than 9d. (18.3 cents) per pound in excess of the price in July, 1914. Of this increase, 7d. (14.2 cents) is accounted for by increased taxation. The chief causes given for this advance in price are said to be difficulties in maintaining supplies, owing to scarcity of shipping, the risk of ocean transport, and also a strong competitive demand arising from heavy Army requirements and the desire of traders to maintain adequate stocks to provide for the needs of their customers. The evidence also seemed to indicate heavy speculative buying.

The rise in the price of sugar (exclusive of duty) since the beginning of the war has been proportionately greater than that of any of the other main articles of food, declares the report, the average price of white granulated sugar having increased by 170 per cent in the United Kingdom generally. At the beginning of the war the price was approximately 2d. (4.1 cents) per pound; in December, 1916, at the time of this report, it was about 5½d. (11.2 cents). A sudden rise immediately after the beginning of the war is accounted for by excited buying on the part of the public, combined with the stoppage of imports from Germany and Austria-Hungary, and with interruptions to shipments from other quarters. The situation was relieved by the Government, which purchased large supplies and appointed a royal commission to take them over and generally to control the further importation and the distribution. But the relief was only temporary; decreased supplies caused a further advance in price. Further factors, noted by the report, in the rise of prices, especially during 1916, were an increase in the charges for docking and handling in the ports and in the working expenses, including wages, cost of conveyance, packages, petrol, horse keeping, repairs, etc., at the refineries and in the different stages of distribution. The report says:

> The refiners' profits are limited, their selling prices being prescribed by the royal commission on a basis regulated in accordance with the price at which the raw sugar imported is issued to them. In addition, any profit made in excess of the prewar figures plus an agreed percentage is recovered by the royal commission. The profits of the wholesale distributors are also limited to 1¾ per cent of the price, including duty * * *. The Commission itself aims at adding only such a fraction to the cost as will meet insurance and working expenses, and provide a sufficient reserve fund to enable uniformity of price to be maintained and to provide a balance in hand to meet any possible reduction in prices at the close of the war.
>
> Wholesale prices being thus regulated by the royal commission, the prices charged by retailers are also watched. Owing to the variations in the cost of transport from the ports to different towns, and in the terms upon which dif-

ferent traders purchase their supplies, no attempt is made to prescribe a uniform retail price for the country as a whole; but action is taken to deal with any efforts which may be made by individual traders to exact grossly excessive prices. For standard granulated sugar, the present wholesale price to the first-hand buyers, including duty, is 41s. 7½d. [$10.13] per hundredweight (less 1¾ per cent) which, after allowing for a fair profit to the distributors, will in most cases permit the retailer to sell at 5d. [10.1 cents] per pound at the port. When the sugar has to travel to a place in the country ordinarily well served by transport facilities, it is considered that 5½d. [10.7 cents] will usually give a fair rate of profit to the retailer.

The shortage during 1916, and consequent rise in prices, was, however, due primarily, it was found, to the scarcity of available shipping which made it necessary in the national interests to reduce the amount of tonnage placed at the disposal of the sugar commission and by the increase in the army requirements of sugar.

Summarizing, the following table indicates the changes in prices of commodities noted in this article:

RISE IN PRICES OF CERTAIN COMMODITIES IN GREAT BRITAIN DUE TO THE WAR.

Commodity.	Unit.	Average price July, 1914.	Average price June, 1915.	Average price October, 1916.	Per cent of increase, 1916 over 1914.
Bread	4-pound loaf	$0.117	$0.172	$0.203	73.5
Flour [1]	280-pound sack	6.53	11.19	13.85	112.1
Wheat, imported [2]	480 pounds	8.78	14.07	18.74	113.4
Wheat, British	480 pounds	8.29	13.97	14.74	77.8
Potatoes	Ton	[3] 21.29	23.72	[4] 56.69	166.3
Tea	Pound	[5] .162	[6] .167	[6] .228	40.7
Sugar	Pound	.041	.071	[7] .112	173.2

[1] No. 1 households; London market.
[2] No. 1 Northern Manitoba; London market.
[3] Price in June, 1914.
[4] Price in November, 1916.
[5] Excluding duty; average for first 9 months of 1914.
[6] Excluding duty; price at end of December.
[7] Approximate price in December.

BREAD RATIONING IN FRANCE.[1]

On November 30, 1917, the council of ministers approved a decree organizing a system of bread rationing. The basis adopted limits the amount of grain to be released for the manufacture of bread, the army. Bread tickets are to be issued and distributed by a communal office in communes of more than 20,000 population. In fixing the amount of grain to be released for the manufacture of bread, the needs, habits, and interests of consumers, producers, and intermediaries have been considered. The prefect of each Department estimates the amount of grain necessary, which is thereupon distributed to the millers authorized to furnish flour.

[1] La Republique Française, Dec. 1, 5, and 19, 1917.

A permanent supervising cereal office is established in each Department. All flour mills are placed under State supervision and, in general, all cereals are requisitioned. The State may purchase the grain through committees, millers, or merchants operating as State agents, or acquire it through direct requisition.

The weight, bake, and form of the loaf are not regulated, but all breads, including fancy, health, and diet bread, must be sold by weight, and made from whole wheat flour, excluding impurities only. The price will be uniform in all parts of the State, except as it may be influenced by local conditions.

The use of bread flour for pastry making is prohibited. Pastry made from other materials may only be sold on two days each week. Bread consumers are divided into three classes as determined by age, social condition, etc. The classes with the daily rations allowed are as follows:

1. Those performing heavy manual labor, and having a small income:
   Men over 16 years of age ---------- 600 grams (21.2 ounces).
   Women over 16 years of age---------- 500 grams (17.6 ounces).
2. Those doing light work, and having a small income:
   Men over 16 years of age---------- 400 grams (14.1 ounces).
   Women over 16 years of age---------- 300 grams (10.7 ounces).
3. All persons not included in above classes-------- 200 grams (7 ounces).

Supplies are delivered upon presentation of authorized cards issued by the minister through local authorities. The cards are individual, in the name of the applicant. The holder is required to sign the card for himself and minors. The communal office distributes the cards, supervises their use, and cancels such as were issued to deceased persons or to persons who remove. With each card sufficient tickets are issued in amounts of 100 grams each to cover the monthly allowances in favor of the holder.

Cards with all stubs of used tickets and unused tickets are returned at the end of the month, and a new issue made. Provisions are made for issuing tickets to persons temporarily away from their homes, to soldiers on leave or furlough, and to persons temporarily sojourning in a commune. Loaned or sold cards are confiscated. Stolen, lost, or destroyed cards or coupons are not, in general, replaced, but such theft, loss, or destruction must be immediately reported. Makers or users of false books or tickets are subject to prosecution.

Delivery of bread by bakers, restaurant, hotel, or boarding-house keepers otherwise than in exchange for tickets is prohibited. Tickets will be received in exchange for current bread only, or for the equivalent in flour, fancy, diet, or health bread in proportions indicated in a table of equivalents prepared by the public authorities and posted

in the place of sale. Bakers living in a commune not under the card system are not permitted to supply customers living in a commune in which the system is in operation.

Sale of fancy bread, pastry, and confectionery to be eaten on the premises is prohibited.

Provision is made to meet extraordinary demands caused by temporary increase of population. The supply of flour will be withheld from bakers, etc., for failure to observe these regulations.

The decree became effective in Paris and the Department of the Seine on December 20, 1917.[1]

PRICES OF FOOD IN NEW ZEALAND.[2]

In compliance with the cost-of-living act of 1915, the Board of Trade of New Zealand, constituted on March 1, 1916, presented its report covering the period March 1, 1916, to March 31, 1917.

The board was authorized to investigate infringements of the provisions of the commercial trust law of 1910; matters affecting cost of living; supply, demand, and prices of commodities; complaints of unreasonably high prices; questions relating to trade, commerce, or business of New Zealand; markets for goods of home production; and to make recommendations in regard to trade, markets, and means for the encouragement, development, and protection of industry and commerce.

At its first meeting the board decided to investigate the principal causes of high prices.

The first subject considered was wheat and its milled products. The conclusion states that "The distribution of the food supply * * * can not safely be left in a time of crisis to the working of an unregulated system of supply and demand. Prices of flour and by-products require continuous scrutiny. Dealers in grain should be registered and be required to report quantities purchased and prices paid."

In considering price fixing, "recommended prices" instead of "maximum prices" were considered preferable. Subsequent price movements, however, seemed to warrant Government control. The danger of the policy of noninterference was demonstrated by an unwarranted advance of 25 per cent in the price of flour in November, 1916. The Board of Trade thereupon resolved that "It is desir-

[1] La Republique Française, Dec. 19, 1917.
[2] First annual report of the Board of Trade, Wellington, 1917, 26 pp.

able for the Government to fix the maximum price of wheat," "that wheat and flour shall be handled at reasonable rates by merchants, millers, and bakers," and recommended a maximum for best quality of wheat of 6s. 3d. ($1.52) per bushel at country stations.

At a conference of flour millers the following resolutions were adopted: The price of flour should be based upon 48 bushels of wheat yielding 1 ton of flour. The price of pollard (middlings) and bran should be fixed at £6 ($29.20) and £4 ($19.47), respectively, per ton. When the price of wheat is 5s. ($1.22) per bushel the price of flour should be £13 10s. ($65.70) per ton. In consideration of the restoration of "flour duty" and "dumping legislation" forthwith flour should not exceed £14 ($68.13) f. o. b. less 2½ per cent at wheat centers until the Government scheme comes into force.

Evidence was given placing the cost of production at £5 10s. ($26.76) to £8 ($38.93) per acre (including interest on wheat land). Based upon available reports, the average actual yield was 23.09 bushels per acre. It was evident that the Government should control the present supply and encourage production. The course finally agreed upon fixed a maximum price for the 1915–16 crop, and a guarantee of 5s. 10d. ($1.42) per bushel for the crop of 1916–17. Prices of bread were not fixed. Local and ordinary competition "worked on the whole satisfactorily."

Early in December, 1916, reports seemed to indicate a short crop, and the board recommended that the Government acquire an option on 1,500,000 bushels of Australian wheat. Since the ending of the financial year 1,000,000 bushels have been purchased and are being distributed under the supervision of the board.

Local prices of butter rose in sympathy with the record prices ruling in Great Britain. Placing the index number of the price of butter at approximately 105 on April 11, 1914, it rose to 225 on March 7, 1917. Both wholesalers and retailers threatened further advances, and factories threatened "if prices were interfered with they would withdraw supplies from the local market entirely and export their whole output."

The Regulation of Trade and Commerce Act provided that—

"Nothing in this act relative to maximum prices shall extend or apply to the sale of goods which are destined by the purchaser, or believed by the seller on reasonable grounds to be so destined, for exportation and not for consumption in New Zealand." This precluded any remedy by fixation of maximum prices. The measures taken by the Government restricting exportation failed to prevent further advance in local wholesale prices. An investigation showed

that the margin was in favor of export trade. Retailers claimed that the "average cost of running a retail grocery business was 12½ per cent on the turnover," and that they were handling butter at a loss.

After an exhaustive investigation the board came to the conclusion that the retail price should not be allowed to rise indefinitely and recommended a fixed price throughout New Zealand; the prohibition of export of butter and cheese, except under license on certain terms and conditions; fixed maximum wholesale price, from time to time, for butter for local consumption, and limiting distribution charges.

The board prepared a scheme in consonance with the above recommendations. This was approved by the Government, and on October 13, 1916, regulations were gazetted. The validity of this action was tested in the Supreme Court, which declared the "Order in Council to be valid in all respects." The fund derived from licenses "shall be returned to the contributing factories," less expenses of administration. The scheme is said to be working satisfactorily.

The investigation of the meat supply showed a gradual change in the proportion of each kind of beef slaughtered. The following table shows this variation by years, 1913 to 1917, at the Auckland abattoirs:

Beef animals slaughtered.	1913–14	1914–15	1915–16	1916–17 [1]
Oxen	13,117	10,444	7,797	4,702
Cows	4,214	6,500	6,677	3,397
Total	17,331	16,944	14,474	8,099

[1] April to October, 7 months.

For the first and the last full year, the percentages of cows to all slaughtered beef cattle were 24.3 and 46.1, respectively. In one locality for the year ending March 31, 1916, 90 per cent of all sheep and lambs slaughtered were ewes.

The prices of live stock (beef and mutton) had increased over 100 per cent between January, 1912, and March, 1917. During this period prime oxen increased from 23s. ($5.60) to 46s. 6d. ($11.31); cow beef, from 20s. 6d. ($4.99) to 43s. 9d. ($10.65); and sheep, from 17s. 3d. ($4.20) to 34s. 9d. ($8.46) per 100 pounds.

In a few cities arrangements were made by which butchers could be supplied from the imperial store subject to their selling meat at prices deemed reasonable by the board. In other cities agreements have been reached on a price list. At Auckland two retail shops were taken over, at the offer of the owner, by the New Zealand Gov-

ernment. The owner and employees were retained, and a civil service accountant supervises the accounts. One effect directly traceable to the establishment of Government meat shops in Auckland was the steadying of retail prices throughout New Zealand. The upward tendency was checked and in Auckland an actual reduction took place.

While the sugar company possesses a monopoly of the New Zealand sugar trade, it did not make use of its economic position and the conditions created by the war to exploit the public.

Milk, fish, kerosene, coal, etc., prices are among the other items of consumption which came within the purview of the board, and are the subjects of discussion in the report.

WAGES AND HOURS OF LABOR.

RATES OF WAGES OF EMPLOYEES PLACED BY FEDERAL, STATE, AND MUNICIPAL EMPLOYMENT OFFICES, DECEMBER, 1917.

In the following table are shown the prevailing rates of wages paid to workers in 33 selected occupations placed in employment by public employment offices on the last day of December, 1917, or the day nearest the last day in December on which workers were placed. Reports from 89 employment offices from 39 States and the District of Columbia were tabulated as follows: Thirty-five Federal employment offices, 1 Federal-municipal employment office, 9 Federal-State employment offices, 1 Federal-State-municipal employment office, 2 municipal employment offices, 1 municipal-private employment office, 38 State employment offices, and 2 State-municipal employment offices.

RATES OF WAGES OF EMPLOYEES PLACED BY FEDERAL, STATE, AND MUNIC

[Fed.=Federal; Sta.=State; Mun.=Municipal; Pri=private;

State, city, and kind of office.	Blacksmiths.	Boilermakers.	Bricklayers.	Carpenters.	Cleaners and scrubbers, female.
Alabama:					
Mobile (Fed.)				$4.00 d.	
Arizona:					
Phoenix (Fed.-Sta.-Co.-Mun.).	$5.00 d.		$7.00 d.	5.00 d.	$0.30 h.
Arkansas:					
Little Rock (Fed.)	.50 h.			.60 h.	
California:					
Los Angeles (Fed.)	5.00 d.	$5.00 d.	5.00 d.	4.50–5.00 d.	.30 h.
Los Angeles (Sta.-Mun.)	4.00 d.	.52 h.	5.00 d.	4.00 d.	.25 h.
San Diego (Fed.)	4.00 d.			4.00–5.00 d.	.25–.30 h.
San Francisco (Fed.)	5.25 d.	.55 h.		6.50 d.	.25 h.
Santa Barbara (Fed.)				4.50 d.	
Colorado:					
Colorado Springs (Sta.)				5.20 d.	.25 h.
Denver (Fed.)					
Denver No. 2 (Sta.)	4.75 d.	4.65 d.		6.00 d.	.30 h.
Pueblo (Sta.)	3.75 d.				.25 h.
Connecticut:					
Bridgeport (Fed.)	.55 h.			.60 h.	.25 h.
Bridgeport (Sta.)					.25 h.
Hartford (Sta.)					.30 h.
New Haven (Sta.)					1.75 d.
Norwich (Sta.)					1.50 d.
Waterbury (Sta.)					
Delaware:					
Wilmington (Fed.)		.75 h.	.60 h.	.62½ h.	
District of Columbia:					
Washington (Fed.)				.62½ h.	
Florida:					
Jacksonville (Fed.)				3.00–4.00 d.	
Miami (Fed.)				3.00–4.00 d.	
Georgia:					
Savannah (Fed.)	4.00 d.	5.00 d.	5.00 d.	4.00 d.	.75 d.
Idaho:					
Moscow (Fed.)	5.28 d.		8.00 d.	5.28 d.	5.00 w.
Illinois:					
Chicago (Fed.)	4.00 d.			.45 h.	
Chicago (Sta.)	.54–.70 h.	.60 h.	.75 h.	.65 h.	2.10 d.
East St. Louis (Sta.)	.48 h.	.50 h.	.87½ h.	.70 h.	.15 h.
Peoria (Sta.)				.60 h.	2.10 d.
Rockford (Sta.)		.45 h.	.75 h.	.62½ h.	.25 h.
Rock Island (Sta.)	.65 h.	.52–.75 h.	.75 h.	.62½ h.	.25 h.
Springfield (Sta.)	.50 h.		.65 h.	.55 h.	1.50 d.
Indiana:					
Evansville (Sta.)	.25 h.	.30 h.	.60 h.	.45 h.	
Indianapolis (Fed.)				.53 h.	1.50 d.
Indianapolis (Sta.)				3.50–4.50 d.	
South Bend (Sta.)				.50 h.	.25 h.
Terre Haute (Sta.)				.55 h.	
Iowa:					
Des Moines (Fed.-Sta.)				.62½ h.	
Kansas:					
Topeka (Sta.)					
Kentucky:					
Louisville (Sta.)	.50 h.			.40 h.	
Louisville (Mun.-Pri.)				.40 h.	1.10 d.
Louisiana:					
New Orleans (Fed.-Sta.)	5.00 d.	4.72 d.	5.20 d.	6.00 d.	.75 d.
Maryland:					
Baltimore (Fed.)	.50 h.	3.00 d.		.62½ h.	6.00 w.
Massachusetts:					
Boston (Sta.)	4.00–7.00 d.	.47–.60 h.	6.25 d.	5.50 d.	.20 h.
Springfield (Sta.)	.50 h.	.47–.60 h.		.56 h.	7.00–8.00 w.
Worcester (Sta.)				.37½ h.	.22 h.
Michigan:					
Battle Creek (Sta.)		.45 h.		.55 h.	.25 h.
Bay City (Sta.)				.55 h.	2.00 d.
Detroit (Fed.)	.40–.45 h.	.42–.55 h.	.80 h.	.45–.60 h.	.25 h.
Detroit (Sta.)	.50 h.	.55 h.	.65 h.	.60 h.	.25 h.
Flint (Sta.)	.55 h.	.50 h.	.65 h.	.55 h.	.25 h.
Grand Rapids (Sta.)				.35 h.	.20 h.
Jackson (Sta.)	.45 h.	.45 h.	.75 h.	.55 h.	.25 h.
Kalamazoo (Sta.)				.40 h.	.25 h.
Lansing (Sta.)	.55 h.	.60 h.	.70 h.	.60 h.	.25 h.
Muskegon (Sta.)					
Saginaw (Sta.)					1.75 d.

[1] And board. [2] And found. [3] And board and room.

IPAL EMPLOYMENT OFFICES DURING THE MONTH OF DECEMBER, 1917.

h=hour; d=day; w=week; m=month; y=year.]

Cooks, male.	Cooks, female.	Drivers, teamsters, etc.	Dock laborers.	Farm hands.	Hod carriers.
$80.00 m.	$65.00 m.	[1] $2.00 d.		$45.00–60.00 m.	
				30.00 m.	$0.30 h.
20.00 w.	45.00–50.00 m.	2.50 d.	$0.60 h.	25.00–40.00 m.	4.00 d.
15.00 w.	12.00 w.	2.50 d.		[1] 40.00 m.	4.00 d.
[2] 60.00 m.	30.00–40.00 m.	$2.43–2.75 d.		[2] 35.00–40.00 m.	
[2] 80.00 m.	40.00 m.	75.00 m.		[2] 2.00 d.	
17.00 w.	10.00 w.			35.00 m.	3.50 d.
[3] 70.00 m.	[3] 45.00 m.	3.00 d.		[3] 45.00 m.	
1.50 d.	30.00 m.			35.00 m.	
20.00 w.	16.00 w.	18.00 w.		35.00 m.	
21.00 w.	55.00 m.	18.00 w.		55.00 m.	
20.00 w.		17.00 w.		45.00 m.	3.50 d.
		14.00 w.		35.00 m.	
		17.00 w.		40.00 m.	
				22.50 m.	
				30.00 m.	
[4] 60.00 m.	[4] 5.50 w.			1.25–1.75 d.	
[4] 60.00 m.	[4] 5.50 w.			1.25–1.75 d.	
1.00 d.	.75 d.	1.00 d.	15.00 w.	9.00 w.	10.00 w.
75.00 m.	40.00 m.	75.00 m.		50.00 m.	3.50 d.
	35.00 m.			35.00 m.	
75.00–90.00 m.	10.00–12.00 w.	16.00–20.00 w.	.35 h.	35.00–40.00 m.	
10.00 w.	6.00 w.	3.00 d.	3.00 d.	35.00 m.	.50 h.
15.00 w.	10.00 w.	2.75 d.		35.00 m.	
12.00–15.00 w.	10.00–12.00 w.	.35–.40 h.		45.00–50.00 m.	.40–.50 h.
18.00 w.	8.00 w.	3.00 d.	6.00 d.	40.00 m.	.42½ h.
12.00 w.	7.00 w.	2.70 d.		35.00 m.	
		.20 h.		1.25 d.	
60.00 m.	[1] 9.00 w.	.25 h.		35.00 m.	
80.00–125.00 m.	8.00–10.00 w.	2.50 d.		30.00–35.00 m.	
20.00 w.	12.00 w.	20.00 w.		30.00 m.	3.00 d.
		14.00 w.		1.50 d.	
				30.00 m.	
				30.00–50.00 m.	
40.00 m.	[3] 5.00 w.	15.00 w.			
75.00 m.	5.00 w.	10.00 w.			
60.00 m.	15.00 m.	2.00 d.	2.00 d.	1.50 d.	2.24 d.
18.00 w.	8.00 w.	.30 h.	.25–.45 h.	[5] 15.00–30.00 m.	
16.00 w.	8.00–12.00 w.	16.00–18.00 w.	.38 h.	[3] 40.00 m.	.43 h.
		15.00–18.00 w.		[3] 30.00–35.00 m.	
	[3] 32.00 m.	18.00 w.		[3] 35.00 m.	
14.00 w.	8.00 w.	.30 h.		12.00 m.	
	60.00 m.			28.00–55.00 m.	
3.00–5.00 d.	2.00–3.00 d.	20.00–22.00 w.	.35 h.	30.00–35.00 m.	.40–.45 h.
12.00 w.	10.00 w.	.35 h.	.30 h.	30.00 m.	.45 h.
25.00 w.	15.00 w.	3.00 d.		26.00 m.	.35 h.
	60.00 m.	15.00 w.		26.00 m.	
60.00–80.00 m.	50.00–75.00 m.	2.70 d.	2.50–3.00 d.	35.00–45.00 m.	.35 h.
15.00 w.	10.00 w.	15.00 w.		30.00 m.	.30 h.
[1] 80.00 m.	[1] 60.00 m.	.35 h.		[1] 35.00 m.	.40 h.
				2.00 d.	

[4] And board and lodging.

[5] Married, $25 to $45 per month.

RATES OF WAGES OF EMPLOYEES PLACED BY FEDERAL, STATE, AND MUNIC

State, city, and kind of office.	House servants.	Inside wiremen.	Laborers.	Laundry operatives, male.	Laundry operatives, female.
Alabama:					
Mobile (Fed.)					
Arizona:					
Phoenix (Fed.-Sta.-Co.-Mun.)	$10.00 w.		$2.50 d.		$10.00 w.
Arkansas:					
Little Rock (Fed.)	5.00 w.	$0.75 h.	.30 h.		
California:					
Los Angeles (Fed.)	30.00 m.	5.00 d.	2.75 d.	$12.00 w.	9.00–10.00 w.
Los Angeles, (Sta.-Mun.)	35.00 m.	4.00 d.	2.50 d.	12.00 w.	8.00 w.
San Diego (Fed.)			3.25 d.		
San Francisco (Fed.)	[1] 20.00–40.00 m.		2.75 d.		1.33–2.00 d.
Santa Barbara (Fed.)	35.00 m.		3.50 d.	14.00 w.	12.00 w.
Colorado:					
Colorado Springs (Sta.)	30.00 m.		.30 h.	2.00 d.	1.50 d.
Denver (Fed.)			.25 h.		
Denver No. 2 (Sta.)	30.00 m.	.82½ h.	.35 h.		1.50 d.
Pueblo (Sta.)	5.00 w.		.30 h.		
Connecticut:					
Bridgeport (Fed.)	30.00 m.		.30 h.	.30 h.	.25 h.
Bridgeport (Sta.)	30.00 m.		.55 h.		.25 h.
Hartford (Sta.)	5.00 w.		.50 h.		
New Haven (Sta.)	7.00 w.		3.15 d.	15.00 w.	1.75 d.
Norwich (Sta.)	35.00 m.			3.00 d.	
Waterbury (Sta.)			2.75 d.		10.00 w.
Delaware:					
Wilmington (Fed.)	5.00 w.		.32 h.		
District of Columbia:					
Washington (Fed.)	25.00 m.		.30 h.		
Florida:					
Jacksonville (Fed.)	[2] 7.00 w.		1.50–2.00 d.		1.50 d.
Miami (Fed.)	[2] 7.00 w.		.25 h.		1.50 d.
Georgia:					
Savannah (Fed.)	4.00 w.	21.00 w.	10.00 w.	9.00 w.	6.00 w.
Idaho:					
Moscow (Fed.)	5.00 w.		3.50 d.		
Illinois:					
Chicago (Fed.)	30.00 m.		32½ h.		9.00 w.
Chicago (Sta.)	6.00–10.00 w.		.27½–.35 h.		
East St. Louis (Sta.)	5.00 w.	.75 h.	3.00 d.	20.00 w.	9.00 w.
Peoria (Sta.)	6.00 w.		.35 h.	13.00 w.	2.10 d.
Rockford (Sta.)	6.00 w.	.65–.75 h.	.40–.50 h.	12.00–14.00 w.	8.00 w.
Rock Island (Sta.)	6.00 w.	.62½ h.	3.00 d.	17.00–25.00 w.	8.00 w.
Springfield (Sta.)	5.00 w.		.20–.30 h.	2.00 d.	1.00 d.
Indiana:					
Evansville (Sta.)	4.00 w.		.20 h.		
Indianapolis (Fed.)	[1] 5.50 w.	.40 h.	.30 h.		6.00 w.
Indianapolis (Sta.)	10.00 w.		2.25–3.00 d.		8.00–10.00 w.
South Bend (Sta.)	6.00 w.		3.00 d.		
Terre Haute (Sta.)			22½–.25 h.		
Iowa:					
Des Moines (Fed.-Sta.)	6.00 w.		.30 h.		
Kentucky:					
Louisville (Sta.)	5.00–6.00 w.		.22½–.35 h.	35.00 m.	
Louisville (Mun.-Pri.)	[1] 1.00 d.	.40 h.	.22½ h.		1.00 d.
Louisiana:					
New Orleans (Fed.-Sta.)	20.00 m.	4.16 d.	2.25 d.	40.00 m.	6.00 w.
Maryland:					
Baltimore (Fed.)	6.00–7.00 w.			10.00–15.00 w.	
Massachusetts:					
Boston (Sta.)	[2] 4.00–8.00 w.	4.00–5.00 d.	2.75–3.25 d.	[2]45.00–50.00 m.	6.00–10.00 w.
Springfield (Sta.)	[2] 5.00–8.00 w.	.50–.55 h.	.30–.37 h.		[2] 25.00 m.
Worcester (Sta.)	[2] 6.00 w.		3.00 d.		7.00 w.
Michigan:					
Battle Creek (Sta.)	5.00 w.	.50 h.	.25–.30 h.	16.50–18.00 w.	8.00–12.00 w.
Bay City (Sta.)	4.00–7.00 w.	.37 h.	.25–.30 h.		
Detroit (Fed.)	[3] 30.00 m.	.40–.50 h.	.30–.40 h.	18.00–22.00 w.	10.00–15.00 w.
Detroit (Sta.)	6.00–8.00 w.	.50 h.	.35 h.	9.00–20.00 w.	12.00–18.00 w.
Flint (Sta.)	5.00 w.	.45 h.	.30 h.	2.75 d.	1.50 d.
Grand Rapids (Sta.)	4.00–7.00 w.		.30 h.		
Jackson (Sta.)	5.00–7.00 w.	50.00–55.00 m.	.35 h.	18.00–25.00 w.	9.00–12.00 w.
Kalamazoo (Sta.)	5.00 w.		.30 h.		7.00 w.
Lansing (Sta.)	[1] 35.00 m.	.65 h.	.40 h.		
Muskegon (Sta.)	8.00 w.		2.50 d.		
Saginaw (Sta.)	4.00 w.		2.75 d.		

[1] And board. [2] And board and room. [3] And board, lodging, and washing.

IPAL EMPLOYMENT OFFICES DURING THE MONTH OF DECEMBER, 1917—Continued.

Machinists.	Molders.	Painters.	Plasterers.	Plumbers.	Saleswomen.
$0.55 h.		$4.50 d.	$6.00 d.	$6.00 d.	$10.00 w.
.65 h.			6.00 d.	.62½ h.	8.00 w.
5.00 d.	$5.00 d.	5.00 d.	4.50 d.	5.00 d.	9.00–10.00 w.
5.25 d.	4.00 d.	3.50 d.	5.00 d.	4.00 d.	8.00–15.00 w.
.45–.53 h.					
5.25 d.		4.25 d.			10.00 w.
4.65 d.				7.50 d.	
.50 h.					8.00 w.
.60 h.	.50 h.				
.60 h.	.50 h.				
.45 h.		.50 h.			
		18.00 w.			
	18.00 w.				
.50 h.		.50 h.	.75 h.	.50 h.	
27.00 w.	5.00 d.	21.00 w.	21.00 w.	5.00 d.	2.00 d.
5.28 d.	5.28 d.	5.04 d.	6.00 d.	5.28 d.	
3.00–4.50 d.	4.00 d.			.75 h.	8.00–12.00 w.
.35–.55 h.	6.00 d.	.70 h.	.50 h.	5.00 d.	8.00–12.00 w.
.51 h.	.58 h.	.60 h.	.87½ h.	.87½ h.	8.00 w.
.40 h.					
.35–.45 h.	.35–.40 h.	.55 h.	.62½ h.	.75 h.	8.00 w.
4.00 d.	4.00 d.	.55 h.	.75 h.	5.45 d.	9.00 w.
.45 h.	.45 h.	.50 h.	.65 h.	.60 h.	8.00–10.00 w.
		.45 h.			
.37½ h.					6.00–7.00 w.
3.50–4.50 d.		3.50 d.			
.60 h.	4.00 d.	4.00 d.	4.00 d.	.60 h.	10.00 w.
.47 h.					
.40 h.					
.35–.50 h.					6.00–8.00 w.
5.00 d.	5.00 d.	5.50 d.	6.00 d.	6.50 d.	6.00 w.
.45–.60 h.	5.00–7.00 d.	.30–.55 h.			
.47–.60 h.	5.00 d.	4.00–5.00 d.	6.00–6.50 d.	5.50 d.	7.00–15.00 w.
.55–.60 h.		.50 h.		.65 h.	
.40–.60 h.	4.25 d.	.32 h.			
.35 h.	.40 h.				6.00–7.50 w.
					5.00–12.00 w.
.45–.60 h.	.50–.55 h.	.45–.60 h.	.60–.75 h.	.75 h.	9.00–15.00 w.
.50 h.	.50 h.	.45 h.	.55 h.	.75 h.	7.00–20.00 w.
.45 h.	.60 h.	.55 h.	.55 h.	.65 h.	10.00 w.
.45 h.	4.50 d.	.40–.45 h.	.50–.60 h.	.60 h.	6.00–12.00 w.
.45 h.					
.60 h.	.65 h.	.60 h.	.70 h.	.70 h.	.25 h.

RATES OF WAGES OF EMPLOYEES PLACED BY FEDERAL, STATE, AND MUNIC

State, city, and kind of office.	Seamstresses.	Sewing machine operators, male.	Sewing machine operators, female.	Stenographers, male.	Stenographers, female.
Alabama:					
Mobile (Fed.)					
Arizona:					
Phoenix (Fed.-Sta.-Co.-Mun.)				$100.00 m.	$75.00 m.
Arkansas:					
Little Rock (Fed.)					
California:					
Los Angeles (Fed.)	$1.00–2.50 d.			85.00 m.	60.00-75.00 m.
Los Angeles (Sta.-Mun.)	2.00 d.			75.00–90.00 m.	60.00-75.00 m.
San Diego (Fed.)				85.00 m.	
San Francisco (Fed.)	2.00 d.			93.50 m.	65.00 m.
Santa Barbara (Fed.)					
Colorado:					
Colorado Springs (Sta.)	1.00 d.		$1.50 d.		
Denver (Fed.)					
Denver No. 2 (Sta.)			2.50 d.		
Pueblo (Sta.)	1.50 d.				10.00 w.
Connecticut:					
Bridgeport (Fed.)					
Bridgeport (Sta.)					
Hartford (Sta.)					
New Haven (Sta.)					
Norwich (Sta.)					
Waterbury (Sta.)					
Delaware:					
Wilmington (Fed.)					1,200.00 y.
District of Columbia:					
Washington (Fed.)				1,000.00 y.	
Florida:					
Jacksonville (Fed.)					
Miami (Fed.)					
Georgia:					
Savannah (Fed.)	9.00 w.	$12.00 w.	9.00 w.	15.00 w.	50.00 m.
Idaho:					
Moscow (Fed.)	2.00 d.		2.00 d.	100.00 m.	75.00 m.
Illinois:					
Chicago (Fed.)	7.00–9.00 w.		8.00–20.00 w.		12.00–20.00 w.
Chicago (Sta.)	7.00–9.00 w.		8.00–15.00 w.	75.00-100.00 m.	18.00–20.00 w.
East St. Louis (Sta.)	.20 h.	30.00 w.	.20 h.	90.00 m.	75.00 m.
Peoria (Sta.)					
Rockford (Sta.)	2.00 d.				35.00–45.00 m.
Rock Island (Sta.)	2.00 d.	80.00 m.	1.50 d.	80.00 m.	60.00 m.
Springfield (Sta.)	2.00 d.			65.00 m.	40.00–60.00 m.
Indiana:					
Evansville (Sta.)					
Indianapolis (Fed.)	2.00 d.				10.00–15.00 w.
Indianapolis (Sta.)					
South Bend (Sta.)				18.00 w.	10.00 w.
Terre Haute (Sta.)					
Iowa:					
Des Moines (Fed.-Sta.)					
Kansas:					
Topeka (Sta.)					
Kentucky:					
Louisville (Sta.)					8.00 w.
Louisville (Mun.-Pri.)					10.00 w.
Louisiana:					
New Orleans (Fed.-Sta.)	6.00 w.	2.75 d.	2.75 d.	75.00 m.	60.00 m.
Maryland:					
Baltimore (Fed.)			10.00 w.	83.00–125.00 m.	15.00 w.
Massachusetts:					
Boston (Sta.)	1.50–2.50 d.	18.00 w.		18.00–25.00 w.	6.00–25.00 w.
Springfield (Sta.)			8.00 w.		
Worcester (Sta.)					15.00 w.
Michigan:					
Battle Creek (Sta.)					12.00–15.00 w.
Bay City (Sta.)					10.00 w.
Detroit (Fed.)	15.00–20.00 w.	18.00–22.00 w.	12.00–18.00 w.	80.00–100.00 m.	15.00–20.00 w.
Detroit (Sta.)					
Flint (Sta.)	2.50 d.	3.00 d.	1.50 d.	80.00 m.	60.00 m.
Grand Rapids (Sta.)					
Jackson (Sta.)	8.00–15.00 w.		8.00–15.00 w.	8.00–20.00 w.	8.00–20.00 w.
Kalamazoo (Sta.)					
Lansing (Sta.)	.25 h.			100.00 m.	75.00 m.
Muskegon (Sta.)			1.50 d.		
Saginaw (Sta.)					

[1] And board. [2] And found. [3] And maintenance.

IPAL EMPLOYMENT OFFICES DURING THE MONTH OF DECEMBER, 1917—Continued.

Structural-iron workers.	Telephone operators (switchboard), female.	Waiters.	Waitresses.	Casual workers, male.	Casual workers, female.
$6.00 d.	$50.00 m.	$15.00 w.	$10.00 w.	[1] $1.75 d.	$1.75 d.
5.00 d.	10.00 w.	15.00 w.	9.00 w.	2.50 d.	.30 h.
4.00 d.		12.00 w.	9.00 w.	2.50 d.	.30 h.
		9.00–14.00 w.	9.00 w.	.30 h.	.25 h.
	50.00 m.	[2] 49.50 m.	10.00 w.	[2] 2.00 d.	
				2.25 d.	
		10.00 w.	8.00 w.	.35 h.	.25 h.
				2.50 d.	.25 h.
			2.00 d.	.30 h.	.30 h.
			1.00 d.	.30 h.	.20 h.
		15.00 w.	10.00 w.	.30 h.	.25 h.
			10.00 w.	.50 h.	.25 h.
		[1] 7.00 w.		.50 h.	.30 h.
			7.00 w.	.35 h.	.25 h.
			7.00 w.	3.00 d.	1.50 d.
			8.00 w.	.35 h.	
5.00 d.				.41½ h.	
		40.00 m.		.30 h.	
5.00 d.	12.00 w.	6.00 w.	5.00 w.	9.00 w.	6.00 w.
		60.00 m.	8.00 w.	3.00 d.	2.00 d.
.40–.62½ h.	9.00–14.00 w.	35.00 w.	8.00–10.00 w.	.30 h.	2.10 d.
.70 h.	10.00–12.00 w.	8.00–10.00 w.	9.00–10.00 w.	.27½– .30 h.	.25 h.
.70 h.	10.00 w.	18.00 w.	8.00 w.	.30 h.	.15 h.
		9.00 w.	7.00 w.		
		12.00 w.	1.00– 1.50 d.	.25– .35 h.	.20– .25 h.
.62 h.	7.00 w.	10.00 w.	9.00 w.	3.00 d.	.25 h.
	24.00 m.	12.00 w.	6.00 w.		
	8.00 w.		7.00 w.		1.50 d.
		12.00–15.00 w.	8.00–10.00 w.	2.50 d.	1.50 d.
	30.00 m.	12.00 w.	7.00 w.		
		[1] 8.00 w.		.25– .35 h.	
				.30 h.	
				2.00 d.	1.10 d.
4.00 d.	45.00 m.	5.00 w.	5.00 w.	1.50 d.	1.00 d.
			[3] 7.00 w.		6.00 w.
5.00–7.00 d.	8.50–15.00 w.	[1] 12.00 w.	[4] 7.00 w.	.35 h.	.20 h.
.47– .60 h.			[5] 5.00 w.	.30 h.	.20– .25 h.
		[1] 15.00 w.	[1] 7.00 w.	.30 h.	.25 h.
	24.00 m.	10.00 w.	6.00– 8.00 w.	.30 h.	.25 h.
.50– .60 h.	10.00–12.00 w.	15.00–18.00 w.	8.00–12.00 w.	.25– .60 h.	.15– .25 h.
.50 h.		[1] 10.00 w.	[1] 8.00 w.	.32½– .45 h.	.25 h.
.60 h.	9.00 w.	10.00 w.	7.00 w.	.35 h.	.25 h.
			6.00 w.	.40 h.	.25 h.
6.00–7.00 d.	8.00–10.00 w.	9.00 w.	7.00– 8.00 w.	.30 h.	.20 h.
			5.00 w.	.35 h.	.25 h.
	60.00 m.	[1] .25 h.	[1] .20 h.	.30 h.	.25 h.
				.35 h.	.25 h.

[4] And board, at restaurants; $5 and board and room at hotels.

[5] And board and room.

RATES OF WAGES OF EMPLOYEES PLACED BY FEDERAL, STATE, AND MUNIC

State, city, and kind of office.	Blacksmiths.	Boilermakers.	Bricklayers.	Carpenters.	Cleaners and scrubbers, female.
Minnesota:					
Minneapolis (Fed.)	$3.00–4.00 d.	$0.40–.60 h.	$0.75 h.	$0.55 h.	$0.35 h.
Minneapolis (Sta.)				.55 h.	2.00 d.
St. Paul (Sta.)	26.46 w.			.55 h.	.25 h.
Mississippi:					
Gulfport (Fed.)			.62½ h.	.50 h.	
Missouri:					
Kansas City (Fed.–Sta.)	5.00 d.	.76½ h.	.75 h.	.65 h.	.25 h.
St. Louis (Fed.–Sta.)		.50 h.		.62½ h.	1.60 d.
Montana:					
Butte (Mun.)					.35 h.
Nebraska:					
Lincoln (Fed.–Sta.)					
Omaha (Fed.–Sta.–Co.–Mun.)				.60 h.	.25 h.
Nevada:					
Reno (Fed.)	4.50 d.			5.00 d.	
New Jersey:					
Jersey City (Fed.)				.45–.62½ h.	1.85 d.
Newark (Fed.–Sta.)	.30 h.		.75 h.	3.75 d.–.62½ h.	
Orange (Fed.–Sta.)	.48 h.			.62½ h.	.25 h.
New York:					
Buffalo (Fed.)					
New York (Fed.)	.55–.70 h.			4.50 d.	
New York City (Mun.)	5.50 d.	5.00 d.	6.00 d.	5.50 d.	8.00–9.00 w.
Ohio:					
Cleveland (Fed.)	.50–.55 h.	.62½ h.	.80 h.	.70 h.	2.00 d.
Oklahoma:					
Oklahoma City (Sta.)	3.50 d.	.55 h.		.60 h.	.20 h.
Tulsa (Sta.)	4.00–5.00 d.	.65 h.	7.00 d.	6.00 d.	.25 h.
Oregon:					
Astoria (Fed.)					
Portland (Fed.–Mun.)	5.25 d.	5.25 d.	7.00 d.	5.60 d.	.30 h.
Pennsylvania:					
Erie (Sta.)	.33 h.			.55 h.	
Johnstown (Sta.)					1.60 d.
Philadelphia (Fed.)		3.50 d.		.62½ h.	
Philadelphia (Fed.–Sta.)					
Pittsburgh (Fed.)	.58 h.	.55 h.	.65 h.	.60 h.	.22 h.
Scranton (Sta.)	.50 h.		.70 h.	.65 h.	1.50 d.
Rhode Island:					
Providence (Fed.)	.47–.60 h.	.47–.60 h.		.50 h.	
South Carolina:					
Charleston (Fed.)				3.50 d.	
Tennessee:					
Memphis (Fed.)				.50 h.	
Texas:					
Dallas (Mun.)	4.00 d.	4.50 d.	8.00 d.	5.00 d.	2.00 d.
El Paso (Fed.)					
Fort Worth (Fed.)					
Galveston (Fed.)				.62½ h.	
Utah:					
Salt Lake City (Fed.)	4.75–6.00 d.	4.05–4.75 d.	6.00 d.	4.50–6.00 d.	1.25–2.00 d.
Virginia:					
Norfolk (Fed.)	.59 h.	.55 h.	.65 h.	.53–.58 h.	1.00 d.
Washington:					
Bellingham (Fed.–Mun.)	4.50 d.	6.00 d.	6.00 d.	5.00 d.	.25 h.
Seattle (Mun.)	4.50–6.00 d.	6.00 d.	5.00 d.	5.00–6.00 d.	.30 h.
Walla Walla (Fed.)	3.00 d.				
Yakima (Fed.)					.30 h.
Wisconsin:					
La Crosse (Sta.–Mun.)					.20–.25 h.
Milwaukee (Fed.–Sta.–Mun.)	.45 h.		.50 h.	.50 h.	25.00 m.
Oshkosh (Sta.–Mun.)	.50 h.			.50 h.	.20 h.
Superior (Sta.–Mun.)	5.00 d.	4.75 d.	.80 h.	.60 h.	.30 h.
Wyoming:					
Cheyenne (Fed.–Sta.)				.65 h.	.25 h.

[1] And board and room for single men; married men, $45 per month.
[2] And board.

IPAL EMPLOYMENT OFFICES DURING THE MONTH OF DECEMBER, 1917—Continued.

Cooks, male.	Cooks, female.	Drivers, teamsters, etc.	Dock laborers.	Farm hands.	Hod carriers.
$60.00–75.00 m.	$7.00–15.00 w.	$15.00–18.00 w.	$2.50–3.00 d.	$20.00–50.00 m.	$0.50 h.
70.00 m.	9.00 w.	3.00 d.	.....	30.00 m.	.....
.....	50.00 m.	3.10 d.	.....	25.00 m.	.....
.....	.....	11.00 w.	.....	.....	.....
21.00 w.	12.60–14.00 w.	18.00 w.	.25 h.	35.00 m.	.45 h.
60.00 m.	30.00 m.	12.00 w.	.....	[1] 25.00 m.	.....
25.00–38.00 w.	17.50 w.	.....	.....	45.00 m.	.....
.....	8.00 w.	.....	.....	40.00 m.	.....
75.00 m.	60.00 m.	3.00 d.	.....	40.00 m.	.....
70.00 m.	50.00 m.	.....	.....	45.00 m.	.....
.....	.....	18.00 w.	.....	30.00 m.	.....
30.00–35.00 m.	30.00–35.00 m.	12.00–18.00 w.	.....	25.00–40.00 m.	.....
.....	30.00–40.00 m.	12.00 w.	.37½ h.	.....	.....
.....	.....	.....	.....	25.00–40.00 m.	.....
60.00 m.	.....	35.00 m.	.....	35.00 m.	.....
25.00 w.	30.00–60.00 m.	20.00 w.	3.50 d.	45.00 m.	3.40 d.
.....	.....	18.00 w.	.35 h.	30.00 m.	.45 h.
15.00 w.	10.00 w.	.25 h.	.....	25.00 m.	.....
75.00–125.00 m.	7.00–16.00 w.	2.75–3.25 d.	.....	25.00–40.00 m.	.40–.45 h.
45.00 m.	.....	.....	.....	.....	.....
75.00–100.00 m.	40.00–80.00 m.	3.00–3.50 d.	.60–1.00 h.	40.00–60.00 m.	4.50 d.
[2] 16.00 w.	.....	18.00–20.00 w.	.....	[3] 30.00 m.	.....
75.00 m.	7.00 w.	70.00 m.	.....	.....	.....
15.00–25.00 w.	8.00–15.00 w.	3.00 d.	.....	.....	.....
.....	.....	.....	.....	[4] 35.00–40.00 m.	.....
20.00 w.	12.00 w.	3.50 d.	.....	40.00 m.	.....
50.00 m.	6.00–12.00 w.	16.00 w.	.....	[2] 1.50 d.	.....
.....	.....	18.00 w.	.40 h.	30.00–35.00 m.	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	25.00 m.	.....
90.00 m.	7.00 w.	15.00 w.	.....	[2] 30.00 m.	2.50 d.
[5] 33.00 m.	.....	.....	.....	.....	.....
.....	3.00 w.	.....	.....	25.00 m.	.....
40.00–125.00 m.	35.00–75.00 m.	3.00–4.00 d.	.....	40.00–75.00 m.	4.50–5.00 d.
50.00–100.00 m.	4.00–6.00 w.	.....	.25–.30 h.	15.00–35.00 m.	.....
60.00– 80.00 m.	30.00–50.00 m.	3.00–3.50 d.	3.20–5.00 d.	40.00–50.00 m.	3.50–4.00 d.
60.00–125.00 m.	35.00–75.00 m.	3.25–3.75 d.	.35– .50 h.	30.00–75.00 m.	3.00–3.50 d.
3.00 d.	35.00 m.	.....	.....	50.00 m.	.....
100.00 m.	.....	[2] 2.00 d.	.....	[2] 35.00–45.00 m.	.....
.....	.....	.....	.....	15.00–30.00 m.	.....
100.00 m.	40.00 m.	3.00 d.	.40 h.	35.00 m.	.40 h.
.....	5.10 w.	.....	.....	30.00 m.	.....
75.00 m.	50.00 m.	20.00 w.	.36 h.	45.00 m.	.40 h.
18.00 w.	.....	3.50 d.	.....	40.00 m.	24.00 w.

[3] And board; married men, $35 and house, garden, etc.
[4] And board; married men, $45–$50 and privileges.
[5] And all expenses.

RATES OF WAGES OF EMPLOYEES PLACED BY FEDERAL, STATE, AND MUNIC

State, city, and kind of office.	House servants.	Inside wiremen.	Laborers.	Laundry operatives, male.	Laundry operatives, female.
Minnesota:					
Minneapolis (Fed.)	$5.00–9.00 w.	$0.62½ h.	$2.50 d.	$15.00–18.00 w.	$7.00 w.
Minneapolis (Sta.)	5.00 w.		.30 h.		8.00 w.
St. Paul (Sta.)	20.00 m.		2.75 d.	2.50 d.	
Mississippi:					
Gulfport (Fed.)					
Missouri:					
Kansas City (Fed.-Sta.)	5.00–7.00 w.	.75 h.	.42½ h.	20.00 w.	5.00–9.00 w.
St. Louis (Fed.-Sta.)	[1] 25.00 m.		.32½ h.		1.60 d.
Montana:					
Butte (Mun.)	30.00–35.00 m.		4.25 d.		
Nebraska:					
Lincoln (Fed.-Sta.)			2.50 d.		
Omaha (Fed.-Sta.-Co.-Mun.)	7.00 w.		.30–.35 h.		
Nevada:					
Reno (Fed.)	35.00 m.		.35 h.		
New Jersey:					
Jersey City (Fed.)	25.00 m.		.27–.37½ h.		
Newark (Fed.-Sta.)	30.00–35.00 m.		.30–.40 h.		
Orange (Fed.-Sta.)	30.00–35.00 m.	18.00 w.	2.50 d.		
New York:					
Buffalo (Fed.)			.30–.35 h.		
New York (Fed.)		.35–.40 h.	.37½ h.		
New York City (Mun.)	25.00–40.00 m.	5.30 d.	3.50 d.	18.00 w.	2.00 d.
Ohio:					
Cleveland (Fed.)	7.00–8.00 w.	.78½ h.	.35 h.		
Oklahoma:					
Oklahoma City (Sta.)	5.00 w.		.30 h.		.15 h.
Tulsa (Sta.)	5.00–10.00 w.	5.50–7.00 d.	.25–.45 h.		7.00–14.00 w.
Oregon:					
Astoria (Fed.)			3.50 d.	3.00 d.	
Portland (Fed.-Mun.)	30.00–40.00 m.	4.50 d.	.35 h.	15.00–21.00 w.	8.64–12.00 w.
Pennsylvania:					
Erie (Sta.)		.30 h.	.22–.45 h.		
Johnstown (Sta.)	5.00–6.00 w.		.30 h.		1.60 d.
Philadelphia (Fed.)			.30–.40 h.		5.00–7.00 w.
Philadelphia (Fed.-Sta.)					
Pittsburgh (Fed.)	7.00 w.	.45 h.	.34 h.	15.00 w.	8.00 w.
Scranton (Sta.)	4.00 w.	.60 h.	.30 h.		
Rhode Island:					
Providence (Fed.)			.45 h.		7.00 w.
South Carolina:					
Charleston (Fed.)			1.75 d.		
Tennessee:					
Memphis (Fed.)			.25–.30 h.		
Texas:					
Dallas (Mun.)	5.00 w.		2.25 d.	15.00 w.	10.00 w.
El Paso (Fed.)	4.50 w.		1.75 d.		
Fort Worth (Fed.)			2.00 d.		1.25 d.
Galveston (Fed.)					
Utah:					
Salt Lake City (Fed.)	5.00–10.00 w.	5.60 d.	2.90–3.50 d.	16.00–25.00 w.	1.25–2.50 d.
Virginia:					
Norfolk (Fed.)	4.00–6.00 w.	.59 h.	.25–.30 h.		
Washington:					
Bellingham (Fed.-Mun.)	4.00–5.00 w.	4.00 d.	3.00 d.	15.00–18.00 w.	8.00–9.00 w.
Seattle (Mun.)	15.00–45.00 m.	4.00 d.	3.00–3.50 d.	15.00–18.00 w.	2.10 d.
Walla Walla (Fed.)	6.00 w.		.30 h.		
Yakima (Fed.)			.35 h.		
Wisconsin:					
La Crosse (Sta.-Mun.)	4.00–6.00 w.		.20–.25 h.		
Milwaukee (Fed.-Sta.-Mun.)	5.00 w.	.35 h.	.30 h.	12.00 w.	7.00 w.
Oshkosh (Sta.-Mun.)	4.00 w.				
Superior (Sta.-Mun.)	25.00 m.	.56 h.	.35 h.	20.00 w.	12.00 w.
Wyoming:					
Cheyenne (Fed.-Sta.)	9.00 w.		.35 h.	20.00 w.	11.00 w.

[1] And room and board.

IPAL EMPLOYMENT OFFICES DURING THE MONTH OF DECEMBER, 1917—Continued.

Machinists.	Molders.	Painters.	Plasterers.	Plumbers.	Saleswomen.
$3.00–4.00 d.	$3.00–4.00 d.	$0.55 h.	$0.75 h.	$0.52 h.	$8.00 w.
.42½ h.					7.50 w.
		.55 h.			
				6.00 d.	
.55 h.	.50 h.	.60 h.	7.00 d.	6.00 d.	6.00 w.
.60 h.					
		.45 h.			
.55 h.		.55 h.		6.00 d.	
5.00 d.					
.50– .75 h.					
.40– .60 h.		4.00– 4.50 d.		.62½–.75 h.	
.52 h.					10.00 w.
.35– .47½ h.					
6.00 d.	6.00 d.	5.00 d.	6.00 d.	6.00 d.	10.00–15.00 w.
.50– .70 h.	4.50 d.	.60 h.	.75 h.	.81¼ h.	
	.45–.52½ h.	.65 h.	7.00 d.	7.00 d.	8.00–15.00 w.
5.25 d.	5.25 d.	4.50 d.	7.00 d.	6.50 d.	8.64–15.00 w.
.30– .65 h.	.30– .45 h.	.42½ h.			
.44 h.		.45 h.			6.00 w.
.55– .60 h.	4.50– 6.00 d.	.59 h.			8.00 w.
.55 h.	5.00 d.	.45 h.		.75 h.	10.00 w.
.45 h.	.45 h.	.60 h.		.70 h.	
.47– .60 h.	.50–.59½ h.				
				.60 h.	
5.00 d.		4.50 d.	8.00 d.	6.00 d.	15.00 w.
				81⅓ h.	
3.60– 5.75 d.	6.00 d.	5.50– 6.00 d.	7.00 d.	6.50 d.	.90– 1.75 d.
.59 h.	.50– .55 h.	.46– .52 h.	.63 h.		8.00–15.00 w.
.50– .75 h.	6.00 d.	4.00 d.	5.00 d.	.75 h.	6.00–12.00 w.
4.00– 6.00 d.		3.00– 4.00 d.	5.00 d.		
2.50– 3.00 d.					
.45 h.	.45 h.	.37½ h.			6.00 w.
.45 h.					8.00 w.
5.00 d.	4.50 d.	.50 h.	.70 h.	.70 h.	12.00 w.
.43 h.		.70 h.			

RATES OF WAGES OF EMPLOYEES PLACED BY FEDERAL, STATE, AND MUNIC

State, city, and kind of office.	Seamstresses.	Sewing machine operators, male.	Sewing machine operators, female.	Stenographers, male.	Stenographers, female.
Minnesota:					
Minneapolis (Fed.)	$8.00–40.00 w.	$18.00–35.00 w.	$12.00 w.	$18.00–21.00 w.	$40.00–75.00 m.
Minneapolis (Sta.)	2.00 d.		8.00 w.	65.00 m.	12.00 w.
St. Paul (Sta.)					
Mississippi:					
Gulfport (Fed.)					
Missouri:					
Kansas City (Fed.-Sta.)	2.50 d.			20.00 w.	15.00 w.
St. Louis (Fed.-Sta.)	2.00 d.		2.25 d.		75.00 m.
Montana:					
Butte (Mun.)					
Nebraska:					
Lincoln (Fed.-Sta.)				75.00 m.	65.00 m.
Omaha (Fed.-Sta.-Co.-Mun.)				80.00 m.	70.00 m.
Nevada:					
Reno (Fed.)					
New Jersey:					
Jersey City (Fed.)					8.00–15.00 w.
Newark (Fed.-Sta.)				8.00–22.00 w.	8.00–22.00 w.
Orange (Fed.-Sta.)					
New York:					
Buffalo (Fed.)					
New York (Fed.)					
New York City (Mun.)	2.50 d.	30.00 w.		25.00 w.	15.00–25.00 w.
Ohio:					
Cleveland (Fed.)			9.00–12.00 w.	80.00 m.	65.00 m.
Oklahoma:					
Oklahoma City (Sta.)				75.00 m.	60.00 m.
Tulsa (Sta.)	1.00–2.00 d.		1.50–2.00 d.	75.00-125.00 m.	65.00-100.00 m.
Oregon:					
Astoria (Fed.)					
Portland (Fed.-Mun.)	2.00 d.		8.64–12.00 w.	80.00-125.00 m.	60.00-100.00 m.
Pennsylvania:					
Erie (Sta.)					14.00–15.00 w.
Johnstown (Sta.)					
Philadelphia (Fed.)	1.50–3.00 d.		9.00–18.00 w.	18.00–30.00 w.	12.00–18.00 w.
Philadelphia (Fed.-Sta.)					
Pittsburgh (Fed.)	1.50 d.			75.00 m.	
Scranton (Sta.)	3.00 d.			50.00 m.	10.00 w.
Rhode Island:					
Providence (Fed.)	.17 h.		.17 h.	3.00 d.	8.00 w.
South Carolina:					
Charleston (Fed.)					13.00 w.
Tennessee:					
Memphis (Fed.)					
Texas:					
Dallas (Mun.)	2.50 d.		12.00 w.	75.00 m.	50.00 m.
El Paso (Fed.)					
Fort Worth (Fed.)	2.00 d.				
Galveston (Fed.)					
Utah:					
Salt Lake City (Fed.)	1.50–2.00 d.	20.00–25.00 w.	1.00–2.25 d.	45.00-125.00 m.	40.00–75.00 m.
Virginia:					
Norfolk (Fed.)	10.00–15.00 w.				
Washington:					
Bellingham (Fed.-Mun.)	2.00–3.00 d.			75.00-100.00 m.	25.00–75.00 m.
Seattle (Mun.)	2.00 d.			85.00 m.	
Walla Walla (Fed.)					
Yakima (Fed.)					
Wisconsin:					
La Crosse (Sta.-Mun.)					
Milwaukee (Fed.-Sta.-Mun.)	3.00 d.	15.00 w.	8.00 w.	80.00 m.	50.00 m.
Oshkosh (Sta.-Mun.)	1.25 d.				
Superior (Sta.-Mun.)					
Wyoming:					
Cheyenne (Fed.-Sta.)					

IPAL EMPLOYMENT OFFICES DURING THE MONTH OF DECEMBER, 1917—Concluded.

Structural-iron workers.	Telephone operators (switchboard), female.	Waiters.	Waitresses.	Casual workers, male.	Casual workers, female.
$0.45–0.50 h.	$40.00–50.00 m.	$15.00 w.	$7.00–12.00 w.	$0.30–0.35 h.	$0.30–0.35 h.
.....	7.00 w.	12.00 w.	8.00 w.	.35 h.	1.75 d.
.....	.....	.....	18.00 m.	.35 h.	.....
.....	.....	.....	.....	.....	.....
5.25 d.	10.00 w.	14.00 w.	8.00 w.	.30 h.	2.10 d.
.....	40.00 m.	.....	1.10 d.	.30 h.	7.50 w.
.....	.....	.....	14.00 w.	.....	.....
.....	.....	12.00 w.	10.00 w.	.30 h.	.25 h.
.75 h.	.....	15.00 w.	10.00 w.	.....	.....
.....	.....	2.00 d.	2.00 d.	.35 h.	.35 h.
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	1.85 d.
.....	.....	.....	6.00–7.00 w.	.30 h.	1.75 d.
.....	.....	.....	.....	.30–.35 h.	.....
6.00 d.	10.00–16.00 w.	20.00 w.	3.50–8.00 w.	3.00 d.	2.00 d.
.80 h.	10.00 w.	.....	.....	.....	.....
.....	.....	10.00 w.	1.00 d.	.30 h.	.15 h.
.65 h.	.....	9.00–12.00 w.	7.00–11.00 w.	.25–.40 h.	.25–.30 h.
5.00–6.00 d.	9.00–15.90 w.	13.00–18.00 w.	10.00–12.00 w.	.35 h.	.30 h.
.65 h.	.....	.....	.....	.30 h.	.20 h.
.....	.....	.....	5.00 w.	.....	.....
.66⅔ h.	.....	.....	4.00–8.00 w.	3.00–3.50 d.	1.60–2.00 d.
.45 h.	.....	15.00 w.	10.00 w.	3.00 d.	1.50 d.
.....	9.00 w.	.....	.....	.25 h.	.....
.47–.60 h.	13.00 w.	.....	.....	.....	.....
.....	1.50 d.	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
5.00 d.	45.00 m.	15.00 w.	12.00 w.	2.00 d.	1.50 d.
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
6.50 d.	24.00–60.00 m.	15.00 w.	30.00–40.00 m.	.30–.40 h.	.25–.30 h.
.....	.....	.....	.....	.....	.....
.....	.....	15.00–20.00 w.	8.00–10.00 w.	.30 h.	.25 h.
.....	.....	10.00–16.00 w.	1.50–2.00 d.	.35–.40 h.	.30 h.
.....	.....	.....	10.00 w.	.30 h.	.25 h.
.....	.....	.....	.....	.35 h.	.30 h.
.....	.....	.....	.....	.30 h.	.20 h.
.....	.....	14.00 w.	6.00 w.	.30 h.	.25 h.
.....	.....	.....	.....	.25 h.	.20 h.
.68 h.	10.00 w.	15.00 w.	10.00 w.	.35 h.	.30 h.
.....	.....	.....	.....	.25 h.	.....

WAGES AND HOURS OF LABOR IN THE IRON AND STEEL INDUSTRY.

This bureau has just published a report (Bulletin 218) which is a continuation of its former reports on wages and hours of labor in the iron and steel industry. This statistical record ends with May, 1915, a time when the late general depression in the industry was lessening, but at a time when hourly earnings still were at a low level. The depression while not affecting the rates of pay which had been materially increased in the spring of 1913, did, by affecting the tonnage output and consequently the incentive for rapid work, so decrease the earnings per hour of tonnage workers, that the combined full-time weekly earnings of time and tonnage workers in May, 1915, as compared with May, 1913, were decreased 4 per cent in blast furnaces, 10 per cent in Bessemer plants, 1 per cent in open-hearth plants, 5 per cent in blooming mills, 3 per cent in standard rail mills, 4 per cent in bar mills, and 5 per cent in sheet mills. The weekly earnings in plate mills were unchanged and tin-plate mills showed an increase of 3 per cent.

In addition to the regular tables showing wages and hours of labor a complete presentation is made in this report, by percentages, of the turns worked and the amounts of pay rolls, in the ten departments of the industry discussed, during each month of the two-year period ending June, 1915, which covers the greater part of the general depression. These monthly statements clearly show the increasing activity in the several departments from January to June, 1915, while other text and tabular statements exhibit the remarkable increases in employment and in rates of pay and earnings in the iron and steel industry between January, 1915, and January, 1917. In the latter period approximately 100 of the principal iron and steel plants of the country reported an increase in employees of over 50 per cent and in total pay rolls of over 125 per cent.

The reduction in seven-day work through the introduction of relief gangs which began in 1910 increased to such an extent that in blast furnace plants, the department in which operations are continuous, only 59 per cent of the employees worked seven days per week in 1915, as compared with 80 per cent in 1913, 95 per cent in 1910, and 97 per cent in 1907.

The wide range of average full-time weekly earnings in the iron and steel industry is shown by the following list, including a few

of the unskilled, semiskilled, and skilled occupations for 1915, selected from the various departments:

Blast furnaces:	
Laborers	$12.20
Keepers	18.33
Blowers	26.93
Bessemer converters:	
Mold cappers	17.53
Steel pourers	27.96
Vesselmen	30.87
Blooming mills:	
Bottom makers' helpers	12.46
Manipulators	25.81
Heaters	40.06
Plate mills:	
Shearmen's helpers	17.89
Table operators, sheared	22.63
Screwmen, sheared	32.61
Bar mills:	
Bundlers	13.38
Roughers	25.76
Rollers	56.75
Sheet mills:	
Openers	$11.93
Doublers	19.42
Sheet heaters	37.19
Open hearth furnaces:	
Stockers	15.41
Stopper setters	21.96
Melters' helpers, first	32.80
Standard rail mills:	
Hot-bed men	12.54
Table-lever men	22.92
Rollers	43.09
Puddling mills:	
Bloom boys	10.62
Puddlers	20.45
Heaters	36.37
Tin-plate mills:	
Screw boys	16.59
Catchers	20.87
Shearmen	29.55

A similarity in earnings by no means indicates a similarity in full-time weekly hours; for example, it will be noticed that the full-time weekly earnings of blast furnace keepers were only $1.09 less than those for sheet mill doublers, but the working time differed greatly in the two occupations, the average full-time hours per week of keepers being 79.4, while that of doublers was only 42.8.

The rate of wages paid common laborers is to a large extent a basic rate from which are determined the rates for other occupations requiring little skill, hence the rate for common labor is of importance beyond the limits of the occupation proper. The rate per hour is practically the same in all departments of a plant, but the earnings per day or week, of course, are determined by the number of hours worked. The average rate per hour of laborers in 1915 in the 10 departments covered by this report was 18 cents while the average full-time hours per week ranged from 57.5 to 74.3, and the average full-time weekly earnings from $9.66 to $14.31.

A valuable addition to this report is a glossary of iron and steel occupational terms, covering not only the principal occupations but many of the minor ones as well. The glossary will be of great service in any study of labor conditions in the iron and steel industry.

MINIMUM WAGE.

RESULTS OF MINIMUM-WAGE LEGISLATION IN CALIFORNIA CANNING INDUSTRY.

In May, 1917, the California Industrial Welfare Commission issued a report (Bulletin No. 1) on the regulation of wages, hours, and working conditions of women and minors in the fruit and vegetable canning industry of the State,[1] which is devoted largely to a study of the effects of certain rulings of the commission on the industry during the season of 1916. These rulings, or orders, established sanitary standards, hours of labor, and minimum piece rates for canning and cutting apricots, peaches, pears and tomatoes, and time rates applicable to any occupation.[2] The portions of these orders relating to wages and hours of labor are given in full:

No person, firm, or corporation shall employ or suffer or permit any woman or minor to work in the fruit and vegetable canning industry in any of the following occupations at piecework rates less than the following:[3]

Piece rates.

Cutting:	
Apricots	$0.225 per 100 pounds.
Pears	.375 per 100 pounds.
Cling peaches	.225 per 100 pounds.
Free peaches	.125 per 100 pounds.
Tomatoes	.03 per 12 quarts.
Canning:	
All varieties of fruit, No. 2½ cans	.015 per dozen cans.
All varieties of fruit, No. 10 cans	.036 per dozen cans.
Tomatoes, No. 2½ cans	.01 per dozen cans.
Tomatoes, No. 10 cans	.024 per dozen cans.

Time rates.

Experienced hands, (that is, experience of over three weeks)	.16 per hour.
Inexperienced hands	.13 per hour.

[1] California. Industrial Welfare Commission. Bulletin No. 1. Report on the regulation of wages, hours, and working conditions of women and minors in the fruit and vegetable canning industry of California, Sacramento, 1917. 176 pp. Illustrated.

[2] The wages board in the fruit and vegetable canning industry, upon whose recommendation the piece rates established by the commission were based, after slight modification, devoted its attention primarily to the matter of piece rates because over 90 per cent of the women employed in the industry work on this basis. The piece rates were made to apply only to apricots, peaches, pears, and tomatoes, because "they constitute 80 per cent of the fruit and vegetable pack of the State."

[3] It should be stated in this connection that these orders have been superseded by orders of Apr. 16, 1917, effective June 16, 1917, applicable to the 1917 pack. See MONTHLY REVIEW for July, 1917, pp. 57 and 58.

No person, firm, or corporation shall employ or suffer or permit an adult woman, 18 years of age or over, to work in the fruit and vegetable canning industry for more than 10 hours in any one day, or more than 60 hours in any one week, except in case of emergency; provided, however, that in no case shall the hours of employment of any woman exceed 72 hours in any one week * * *

No person, firm, or corporation shall employ or suffer or permit any adult woman, 18 years of age or over, to work in case of emergency at a wage less than one and one-fourth times the foregoing minimum time or piece rates. Emergency work shall be all work performed by any woman in excess of 10 hours in any one day, or all work performed by any woman or minor in excess of 6 calendar days in any one week.

No person, firm, or corporation shall employ or suffer or permit any minor child, under the age of 18 years, to work in the fruit and vegetable canning industry for more than 8 hours in any one day or more than 48 hours in any one week.

The 1916 pack of fruit and vegetables was the largest in the history of the State, the output being 7,000,000 cases of fruit and 4,000,000 cases of vegetables, valued at approximately $25,000,000. The 101 canneries operating employed upwards of 22,000 women and children and nearly half as many men, the largest number of women employed at any one time being 12,000. The industry, of course, is highly seasonal in character, the average time for 62 establishments being 18.9 weeks. The question of labor turnover appears to be a very serious one for the report states that in city canneries 20 per cent of the women stayed less than one week and 40 per cent stayed less than 4 weeks. This of course means low earnings for the women, and confusion, inefficiency, and lessened profits for the management. What is characterized as "un-American standards of labor" have grown up in the industry in the past due largely to the fact that a great deal of immigrant labor has been employed, so that the task of the industrial welfare commission has been to overcome these abuses and establish American standards.

The problem of child labor seems to be solving itself, since employers have found that it does not pay. In 41 canneries in 1916 only 1,092 children were working, as compared with 2,344 children employed in the same canneries in 1914—a reduction of 53.4 per cent in 2 years. Many establishments employ no children under 16 years of age, and the largest city canneries in San Francisco and Los Angeles employ practically none under 18 years of age.

The report seems to refute the claim made by some that "the minimum will become the maximum," for it is shown that the rulings of the commission resulted in raising even higher than the minimum the piece rates payable to workers. Thus, it appears that of apricots 43.6 per cent were packed at rates higher than the minimum; of free peaches, 27.6 per cent; of cling peaches, 17.8 per cent; of

pears, 11.7 per cent; and of tomatoes, 3.9 per cent. Nor was the objection that piece rates already higher than the established minimum would be reduced to the fixed rates found to be valid, for in 50 instances, on the five products, rates higher than the minimum rates were paid in 1915, and in only one instance was a reduction made to meet the minimum rates.

The following table, compiled from the report, shows the number of canneries scheduled, the range of rates paid for the preparation of each specified article in 1915 and 1916, and the total wages paid in 1916 together with the total wages that would have been paid had all factories maintained the 1915 rates:

COMPARISON OF RATES PAID IN 1915 AND 1916 FOR PREPARATION OF EACH SPECIFIED PRODUCT, SHOWING TOTAL WAGES PAID IN 1916 AND TOTAL THAT WOULD HAVE BEEN PAID HAD THE 1915 RATES BEEN MAINTAINED IN ALL FACTORIES.

Product.	Number of canneries.	Minimum rate per 100 pounds.		Wage cost of preparation in 1916.			Per cent of 1916 pack payable at—		Number of canneries paying more than minimum rate.	
		1915	1916	At 1916 rates.	At 1915 rates.	Per cent of increase	Minimum rate.	Higher than minimum rate.	1915	1916
		Cents.	*Cents.*							
Cling peaches	54	15 to 28.6	22.5 to 31.2	$211,086.60	$197,716.66	6.8	82.2	17.8	7	11
Pears	32	31.3 to 50	37.5 to 50	163,316.92	159,286.85	2.5	88.3	11.7	5	7
Apricots	51	15 to 37.5	22.5 to 37.5	90,103.00	81,903.17	9.1	56.4	43.6	16	27
Tomatoes	31	[1] 2.5 to 4.0	[1] 3.0 to 4.0	88,761.02	86,011.31	3.2	96.1	3.9	4	6
Free peaches	46	10 to 17.8	12.5 to 16.7	38,471.44	38,634.54	[2]	72.4	27.6	18	20

[1] Per 12 quarts.

[2] Decrease; less than one one-hundredth of 1 per cent.

One portion of the report considers the matter of the yielding power of piece rates established by the commission, in which it is shown that the hourly production of workers under the new 1916 piece rates was increased sufficiently to raise the average minimum hourly earnings considerably over the average minimum hourly earnings which it had been determined could be made based upon the hourly production under the piece rates formerly in force. For example, take the case of cling peaches. At the minimum rate of 22.5 cents per 100 pounds, it was found that hourly production should equal 71.1 pounds in order to yield an average wage of 16 cents an hour. Under the new rates the total average hourly production was found to be 90.3 pounds, which is equivalent to average hourly earnings of 20.9 cents, or 4.9 cents above the minimum hourly wages established by the commission. This condition was found to exist also in canneries handling pears, free peaches, and tomatoes, but not in canneries handling apricots, where the total average hourly

earnings, under the new piece rates, amounted to only 13.7 cents, or 2.3 cents below the 16-cent minimum.

The report also includes a statement of production in the products on which no minimum piece rates had been fixed, comprising asparagus, cherries, apples, string beans, spinach, berries, pimentos, beets, quinces, onions, chilis, plums, grapes, maraschino cherries, peas, and cling and free peaches (hand peeled), showing that the average hourly earnings of workers in these products were lower than in the products produced under the established rates. In a chapter on average hourly earnings, certain factors which operated to increase or decrease production and earnings are noted and explained, among these being (1) the principal product of the cannery; (2) the district, in relation to the principal product; (3) the proportion of minors employed; (4) the length of the season; (5) the turnover in labor force; (6) the length of hours worked. A summary of the factors of production is presented in a table detailed by districts, the following being a recapitulation covering 62 canneries in the State:

Number of canneries	62
Average hourly earnings of workers (cents)	18.1
Average length of season (weeks)	18.9
Total number of adults employed	18,150
Total number of minors employed	1,711
Total number employed	19,861
Per cent of minors to total employed	8.6
Number employed the entire season	2,964
Per cent of total	14.9
Total number of woman hours worked during the season	5,937,706
Number of weeks cutters exceeded 60 hours	127
Number of weeks cutters worked 48 to 60 hours	279
Number of weeks cutters worked less than 48 hours	525
Number of weeks canners exceeded 60 hours	224
Number of weeks canners worked 48 to 60 hours	250
Number of weeks canners worked less than 48 hours	399

The hours worked in most canneries are said to be very irregular, but, it is added, they have been gradually reduced from year to year, because the canneries "have learned what other lines of industry have learned, that excessive hours of work are not efficient from the viewpoint of output, to say nothing of the consideration of the welfare of the workers. The length of day now depends largely upon the class of women employed and the type of management." A table is given showing that 45.2 per cent of the canners and 55.9 per cent of the cutters worked less than 48 hours per week. The seasonal nature of the work is best illustrated by the fact that 55.5

per cent of the total pack was handled within a period of eight weeks.

As to the effect of the commission's rulings on sanitation, the report gives a comparative statement of the conditions in certain factories in 1915 and 1916, showing marked improvements in provision for the comport and health of the workers.

The report closes with a preliminary report on the possibility or practicability of providing seats for women while at work, in which the investigator states the conclusion that "there is no good reason why compulsory standing or compulsory sitting on the part of women cannery workers should not soon be a thing of the past. There is no question but that a free choice of position on the part of the worker and the shortening of the motions required on her part will reduce fatigue and hence increase output."

WAGES, HOURS, AND WORKING CONDITIONS OF WOMEN IN LAUNDRIES AND STORES IN KANSAS.[1]

The creation of the Kansas Industrial Welfare Commission was authorized by legislative enactment approved March 6, 1915, effective July 1 following, and consists of the commissioner of labor and two others appointed by the governor. The law creating the commission provides—

> That it shall be unlawful to employ women, learners, and apprentices and minors in any industry or occupation within the State of Kansas under conditions of labor detrimental to their health or welfare, and it shall be unlawful to employ women, learners, and apprentices and minors in any industry within the State of Kansas at wages which are not adequate for their maintenance and for more hours in any one day than is consonant with their health and welfare.

The law further provides that if after any investigation the commission is of the opinion that wages, hours, sanitary or other conditions need regulating, it may, upon recommendation through a board made up of representatives of employers of the occupation in question, representatives of employees, and one or more of the disinterested public, make and render such orders as may be proper and necessary to carry out the recommendation and determinations of the board. The act thus authorizes the commission to establish a minimum wage and determine the hours for female workers. The report states that in the hope of remedying the working conditions of the greatest number of women workers the commission directed

[1] Kansas. Industrial welfare commission. First biennial report. From July 1, 1915, to June 30, 1917. Topeka, 1917. 65 pp.

its efforts first to an investigation of the laundry and mercantile industries.

Of 780 women workers in 85 laundries, the commission found that 27.2 per cent received less than $6 per week, 50.1 per cent received $6 but under $8, while only 15.3 per cent received $8 but under $10, and 7.4 per cent received $10 or more per week. The hours worked by 517 (66.3 per cent) of these women were found to be 9 but under 10, while 227 (29.1 per cent) were required to work 10 hours or over. Only 102 (13.1 per cent) were working under 48 hours per week, while 54 (6.9 per cent) were working 60 hours and over per week. Referring to a group of workers, the number not being given in the report, it is shown that 73.1 per cent received less than $6 per week; that length of time which they worked for the same firm has not had much influence on their wages; that 25 per cent had finished the eighth grade in school, while 45 per cent had not finished the sixth grade; that 64.7 per cent lived at home; that 61.5 per cent were giving assistance to or entirely supporting their families; that 46 per cent remained with the same firm less than one year; and that 94.1 per cent worked 9 hours or longer each day.

Two sets of figures are presented covering the conditions of women workers in mercantile establishments, those collected by the Department of Labor and those gathered by the welfare commission. Referring to the latter figures, of 1,625 women from whom data as to earnings were obtained, 26 per cent received less than $6 per week, 43 per cent received less than $7 per week, and 53.7 per cent received less than $8 per week, while 1,481, or 91.1 per cent, worked 9 hours but under 10 per day, and 121, or 7.4 per cent, worked under 9 hours. The Department of Labor figures reveal a somewhat better condition. Of 1,552 workers, 238, or 15.3 per cent, received under $6 per week; 487, or 31.4 per cent, received less than $7 per week; and 683, or 44 per cent, received under $8 per week; while all the workers recorded worked 9 hours and over per day.

In a group of mercantile workers the welfare commission found that 41.1 per cent had finished the 8th grade in school, that 47 per cent were entirely self-supporting, and that 28.7 per cent had remained with the same firm less than one year. About 35 per cent had been with the same firm over 5 years.

Affecting both the laundry and mercantile workers, the welfare commission has approved the recommendations of the respective boards as to hours of labor as follows:

For laundry workers: Nine hours shall constitute a regular day's work for female laborers in laundries in this State; and no female person shall be required to work more than 10 hours in any one day, not more than 54 hours in any one week.

For mercantile workers: No female person shall be employed in any mercantile establishment in the State of Kansas except during 10 consecutive hours of any day of 24 hours, and for not more than 9 hours during the said 10 hours; and for not more than 6 days during each week; and no female person shall be employed later than 9 o'clock at night in any one day.

It does not appear from the report that minimum wages have been established by the commission. The commission has, however, approved the establishment of a sanitary code for each industry, the following for the mercantile workers being typical:

No person, firm, or corporation subject to chapter 275 of the session laws of 1915 shall employ or permit any female person to work in any mercantile establishment in the State of Kansas in which the conditions do not conform to the following standards:

1. Cleanliness: Every room and the floors, walls, ceilings, windows, and every other part thereof, and all fixtures therein, shall at all times be kept in a clean and sanitary condition.

2. Drinking water: A sufficient quantity of safe, fresh drinking water, within reasonable access to all workers, shall be provided, with sanitary appliances for drinking. A common drinking cup shall not be used. When the water is iced the ice shall not be in the same container as the water.

3. Lighting: All rooms shall be properly and adequately lighted during working hours. Artificial illumination in every work room shall be installed, arranged, and used, so that the light furnished will at all times be sufficient and adequate for the work carried on therein, and prevent unnecessary strain on the vision or glare on the eyes of the worker.

4. Ventilation: The ventilation of each room shall be adequate, and there shall be sufficient provision for preventing excessive humidity, and an amount of cubic air space necessary to health must be allowed for each employee.

5. Toilet rooms: In every establishment there shall be provided suitable and convenient toilets, separate from those used by the opposite sex, and the number of such toilets shall be not less than one to every 20 female persons employed at one time, or majority fraction thereof. Such toilets must be thoroughly ventilated and open to the outside air, and such toilets must, at all times, be kept in a clean and sanitary condition.

6. Wash rooms: Wash-room accommodations, separate and apart from those used by male persons, must be provided, and individual towels, either cloth or paper, must be furnished. The washing facilities must be adequate, and the wash rooms must be kept in a clean and sanitary condition.

7. Dressing rooms: A suitable space, effectively screened, must be provided for female persons to change their street clothes for working clothes, and, where practical, individual lockers should be provided. A cot for emergency purposes shall be provided.

8. Where there are less than four female persons employed by any person the industrial welfare commission may, upon application and showing, release each applicant from compliance with the foregoing regulations or any part of same.

The commission made some investigation of the cost of living of these workers, the result being set forth in the following table:

ESTIMATED COST OF LIVING MADE BY WOMEN WORKERS IN MERCANTILE ESTABLISHMENTS AND LAUNDRIES IN KANSAS.

Item.	Mercantile establishments.		Laundries.	
	Weekly.	Annually.	Weekly.	Annually.
Board and room	$5.01	$260.65	$4.64	$240.80
Clothing	2.08	108.07	1.19	62.00
Books, papers, magazines, amusements, vacations	.61	31.87	.26	13.74
Laundry	.53	27.77	.27	14.05
Total	8.23	428.36	6.36	330.59

With a total annual living expense of $330.59 for laundry workers, and of $428.36 for mercantile workers, it can be seen that a weekly wage even of $8 would leave very little surplus for the former and a deficit for the latter. Of course, as has been stated, most of the girls live at home, thus probably reducing their expenses for board and room, so that a minimum wage of $8 per week would leave a larger surplus than is apparent from the table.

CHILD LABOR.

PRESIDENT'S POSITION ON SAFEGUARDING OF WOMAN AND CHILD LABOR.

The following statement has been made by the President in a letter to the chairman of the National Child Labor Committee under date of December 20, 1917, in regard to the safeguarding of woman and child labor:[1]

As the labor situation created by the war develops, I am more interested than ever, if that were possible, in throwing all the safeguards possible around the labor of women and children in order that no intolerable or injurious burden may be placed upon them. I am, therefore, very glad indeed that the National Child Labor Committee is diligently continuing its labors and extending its vigilance in this important matter. By doing so it is contributing to efficiency and economy of production, as well as to the preservation of life and health.

CHILDREN LEAVING SCHOOL TO GO TO WORK IN WALTHAM, MASS.

The United States Children's Bureau has recently issued a report[2] presenting the result of a study of children leaving school under 16 years of age to go to work in Waltham, Mass., an industrial community of about 30,000 inhabitants. Although the study was made in October and November, 1914, it is stated that no material change has occurred in the manner in which children are prepared for industry and commercial occupations in Waltham and the conclusions as to such preparation are therefore substantially valid as applied to present conditions. Information was obtained concerning 200, or 40 per cent of the 500 literate[3] children between the ages of 14 and

[1] Official Bulletin, Jan. 2, 1918, p. 4.

[2] From School to Work: A study of children leaving school under 16 years of age to go to work in Waltham, Mass., an industrial community of about 30,000 inhabitants, by Margaret Hutton Abels. United States Department of Labor, Children's Bureau. Washington, 1917. 59 pp.

[3] The report states that illiterate children are those who can not read, write, and spell in the English language, in accordance with the requirements for the completion of the fourth grade of the public schools. Under the law which was in force until September 1, 1913, illiterate children over 14 years of age could be employed provided they were regular attendants at public evening schools. Under the law (Acts of 1913, ch. 779) which went into effect September 1, 1913, however, illiterate children under 16 can not obtain employment certificates. This inquiry covers a period during which both of these laws were in effect.

16 years who took out their first employment certificates during the period from September 1, 1911, to October 31, 1914, their ages, therefore, at the time of the inquiry ranging from 14 to 19 years. The data gathered includes facts as to the age, sex, nativity, the living conditions of working children in Waltham; reasons why the children leave school, where they work, what occupations they enter, the conditions under which they work, what wages they earn, how steadily they are employed, and what opportunities they have for advancement. Over four-fifths of the children studied were native Americans, and 59 per cent were born in Waltham; 95 per cent were living with their parents or other relatives.

The following excerpts taken from the report indicate the provisions of law covering the employment of children in Massachusetts:

Under the laws of Massachusetts every child between 14 and 16 years of age must attend school, unless he has received an employment certificate and is engaged in some regular employment or business for at least six hours a day, or has the written permission of the superintendent of schools to engage in profitable employment at home, or is mentally or physically unfit to attend school. No child may be employed in any factory, workshop, or manufacturing, mechanical, or mercantile establishment unless the employer procures and keeps on file an employment certificate, except that children may work in mercantile establishments on Saturdays between 7 a. m. and 6 p. m. without certificates.

The older group of minors, those between 16 and 21 years of age, may not work in factories, workshops, or manufacturing, mechanical ,or mercantile establishments without educational certificates. These certificates are intended to enforce the attendance upon evening schools of illiterate minors—that is, children who can not read, write, and spell in the English language in accordance with the requirements for the completion of the fourth grade of the public schools. Illiterate children must attend public evening schools, if such are established in the city or town in which they reside, for the whole time during which the public evening schools are in session.

The most remarkable initial fact brought out by the study was the marked decrease in the number of children under 16 years of age granted employment certificates, and also the decrease in the proportion of children granted employment certificates immediately upon passing the compulsory school age. During the year ending March 31, 1913, under the old law, employment certificates were issued to 215[1] children (118 boys and 97 girls), while under the new law during the year ending March 31, 1915, employment certificates were issued to 106 children (79 boys and 27 girls), a decrease of 50.7 per cent. In the first period, of the total number of children to whom employment certificates were issued, about two-thirds (143, or 66.5 per cent) were between 14 and 15 years of age, and in the second

[1] These figures are not the result of the investigation, but are taken from the annual reports of the Waltham school board for 1913 and 1915, and from records of home permits in the office of the superintendent of schools.

period only a little more than one-third (38, or 35.8 per cent) were between these ages. Of 168 children between the ages of 13 and 16 years, for whom data were obtained, 39.3 per cent left school between the ages of 14 and 14½ years, and 63.1 per cent left school between the ages of 14 and 15 years.

The report states that the reasons for leaving school to go to work most commonly given by the children were those indicating a lack of adjustment between the school and the child. For example, 50 per cent of the children gave such reasons as dislike of school, backwardness in school, or trouble with the teachers. Over one-third (34.5 per cent) gave economic necessity as their primary reason; about one-tenth (10.7 per cent) gave preference for work as their first reason; 4.8 per cent stated that it was their parents' wish that they leave school. "This showing as to the large proportion of children who go to work in Waltham because their families need their earnings, agrees with the findings in the Commonwealth at large and in other communities where child labor has been investigated." Yet, the report states that in some cases the need was not so apparent since it is possible that the idle adult wage earner would not have been idle if the children had not been contributing to the family's income. Only about one-third (32.1 per cent) of the children who gave economic need as the reason for leaving school and reporting the amount of their initial wages, received $5 or more a week in their first employment; 35.7 per cent received $4 to $4.99 a week, and 32.1 per cent received less than $4 a week.

Taking up the school reasons given by 50 per cent of the children, it appears that 17.9 per cent of the 168 reporting left school because of backwardness in their studies, and 32.2 per cent left because of dislike for school or trouble with their teachers. The extent of retardation[1] of these pupils is indicated in the following table which also gives the school standing of 442 children of the same ages in the public schools of Waltham in September, 1914.

[1] The standard of retardation in this report is determined by the assumption that children who are 6 and 7 years of age in the first grade, 7 or 8 years of age in the second grade, 8 or 9 years of age in the third grade, and so on, are called normal.

SCHOOL STANDING OF REGULAR WORKERS WHO LEFT SCHOOL TO GO TO WORK COMPARED WITH THAT OF PUPILS IN SCHOOL IN SEPTEMBER, 1914.

School standing.	Regular workers who finally left school at 14 but under 16 years of age.		Children 14 but under 16 years of age in public schools September, 1914.	
	Number.	Per cent.	Number.	Per cent.
In advance of normal grade	2	1.3	54	12.2
In normal grade	26	17.0	225	50.9
Retarded:				
1 year	31	20.3	69	15.6
2 years	31	20.3	41	9.3
3 years	30	19.6	21	4.8
4 years	18	11.8	17	3.8
5 years	11	7.2	13	2.9
6 years	4	2.6	2	.5
Total retarded	125	81.7	163	36.9
Grand total	[1] 153	100.0	442	100.0

[1] Of the 200 children studied 32 were vacation workers and were still in school, 2 did not report the last grade attended, 6 left school between 13 and 14 years of age, and 7 had returned to school after working and finally left school at 16 and 17 years of age.

This table shows that retardation in school was much more general among the children between 14 and 16 years of age who left school to go to work than among the children of the same ages attending the public schools in 1914. Of the former group 81.7 per cent were retarded; of the latter, 36.9 per cent.

It seems that most of the children who left school (65 per cent) entered manufacturing establishments, while 13.5 per cent entered mercantile establishments, but it is noted in this connection that at the time of the inquiry there had been many changes of positions so that at that time only 55 per cent, a decrease of 15.4 per cent, were employed in manufacturing establishments, while 18 per cent, an increase of 33.3 per cent, were employed in mercantile establishments. The proportion of employment certificates issued for work in manufacturing establishments decreased from 81.9 per cent in 1913 to 55.2 in 1915, while the proportion of employment certificates issued for work in mercantile establishments increased from 4.2 per cent in 1913 to 10.5 per cent in 1915.

The chief reason for this change is the law prohibiting the employment of children under 16 years of age for more than eight hours a day. Children under 16 years of age in factories appear to have been gradually replaced by older children, who are not subject to the eight-hour law.

A striking fact brought out in the analysis of the wages received by these working children is that those who left school as soon as they had reached the age of 14 years received lower initial wages and advanced more slowly than those who remained in school until they were 15 or 16. It is stated that for all the children who reported initial and latest wages and ages at the time of beginning work, in-

cluding those whose latest wages were the same or lower than their initial wages, the average annual rate of increase in weekly wages[1] was $1.13, and that those children who began work at 14, but under 14½ years of age, received an average annual rate of increase in their weekly wages of 92 cents, as compared with the following rates for those who began work at more advanced ages: Ninety-six cents for those who began at 14½ but under 15; $1.12 for those who began at 15 but under 15½ years; and $1.92 for those who began at 15½ but under 16 years. There was a similar marked tendency among those whose latest wages were greater than their initial wages. It is noted that the length of time these children were at work was a less important factor in the increase of wages than the age at which the children began work. These facts are brought out in the following table:

AVERAGE WEEKLY WAGES AND AVERAGE RATE OF INCREASE PER YEAR [a] IN WEEKLY WAGES RECEIVED BY CHILDREN [b] OF EACH SPECIFIED AGE AT THE TIME OF BEGINNING WORK, AND AVERAGE NUMBER OF MONTHS CHILDREN HAD BEEN AT WORK.

Age at time of beginning work.	All children.				Children whose latest wages were greater than their initial wages.			
	Number.	Average number of months at work.[c]	Average weekly wages.	Average rate of increase per year in weekly wages.	Number.	Per cent all children.	Average number of months at work.	Average rate of increase per year in weekly wages.
14 but under 14½ years	59	22.0	$4.10	$0.92	40	67.8	24.9	$1.45
14½ but under 15 years	33	24.6	4.46	.96	20	60.6	27.2	1.64
15 but under 15½ years	28	18.9	4.80	1.12	20	71.4	20.2	1.97
15½ but under 16 years	21	19.5	4.99	1.92	17	81.0	21.4	2.38
14 but under 16 years	141	21.6	4.46	1.13	97	68.8	23.8	1.76

[a] See footnote below.
[b] Children who reported initial and latest wages and age at the time of beginning work.
[c] Including time idle between jobs.

A table is given in the report showing that most of the children (75.8 per cent) turned their entire earnings into the family pocketbook.

Other points developed by the inquiry are summarized in the report as follows:

Slack work accounted for 30.6 per cent of the cases of leaving jobs for which the reasons of leaving were reported, while 21.2 per cent of the changes were due to dissatisfaction with work. Other reasons for terminating employment reported by the children were: Return to school (12.1 per cent), securing better job (9.4 per cent), physical disability (8.1 per cent), discharge as a result of

[1] The report states that this was computed by dividing the amount of increase in weekly wages by the number of months elapsed between the date of beginning work and the date of visit, if child was still employed, or the date of termination of last job if child was idle at date of visit, and multiplying the quotient by 12.

the child-labor law of 1913 (6.4 per cent), disagreement with others, discharge, and miscellaneous reasons (12.1 per cent).

Eleven and five-tenths per cent of the children were neither working nor in school at the time of the inquiry. The prospect for the large majority of the children was unsteady work, in monotonous occupations, with little opportunity to increase their earnings.

No special training for the occupations which they entered had been received by any of these children in the public schools.

The law limiting the hours of labor of children under 16 years of age to eight a day was apparently obeyed by most Waltham employers. The legal provision requiring the return of employment certificates within two days after the cessation of work by the child was not well observed.

The study here outlined seems to show that children in Waltham who leave school between 14 and 16 years of age are not adapted to industry, and only in the few cases where the workers are "learning the business" does industry make the necessary adaptation to the child. It is apparent that if anything is to be done for the children who are working or for those who may be compelled to work before reaching the age of 16 years, it must be done by the public schools. Proceeding on this basis the report suggests that, pending a more complete study of the industries and of the schools, an important step toward the solution of the problems of child labor, vocational guidance, and vocational education in Waltham, would be to secure a trained vocational adviser who would give his full time to the work.

Such an officer would study the industries of the community, secure the cooperation of employers, and map out a plan for vocational education which would be adapted to the needs of Waltham children. A vocational adviser would also study the children who are desirous of leaving school to go to work, their home problems and their ambitions, and suggest more schooling or a different kind of schooling, or advise in regard to their choice of employment, and assist them in finding suitable positions. In addition to giving vocational advice, such an officer might well be given the duties of issuing and checking up all employment certificates and compiling statistics of juvenile labor.

The report suggests a list of occupations in which 37 boys and 17 girls expressed a desire for training, but adds that 59 per cent of those interviewed thought that they would not take advantage of vocational training if it were offered.

RELATION BETWEEN JUVENILE DELINQUENCY AND JUVENILE EMPLOYMENT.

In England the war has brought about a considerable relaxation of the rules concerning school attendance and the employment of children. England has also seen a considerable increase in juvenile delinquency since the outbreak of the war. No one supposes that

this is due entirely to the increase in juvenile employment, but there is generally believed to be a connection between the two. When, therefore, as an immediate consequence of the entrance of the United States into the war, there was a demand for the suspension or modification of the laws restricting the employment of women and children, the national child labor committee felt that it was desirable to see whether any conclusion could safely be drawn as to the probable effect of such a relaxation upon the problem of juvenile delinquency:

> It has seemed wise to the national child labor committee, as one of its measures of child protection during the war, to begin a series of studies in various juvenile courts and reformatories over the country for the purpose of assembling all possible information on the relationship between juvenile delinquency and employment.

The results of the first of these investigations have recently been published.[1] Based upon the records of the Manhattan branch of the children's court, it deals with 1,792 children, 1,628 boys and 164 girls, aged 7 but under 16 years, who passed through this court in 1916. No children were included who were brought in merely for investigation, or who presented really cases of improper guardianship rather than of delinquency, or who were so mentally defective as to require commitment to custodial institutions, or who were acquitted or discharged after trial. Everyone of those studied had been not only accused but convicted of some real offense against State law or city ordinance.

The first conclusion appearing from the data presented is that working children are unduly numerous among these offenders. Of the boys 614, or 37.7 per cent, and of the girls 68, or 41.5 per cent, had been employed previously to their arrest. As nearly as could be estimated not more than 10 per cent of the children between 7 and 16, resident in the borough of Manhattan, were employed during 1916.

> On this basis the working children contribute four times their share to the ranks of juvenile delinquency. Should we double our estimate of the number of working children, they would still be sending twice their due proportion to the court.

There is a great difference, however, in the character of the offenses charged against these children, and it might be possible that the working children, while furnishing more than their proportionate share of culprits, were responsible for the more trivial delinquencies. To test this, seven offenses were selected as being the most serious; for these the numbers of working and nonworking offenders were as follows:

[1] The Child Labor Bulletin, 105 E. 22d St., New York City, November, 1917, pp. 161–200.

NUMBER OF WORKING AND OF NONWORKING CHILDREN COMMITTING THE MORE SERIOUS OFFENSES.

Offense.	Working.		Nonworking.		Total.
	Boys.	Girls.	Boys.	Girls.	
Arson	2	.....	3	1	6
Assault	36	.....	54	.....	90
Disorderly conduct	77	4	200	.....	281
Drug selling	3	.....	1	.....	4
Drunkenness	2	1	3	.....	6
Forgery	1	2	.....	.....	3
Incorrigibility	111	25	192	22	350
Sex offenses	13	30	22	22	87
Theft	266	5	505	10	786
Other offenses	103	1	34	1	139
Total	614	68	1,014	56	1,752

That is to say, the working children, who are estimated to form approximately one-tenth of the population aged 7 but under 16, furnish not far from four-tenths (36.8 per cent) of the offenders charged with serious wrongdoing, while the nonworking nine-tenths furnish but a trifle over six-tenths of the serious offenders (63.2 per cent). The undue proportion from the ranks of the workers is about as apparent among those committing serious offenses as it is in the whole group.

Another important test is the prevalence of recidivism in the two classes, a matter which is felt to have a decided bearing upon the seriousness of a given offender's situation.

A child may yield to temptation once as the result of curiosity or thoughtlessness, but one court experience should forever damp his ardor for continued experiments with the law of the land. The recidivist, or repeating offender, is recognized by criminologists as the great problem in penal institutions, and the superintendents of juvenile reformatories know that the habit of transgression, once established, is broken with the utmost difficulty.

The following table shows the situation among the boys[1] in this respect:

RECIDIVISM AMONG WORKING AND NONWORKING BOYS.

Number of convictions on delinquency charge.	Number.			Per cent.	
	Working.	Nonworking.	Total.	Working.	Nonworking.
1	347	729	1,076	56.51	71.89
2	144	186	330	23.45	18.34
3	69	69	138	11.24	6.80
4	31	25	56	5.05	2.47
5	16	3	19	2.61	.30
6	6	1	7	.98	.10
7	1	1	2	.16	.10
Total	614	1,014	1,628	100.00	100.00

Percentage of recidivism among working boys 43
Percentage of recidivism among nonworking boys 28

[1] Only 16 of the girls studied had made more than one appearance in court, a number too small to justify any conclusions.

The percentage of recidivism among the working boys is notably higher than among the nonworking, but even more striking is the difference in the proportion the two classes furnish to the total group of recidivists. Of the 552 recidivists, 48 per cent come from the working and 52 per cent from the nonworking boys.

In the proportion of offenders coming from their ranks, in the proportion committing serious offenses, and in the proportion of recidivists, the working children compare unfavorably with the nonworking. In order to see whether this difference can be accounted for by other circumstances than that of employment, the report considers several factors which might possibly be contributory, such as age, school grade completed, nationality (i. e., whether children of foreign or native born parents), and character of home. In none of these respects was there any striking dissimilarity between the two groups.

In other respects the findings of this report are much the same as those of other investigations into juvenile delinquency. Theft is the leading offense among the boys, accounting for 47 per cent of the total number of cases; incorrigibility and disorderly conduct stand next in order, accounting together for 35.6 per cent of the cases. The most numerous group, 241, or 39 per cent of the 614 boys at work, were delivery, errand, and wagon boys; newsboys come next with 146, or 23.8 per cent of the whole; 47 were employed in factories; 32 as street traders; 23 as office boys; 21 as bootblacks; and 21 in stores and markets, no other occupation showing as many as 10 enrolled. Cases in which there was a direct connection between the occupation and the offense were relatively most numerous in the small group, numbering nine, working in amusement resorts, six of these showing the direct connection; this, however, is accounted for by the fact that in most of these cases the fact that the child was employed in the place at all constituted the offense for which he was brought into court. Among the street traders direct-connection cases form 56 per cent, among the newsboys 33 per cent, among the delivery, errand, and wagon boys 23 per cent, and among the bootblacks 38 per cent of the total cases.

As a result of the study the investigators feel strongly that there should be no relaxation of the school attendance and child-labor laws.

> It would be absurd to claim that all working children become delinquents, and there are undoubtedly individual cases where the shift from school to industry has proved the making of the boy, but in general the evidence is massed on the other side.
>
> In view of the evidence brought out in this study that employment tends to delinquency, can the American people afford to run the risk of increasing juvenile delinquency now by demolishing labor laws and lowering the standards of compulsory education, thereby increasing the number of children employed? Must the children of the Nation carry, in this way as in many others, an undue share of the burden of war?

THE NEGRO IN INDUSTRY.

THE NEGRO MIGRANT IN PITTSBURGH.

An estimated increase in the Pittsburgh district during a period of little more than a year of 18,550 Negroes, of whom about 9,750 were workers, has presented a formidable problem in social economics, having an important bearing upon the lives of the Negroes themselves and the community in which they reside. A realization that this problem is primarily one relating to housing, rents, health, recreation and social conditions generally prompted an intensive study[1] in the summer of 1917 of the negro migrant in the hope of contributing "something toward the orientation and adjustment of the newcomers" that would "prove of value to those members of both races who have already seen in the migration new opportunity for a people whose need has been bitter, as well as a chance for manifold human service," and with the desire of "offering suggestions to those workers in other cities who are dealing with the same many-sided and baffling problem."

A most serious aspect of the problem was found to be the matter of housing. The report states that because of the high cost of materials and labor, incident to the war, and because of investment attractions other than in realty, but few houses have been built and practically no improvements have been made, the result being the employment of attics, cellars, storerooms, basements, churches, sheds, and warehouses for the accommodation of Negroes, and conditions that are confusing and shocking and that breed disease, crime, and vice. Data were secured from over 500 individuals. Of 465 Negroes, 50 per cent were found to be rooming and boarding, most of these being single men, and 35 per cent, mostly families, were living in tenements. As indicating the congestion existing, of 390 men without families 111 (28.5 per cent) were sleeping two in a room, 98 (25.1 per cent) 4 in a room, 61 (15.6 per cent) 3 in a room, and 57 (14.6 per cent) over 6 in a room, while only 22 (5.6 per cent) had individual bedrooms. Fifty per cent were sleeping two in a bed, and 13 per cent were sleeping 3 or more in a bed. Of 157 Negro families, 49 per cent were living in one room and 21 per cent in two rooms.

The rents paid in rooming houses by 305 roomers ranged from $1.50 to more than $3 per week, 55 per cent paying the lower figure and only 2.5 per cent paying over $3. The board paid by 268 men

[1] The Negro Migrant in Pittsburgh, by Abraham Epstein. School of Economics, University of Pittsburgh. Pittsburgh, 1918. 75 pp. Illustrated.

ranged from $2 per week to more than $8 per week, the largest number, 77, or 28.7 per cent, paying $6 per week. Rents paid by 142 families investigated ranged from $10 to over $25 per month, most of them (42.3 per cent) paying $15 per month. It appears that for the accommodations provided, to say nothing of absence of conveniences, these rents are excessive.

The report makes the point that this great influx of Negro labor into Pittsburgh has not resulted in an over supply of labor, nor has it interfered with the opportunity of white labor. "Every man is needed, as there are more jobs than men to fill them. Pittsburgh's industrial life is for the time being dependent upon the Negro labor supply," but the migration has created a problem in housing that seems to be reflecting to the disadvantage of the Negro himself and of the community at large.

A comparison of working hours required of these migrants in the South and in Pittsburgh shows that while 51 per cent work 10 hours per day in the latter place, only 38 per cent had to work that many hours before leaving home; and that while 27 per cent were required to work less than 10 hours in the South, the percentage was only 16 in Pittsburgh. The wages received are generally higher in Pittsburgh than in the South, 56 per cent of the Negroes receiving less than $2 a day before coming North while only 5 per cent were receiving less than that amount in their new field of labor. Sixty-two per cent were receiving $2 to $3 per day in Pittsburgh, while only 25 per cent were in this wage group in the South. However, 15 per cent received over $3.60 per day in the South; and only 5 per cent were receiving more than $3.60 in Pittsburgh.

Most of the Negroes gave as their reason for emigrating the fact that higher wages and economic opportunity had attracted them, while many thought that they would be better treated than at home. Failure, however, on the part of the city to provide decent homes in order to retain labor appears to be influencing the Negroes to move elsewhere, indicated by the statement that of 330 men only 92, or 27.9 per cent, said that they intended to remain in Pittsburgh.

Under the caption "The Negro's own problem," the report presents some facts as to the opportunities offered in Pittsburgh for the political, social, and economic advancement of the Negroes who have settled in the city. The survey indicates that the southern migrants are not as well established in the city's industries as the white laborers, about 95 per cent of those in the steel mills visited doing unskilled work and receiving wages of from 27½ cents to 33 cents per hour. Considerable prejudice against Negro workers was found to exist among white workers. The charge, however, that the Negroes were brought in to break up the labor movement does not appear to

be substantiated. "The number of Negroes taking the places of striking whites and of skilled white workers is so small that it is hardly appreciable." No effective effort seems to have been made to organize these unskilled laborers. They are admitted to membership in two unions and readily become good unionists, but the sentiment seems to be against their becoming members.

In presenting the community's problem the report takes up in some detail a study of delinquency among Negroes in Pittsburgh. Police station records show that the number of arrests on petty charges, such as suspicion, drunkenness, and disorderly conduct, etc., increased greatly in 1916–17 over 1914–15, while the graver crimes, as a whole, remained stable in spite of the increase in population and in some of the crimes which are usually credited to Negroes there is a marked decline. Most of those arrested were between 20 and 30 years of age and were unmarried.

The number of Negro charges in the juvenile courts during the first six months of 1917 was actually 23 lower, in spite of the increase of population, than during the corresponding period in 1915, the figures being 60 and 83, respectively. The author concludes "that the Negro migrant is not a vicious character; is not criminally and mischievously inclined per se, but on the other hand is a peaceful and law-abiding individual. He comes to Pittsburgh to seek better economic and social opportunities. He is in most instances anxious to let others alone in order that he himself may be let alone."

The statistics gathered relating to the health of the Negroes in Pittsburgh tend to confirm a fact already recognized, that the conservation of health is not so much a problem of the individual as of the whole community, and, in the case of the Negro, is interrelated with his social, moral, industrial, housing, and racial situation. Tables are given showing an increase of 78.6 per cent in the number of deaths in the first 7 months of 1917 as compared with the same period in 1915, before the migration, and this in face of the fact that the Negro population increased about 45 per cent in the same time. Climatic conditions may be responsible for this to a large extent, since the record shows an increase of about 186 per cent in the deaths from pneumonia.

The report concludes with some constructive suggestions looking toward the solution of a race problem through race cooperation. In order to solve the problem of social and industrial maladjustment, lack of organization and absence of intelligent guidance, the National League on Urban Conditions among Negroes, composed of white and colored men, with branches in 18 cities, is attempting to secure cooperation among the races and to act as a social medium between the two peoples.

EMPLOYMENT AND UNEMPLOYMENT.

WORK OF PUBLIC EMPLOYMENT OFFICES IN THE UNITED STATES AND OF PROVINCIAL EMPLOYMENT OFFICES IN CANADA.

Data are presented in the following table showing the operations of the public employment offices for the month of December, 1917, and in cases where figures are available, for the corresponding month in 1916. For the United States figures are given from Federal-State employment offices in two States, a Federal-municipal employment office in one State, State employment offices in 15 States, a State-county-municipal employment office in one State, State-municipal employment offices in two States, municipal employment offices in five States, and a municipal-private employment office in one State. Figures from two Canadian employment offices are also given.

OPERATIONS OF PUBLIC EMPLOYMENT OFFICES, 1916 AND 1917.

UNITED STATES.

State, city, and kind of office.	Applications from employers.		Persons asked for by employers.		Persons applying for work.				Persons referred to positions.		Positions filled.	
					New registrations.		Renewals.					
	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.
California:												
Fresno (State)	.....	477	.....	1,050	.....	[1] 546	.....	(2)	.....	1,016	.....	918
Los Angeles (State-municipal)[3]	2,439	3,273	5,031	5,045	1,839	2,496	(2)	(2)	4,917	4,989	4,363	3,937
Oakland (State)	695	1,018	865	1,604	462	[1] 852	380	(2)	884	1,471	700	1,096
Sacramento (State)	214	275	641	740	294	[1] 462	231	(2)	549	734	489	659
San Francisco (State)	907	1,867	1,526	3,567	1,682	[1] 1,798	473	(2)	1,618	3,741	1,121	2,932
Total	.....	.....	.....	.....	.....	.....	.....	.....	7,968	11,951	6,673	9,542
Colorado:												
Colorado Springs (State)	(2)	356	457	356	392	[1] 375	(2)	(2)	371	(2)	(2)	300
Denver No. 1 (State)	.....	242	.....	242	.....	[1] 1,408	.....	(2)	.....	(2)	.....	183
Denver No. 2 (State)	.....	1,512	.....	1,512	200	[1] 806	(2)	(2)	124	(2)	(2)	237
Pueblo (State)	(2)	370	390	370	408	[1] 412	(2)	(2)	366	(2)	(2)	359
Total	.....	.....	.....	.....	.....	.....	.....	.....	861	(2)	(2)	1,079
Connecticut:												
Bridgeport (State)	(2)	(2)	771	837	890	887	(2)	(2)	(2)	(2)	682	706
Hartford (State)	(2)	(2)	778	884	982	1,087	(2)	(2)	(2)	(2)	651	789
New Haven (State)	(2)	(2)	733	747	1,035	904	(2)	(2)	(2)	(2)	628	662
Norwich (State)	(2)	(2)	158	241	182	265	(2)	(2)	(2)	(2)	151	228
Waterbury (State)	(2)	(2)	126	119	162	158	(2)	(2)	(2)	(2)	84	86
Total	.....	.....	.....	.....	.....	.....	.....	.....	(2)	(2)	2,196	2,471

[1] Number applying for work. [2] Not reported. [3] Includes Los Angeles district, 8 counties.

OPERATIONS OF PUBLIC EMPLOYMENT OFFICES, 1916 AND 1917—Continued.

UNITED STATES—Continued.

State, city, and kind of office.	Applications from employers.		Persons asked for by employers.		Persons applying for work.				Persons referred to positions.		Positions filled.	
					New registrations.		Renewals.					
	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.
Illinois:												
Chicago (State)	.....	3,427	.....	12,687	.....	10,083	.....	3,300	.....	12,977	.....	10,881
East St. Louis (State)	.....	688	.....	1,058	.....	370	.....	348	.....	911	.....	884
Peoria (State)	.....	779	.....	1,609	.....	330	.....	713	.....	1,033	.....	1,022
Rockford (State)	.....	475	.....	1,075	.....	686	.....	211	.....	643	.....	598
Rock Island-Moline (State)	.....	982	.....	4,211	.....	1,680	.....	981	.....	3,567	.....	2,500
Springfield (State)	.....	492	.....	708	.....	220	.....	472	.....	638	.....	515
Total	.....	.....	.....	.....	.....	.....	.....	.....	.....	19,769	.....	16,400
Indiana:												
Evansville (State)	101	47	336	237	9	350	.....	100	590	287	267	237
Fort Wayne (State)	173	570	173	570	[1] 166	(2)	(2)	(2)	(1)	516	154	516
Indianapolis (State)	909	1,373	909	1,337	370	1,200	290	104	789	1,373	789	1,304
South Bend (State)	131	107	396	169	245	300	91	52	247	260	190	169
Terre Haute (State)	.....	115	.....	380	.....	298	.....	65	.....	363	.....	356
Total	.....	.....	.....	.....	.....	.....	.....	.....	1,626	2,799	1,400	2,582
Iowa:												
Des Moines (Federal-State)[3]	20	95	95	406	114	240	27	62	101	299	76	189
Kansas:												
Topeka (State)	10	86	14	90	30	35	3	2	18	16	12	14
Kentucky:												
Louisville (State)	273	124	273	124	[1] 411	[1] 134	(2)	(2)	273	124	273	107
Louisville (municipal-private)	(2)	254	254	378	354	229	757	420	266	378	137	184
Total	.....	.....	.....	.....	.....	.....	.....	.....	539	502	410	291
Massachusetts:												
Boston (State)	1,430	1,154	1,649	1,398	[4] 982	[4] 963	(2)	(2)	[5] 2,499	[5] 2,219	1,117	1,072
Springfield (State)	862	682	1,187	1,007	[4] 354	[4] 321	(2)	(2)	[5] 1,256	1,150	801	700
Worcester (State)	829	788	1,127	1,110	[4] 502	[4] 516	(2)	(2)	[5] 1,242	1,169	657	618
Total	.....	.....	.....	.....	.....	.....	.....	.....	4,997	4,538	2,575	2,390
Michigan:												
Battle Creek (State)	42	85	154	402	[1] 106	[1] 765	(2)	(2)	104	402	104	402
Bay City (State)	58	24	123	84	[1] 221	[1] 162	(2)	(2)	123	162	123	162
Detroit (State)	450	1,114	3,175	5,571	(2)	[1] 5,571	(2)	(2)	3,175	5,571	3,175	5,542
Flint (State)	748	286	748	643	[1] 748	[1] 905	(2)	(2)	748	643	748	643
Grand Rapids (State)	337	303	586	589	[1] 586	[1] 823	(2)	(2)	565	667	565	574
Jackson (State)	302	243	511	369	(2)	[1] 434	(2)	(2)	499	360	486	350
Kalamazoo (State)	243	180	243	263	[1] 243	[1] 537	(2)	(2)	243	252	243	226
Lansing (State)	25	78	81	502	[1] 104	[1] 981	(2)	(2)	66	502	66	502
Muskegon (State)	48	33	132	112	[1] 170	[1] 316	(2)	(2)	131	87	106	72
Saginaw (State)	127	93	641	400	[1] 552	[1] 548	(2)	(2)	552	400	552	400
Total	.....	.....	.....	.....	.....	.....	.....	.....	6,206	9,046	6,168	8,873
Minnesota:												
Duluth (State)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	1,105	1,097
Minneapolis (State)	(2)	(2)	(2)	1,793	(2)	1,758	(2)	(2)	(2)	1,684	1,951	1,437
St. Paul (State)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	1,118	566
Total	.....	.....	.....	.....	.....	.....	.....	.....	(2)	1,684	4,174	3,100

[1] Number applying for work.
[2] Not reported.
[3] State office prior to October, 1917.
[4] Number who were registered.
[5] Number of offers of positions.

OPERATIONS OF PUBLIC EMPLOYMENT OFFICES, 1916 AND 1917—Continued.

UNITED STATES—Continued.

State, city, and kind of office.	Applications from employers.		Persons asked for by employers.		Persons applying for work.				Persons referred to positions.		Positions filled.	
					New registrations.		Renewals.					
	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.
Missouri:												
St. Joseph (State)	371	326	979	939	[1] 728	802	2	28	730	830	728	826
St. Louis (Federal-State) [2]	241	269	707	1,342	[1] 555	1,483	([3])	([3])	513	1,483	492	1,417
Total	.....	.....	.....	.....	.....	.....	.....	.....	1,243	2,313	1,220	2,243
Montana:												
Butte (municipal)	373	([3])	([3])	517	[1] 485	518	([3])	([3])	([3])	([3])	283	418
New York:												
Albany (State)	413	473	565	685	415	562	285	326	734	833	424	460
Buffalo (State)	923	1,003	1,922	1,305	1,459	1,128	89	141	1,882	1,643	1,428	1,159
New York City (State)	1,381	1,690	1,895	2,614	946	1,334	507	863	2,049	2,701	1,296	1,712
New York City (municipal)	2,375	1,818	2,750	2,490	[1] 1,856	2,000	([3])	1,613	3,558	3,126	2,340	2,112
Rochester (State)	1,062	897	1,744	1,435	815	573	373	460	1,548	1,223	870	762
Syracuse (State)	789	733	1,206	1,222	672	579	96	265	1,065	1,134	745	852
Total	.....	.....	.....	.....	.....	.....	.....	.....	14,394	10,660	9,443	7,057
Ohio:												
Akron (State-municipal)	([3])	([3])	1,674	1,776	717	977	1,636	1,698	1,411	1,527	1,184	1,300
Athens, (State-municipal)	.....	([3])	.....	29	.....	38	.....	40	.....	37	.....	26
Canton (State-municipal)	.....	([3])	.....	597	.....	405	.....	245	.....	518	.....	404
Chillicothe (State-municipal)	.....	([3])	.....	631	.....	396	.....	266	.....	544	.....	473
Cincinnati (State-municipal)	([3])	([3])	1,621	2,220	1,675	1,853	2,589	3,412	1,670	2,286	1,118	1,756
Cleveland (State-municipal)	([3])	([3])	6,815	5,578	2,306	2,471	6,840	7,646	5,780	5,288	4,536	4,596
Columbus (State-municipal)	([3])	([3])	1,854	2,998	578	1,157	2,170	3,225	1,769	3,047	1,516	2,256
Dayton (State-municipal)	([3])	([3])	914	1,864	677	1,633	1,069	1,966	849	1,537	751	1,374
Hamilton (State-municipal)	.....	([3])	.....	222	.....	181	.....	68	.....	209	.....	163
Lima (State municipal)	.....	([3])	.....	402	.....	475	.....	255	.....	402	.....	339
Mansfield (State-municipal)	.....	([3])	.....	185	.....	160	.....	123	.....	165	.....	126
Marietta (State-municipal)	.....	([3])	.....	177	.....	208	.....	87	.....	205	.....	144
Marion State-municipal)	.....	([3])	.....	309	.....	277	.....	153	.....	354	.....	256
Portsmouth (State-municipal)	.....	([3])	.....	388	.....	339	.....	121	.....	377	.....	225
Sandusky (State-municipal)	.....	([3])	.....	202	.....	173	.....	73	.....	203	.....	165
Springfield (State-municipal)	.....	([3])	.....	444	.....	523	.....	485	.....	428	.....	200
Steubenville (State-municipal)	.....	([3])	.....	780	.....	360	.....	283	.....	534	.....	458
Tiffin (State-municipal)	.....	([3])	.....	220	.....	368	.....	318	.....	255	.....	200
Toledo (State-municipal)	([3])	([3])	1,990	2,736	1,286	2,174	2,354	4,542	1,804	2,706	1,486	2,385
Washington C. H. (State-municipal)	.....	([3])	.....	38	.....	43	.....	40	.....	41	.....	22
Youngstown (State-municipal)	([3])	([3])	1,005	1,412	601	873	740	1,179	968	1,335	843	1,218
Zanesville (State-municipal)	.....	([3])	.....	119	.....	219	.....	77	.....	213	.....	140
Total	.....	.....	.....	.....	.....	.....	.....	.....	14,251	22,211	11,434	18,226

[1] Number applying for work. [2] State office prior to August, 1917. [3] Not reported.

OPERATIONS OF PUBLIC EMPLOYMENT OFFICES, 1916 AND 1917—Concluded.

UNITED STATES—Concluded.

State, city, and kind of office.	Applications from employers.		Persons asked for by employers.		Persons applying for work.				Persons referred to positions.		Positions filled.	
					New registrations.		Renewals.					
	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.	Dec., 1916.	Dec., 1917.
Oklahoma:												
Enid (State)	(1)	135	86	169	116	[2] 159	(1)	(1)	(1)	150	78	131
Muskogee (State)	(1)	338	337	439	236	[2] 513	(1)	(1)	(1)	500	211	308
Oklahoma City (State)	(1)	243	341	742	364	[2] 774	(1)	(1)	(1)	760	289	601
Tulsa (State)	(1)	735	740	1,132	707	[2] 1,110	(1)	(1)	(1)	1,056	667	1,019
Total	.....	.....	.....	.....	.....	.....	.....	.....	(1)	2,466	1,245	2,059
Pennsylvania:												
Altoona (State)	(1)	83	142	235	47	90	6	29	79	108	69	101
Erie (State)	.....	173	.....	948	.....	238	.....	56	.....	281	.....	243
Harrisburg (State)	(1)	146	254	1,368	238	352	79	88	198	414	169	378
Johnstown (State)	(1)	87	214	145	71	86	24	12	81	90	70	80
Philadelphia (State)	(1)	441	881	6,302	600	6,726	539	(1)	958	6,489	774	6,362
Pittsburg (State)	(1)	(1)	1,052	2,570	513	1,878	206	235	542	1,953	508	1,906
Scranton (State)	.....	84	.....	939	.....	130	.....	1	.....	54	.....	53
Williamsport (State)	.....	24	.....	3,510	.....	70	.....	33	.....	113	.....	110
Total	.....	.....	.....	.....	.....	.....	.....	.....	1,858	9,502	1,590	9,233
Rhode Island:												
Providence (State)	120	134	129	220	51	118	34	81	(1)	220	129	220
Texas:												
Dallas (municipal)	155	193	290	(1)	85	98	11	(1)	305	356	268	289
Virginia:												
Richmond (municipal)	223	190	335	264	241	273	(1)	(1)	403	343	192	176
Washington:												
Bellingham (Federal-municipal)	74	87	150	167	[2] 205	[2] 296	(1)	(1)	127	153	104	141
Everett (municipal)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	360	267	197
Seattle (municipal)	2,253	3,252	3,324	6,140	(1)	(1)	(1)	(1)	3,295	6,092	3,010	5,724
Spokane (municipal)	1,610	1,450	1,875	1,390	106	38	.....	(1)	1,856	1,384	1,856	1,372
Total	.....	.....	.....	.....	.....	.....	.....	.....	5,278	7,989	5,237	7,434
Wisconsin:												
La Crosse (State-municipal)	87	81	125	106	[2] 204	[2] 173	(1)	(1)	84	91	74	48
Milwaukee (Federal-State-county-municipal)[3]	1,300	1,186	2,968	3,202	[2]2,829	[2]3,061	(1)	(1)	2,913	3,084	2,211	2,053
Oshkosh (State-municipal)	109	82	127	90	[2] 191	[2] 32	(1)	(1)	103	76	80	66
Superior (State-municipal)	249	217	928	788	[2] 546	(1)	(1)	(1)	542	880	438	733
Total	.....	.....	.....	.....	.....	.....	.....	.....	3,642	4,131	2,803	2,900
Grand total	.....	.....	.....	.....	.....	.....	.....	.....	58,773	105,806	53,165	93,149

CANADA.

Quebec:												
Montreal (provincial)	182	103	394	219	[2] 348	151	(1)	(1)	339	198	266	163
Quebec (provincial)	(1)	21	44	138	[2] 74	[2] 110	(1)	(1)	(1)	91	28	84
Total	.....	.....	.....	.....	.....	.....	.....	.....	339	289	294	247

[1] Not reported. [2] Number applying for work. [3] Not cooperative with county-municipal in 1916.

REPORT OF EMPLOYMENT EXCHANGES IN THE UNITED KINGDOM (GREAT BRITAIN AND IRELAND) FOR FOUR WEEKS ENDING NOVEMBER 9, 1917.

As reported by the British Labor Gazette of December, 1917, the total number of work people remaining on the registers of the 383 British employment offices on November 9, 1917, was 110,129, compared with 107,736 on October 12, 1917, and with 114,513 on November 10, 1916. These figures comprise workers in professional, commercial, and clerical, as well as industrial occupations.

The operations of the employment exchanges for the four weeks are summarized as follows:

Item.	Men.	Women.	Boys.	Girls.	Total.
On registers Oct. 12, 1917	28,519	63,883	7,024	8,310	107,736
Number of individuals registered during period	93,073	132,671	21,982	19,727	267,453
Total	121,592	196,554	29,006	28,037	375,189
Reregistrations during period	3,567	3,800	448	355	8,170
On registers Nov. 9, 1917	30,689	63,267	7,626	8,547	110,129
Vacancies notified during period	85,480	63,985	12,646	11,025	173,136
Vacancies filled during period	54,879	54,890	10,421	8,473	128,663
Applicants placed in other districts	15,225	11,081	1,514	1,105	28,925

The average daily number of registrations and of vacancies filled for the four weeks ending November 9, 1917, is shown in the following table, together with comparative figures for October 12, 1917, and November 10, 1916:

Department.	Average registrations per day in period ending—			Average vacancies filled per day in period ending—		
	Nov. 9, 1917.	Oct. 12, 1917.	Nov. 10, 1916.	Nov. 9, 1917.	Oct. 12, 1917.	Nov. 10, 1916.
Men	4,027	3,432	3,686	2,287	1,929	2,040
Women	5,686	5,586	6,416	2,287	2,080	2,500
Boys	935	870	772	434	396	392
Girls	837	826	852	353	341	364
Total	11,485	10,714	11,726	5,361	4,746	5,296

EMPLOYMENT IN SELECTED INDUSTRIES IN DECEMBER, 1917.

The Bureau of Labor Statistics has received and tabulated reports concerning the volume of employment in December, 1917, from representative manufacturing establishments in 13 industries. Comparing the figures for December, 1917, with those from identical establishments for December, 1916, it appears that in 5 industries there was an increase in the number of people employed and in 8 a decrease. Men's ready-made clothing shows an increase of 15.9 per cent while silk shows a decrease of 9.1 per cent.

Each of the 13 industries shows an increase in the total amount of the pay roll for December, 1917, as compared with December, 1916. The greatest increase shown—38.4 per cent—is in men's ready-made clothing. Woolen and iron and steel show increases of 37.9 and 35.5 per cent, respectively.

COMPARISON OF EMPLOYMENT IN IDENTICAL ESTABLISHMENTS IN DECEMBER, 1916, AND DECEMBER, 1917.

Industry.	Establishments reporting for December both years.	Period of pay roll.	Number on pay roll in December—		Per cent of increase (+) or decrease (−).	Amount of pay roll in December—		Per cent of increase (+) or decrease (−).
			1916	1917		1916	1917	
Boots and shoes	67	1 week	57,192	52,674	− 7.9	$823,722	$846,648	+ 2.8
Cotton manufacturing	43	do	37,165	36,814	− .9	378,077	472,037	+24.9
Cotton finishing	17	do	13,056	12,875	− 1.4	179,326	211,142	+17.7
Hosiery and underwear	58	do	30,994	31,062	+ .2	325,999	380,354	+16.7
Woolen	45	do	37,059	40,599	+ 9.6	506,291	698,394	+37.9
Silk	34	2 weeks	10,682	9,710	− 9.1	227,784	231,232	+ 1.5
Men's ready-made clothing	33	1 week	15,997	18,540	+15.9	226,362	313,216	+38.4
Iron and steel	104	½ month	170,431	179,702	+ 5.4	6,993,674	9,477,527	+35.5
Car building and repairing	17	do	25,482	24,859	− 2.4	904,414	995,038	+10.0
Cigar manufacturing	57	1 week	19,451	20,988	+ 7.9	231,335	270,125	+16.8
Automobile manufacturing	47	do	104,638	101,415	− 3.1	2,165,965	2,496,948	+15.3
Leather manufacturing	34	do	12,264	12,057	− 1.7	182,950	223,439	+22.1
Paper making	47	do	25,506	25,485	− .1	373,752	434,153	+16.2

The table below shows the number of persons actually working on the last full day of the reported pay period in December, 1916, and December, 1917. The number of establishments reporting on this question is small and this fact should be taken into consideration when studying these figures.

COMPARISON OF EMPLOYMENT IN IDENTICAL ESTABLISHMENTS ON LAST FULL DAY'S OPERATION IN DECEMBER, 1916, AND DECEMBER, 1917.

Industry.	Establishments reporting for December, both years.	Period of pay roll.	Number actually working on last full day of reported pay period in December—		Per cent of increase (+) or decrease (−).
			1916	1917	
Boots and shoes	16	1 week	6,967	6,282	− 9.8
Cotton manufacturing	29	do	24,079	23,391	− 2.9
Cotton finishing	14	do	11,101	11,144	+ .4
Hosiery and underwear	14	do	11,853	11,882	+ .2
Woolen	37	do	33,257	36,603	+10.1
Silk	19	2 weeks	7,116	6,462	− 9.2
Men's ready-made clothing	4	1 week	3,367	3,579	+ 6.3
Iron and steel	81	½ month	128,104	134,399	+ 4.9
Car building and repairing	15	do	21,251	20,627	− 2.9
Cigar manufacturing	12	1 week	3,550	3,561	+ .3
Automobile manufacturing	24	do	74,633	69,063	− 7.5
Leather manufacturing	16	do	6,319	6,533	+ 3.4
Paper making	13	do	8,866	8,848	− .2

The figures in the table below show that in 11 of the 13 industries there were more persons on the pay roll in December, 1917, than in November, 1917. Car building and repairing shows the largest increase—4.9 per cent—while silk and automobile manufacturing show decreases of 0.9 and 0.5 per cent, respectively.

Of the 13 industries reporting, 8 show increases and 5 decreases in the total amount of pay roll when comparing December, 1917, with November, 1917. Boots and shoes and leather manufacturing show increases of 18.1 per cent and 9.8 per cent, respectively. The greatest decrease indicated—5.2 per cent—is shown in automobile manufacturing, while iron and steel shows a decrease of 3.4 per cent, which decrease is doubtless explained by a shortage of fuel experienced by many plants during the pay-roll period under consideration.

COMPARISON OF EMPLOYMENT IN IDENTICAL ESTABLISHMENTS IN NOVEMBER, 1917, AND DECEMBER, 1917.

Industry.	Establishments reporting for November and December.	Period of pay roll.	Number on pay roll in 1917.		Per cent of increase (+) or decrease (−).	Amount of pay roll in 1917.		Per cent of increase (+) or decrease (−).
			November.	December.		November.	December.	
Boots and shoes	66	1 week	52,430	52,465	+0.1	791,671	934,760	+18.1
Cotton manufacturing	52	do	41,912	42,259	+ .8	510,399	534,012	+ 4.6
Cotton finishing	17	do	12,610	12,875	+2.1	202,926	211,142	+ 4.0
Hosiery and underwear	51	do	29,094	29,693	+2.1	357,353	367,880	+ 2.9
Woolen	45	do	39,912	40,559	+1.6	674,184	701,032	+ 4.0
Silk	34	2 weeks	11,605	11,506	− .9	284,476	284,155	− .1
Men's ready-made clothing	34	1 week	18,163	18,595	+2.4	297,063	314,023	+ 5.7
Iron and steel	104	½ month	190,995	190,445	− .3	10,445,567	10,095,628	− 3.4
Car building and repairing	16	do	23,464	24,608	+4.9	960,237	983,848	+ 2.5
Cigar manufacturing	57	1 week	20,978	21,081	+ .5	269,830	268,939	− .3
Automobile manufacturing	42	do	97,216	96,682	− .5	2,497,902	2,367,631	− 5.2
Leather manufacturing	32	do	11,526	11,806	+2.4	200,659	220,326	+ 9.8
Paper making	47	do	23,555	24,133	+2.5	410,757	409,263	− .4

A comparatively small number of establishments reported as to the number of persons working on the last full day of the reported pay periods. The following table gives in comparable form the figures for November and December, 1917. The small number of establishments represented should be noted when using these figures.

COMPARISON OF EMPLOYMENT IN IDENTICAL ESTABLISHMENTS ON LAST FULL DAY'S OPERATION IN NOVEMBER, 1917, AND DECEMBER, 1917.

Industry.	Establishments reporting for November and December.	Period of pay roll.	Number actually working on last full day of reported pay period in 1917—		Per cent of increase (+) or decrease (−).
			November.	December.	
Boots and shoes	22	1 week	10,020	10,603	+5.8
Cotton manufacturing	36	do	27,414	27,660	+ .9
Cotton finishing	14	do	10,869	11,144	+2.5
Hosiery and underwear	14	do	11,767	12,153	+3.3
Woolen	38	do	36,149	36,675	+1.5
Silk	20	2 weeks	7,863	7,931	+ .9
Men's ready-made clothing	4	1 week	3,430	3,579	+4.3
Iron and steel	82	½ month	146,922	143,399	−2.4
Car building and repairing	16	do	21,234	22,080	+4.0
Cigar manufacturing	18	1 week	4,786	4,570	−4.5
Automobile manufacturing	24	do	69,447	68,245	−1.7
Leather manufacturing	14	do	6,139	6,338	+3.2
Paper making	13	do	8,587	8,848	+3.0

CHANGES IN WAGE RATES.

In 8 of the 13 industries there were establishments reporting increases in wage rates during the period November 15 to December 15, 1917, and in 5 industries no establishment reported a change. A number of firms did not answer the inquiry relating to the wage-rate changes, but in such cases it is probably safe to assume that no changes were made.

Cotton manufacturing: Reports from 14 plants show increases in the wage rates. One plant reports an increase of 12½ per cent to the entire force. One plant reports a 12 per cent increase to all employees except the office force. Eight plants report an increase of 10 per cent to all employees; while another plant reports an increase of 10 per cent to 96.5 per cent of its force. One plant reports an 8 per cent increase to all the force; and one plant, a 5 per cent increase to all its employees.

Paper making: Reports from three plants show changes in the wage rates. One plant reports a 10 per cent increase to 60 per cent of its force; one, 5 per cent increase to its entire force; and a third, 75 cents per day increase to all its employees.

Car building and repairing: Two plants show changes in the wage rates. One plant reports an increase to all of the employees, but does not make a definite statement as to the amount of increase; and the second plant reports a 10 per cent increase to 8 per cent of the force.

Men's ready-made clothing: One establishment reports an increase of 10 per cent to 40 per cent of its employees; and another, an increase to all cutters, but makes no statement as to the per cent of increase.

Hosiery and underwear: One plant reports an increase of 15 per cent to all of its employees; while a second reports bonuses of from 5 to 10 per cent to the entire force.

Automobile manufacturing: One plant reports a 10 per cent increase to 8 per cent of its force.

Boots and shoes: One plant reports a 10 per cent increase in some departments.

Iron and steel: One plant reports an increase of 10 per cent to time workers.

INDEX NUMBERS OF EMPLOYMENT AND OF PAY ROLL, JANUARY, 1915, TO DECEMBER, 1917.

Index numbers showing relatively the variation in the number of persons employed and in pay-roll totals in seven industries by months from January, 1915, to December, 1917, have been compiled and are presented in the following table. These index numbers are based on the figures for "Employment in selected industries," appearing in this and preceding REVIEWS. The seven industries shown are the only ones for which the Bureau of Labor Statistics has comparable data as far back as January, 1915.

January, 1915, is taken as the starting point, and the number of persons whose names appeared on the pay roll for that month represents 100. The amount of money carried on the pay rolls is treated in the same manner. To illustrate, if the number of persons employed in the iron and steel industry in January, 1915, is taken as 100, then the number employed in that industry in December, 1917, was 183; in other words, had increased 83 per cent; and, if the money pay roll in January, 1915, be taken as 100, the pay roll in December, 1917, represented 335, or in other words, the amount paid in wages was more than 3⅓ times as much as in January, 1915.

While the index numbers show the change in the number of persons employed and in the aggregate amount of money paid in wages, they do not, without a computation, indicate the change in per capita earnings. Such increase may be obtained by dividing the index for the amount of the pay roll by the index for the number of persons on the pay roll. The per cent of such increase in December, 1917, as compared with January, 1915, has been computed and entered at the bottom of the table. Thus the per capita earnings of boot and shoe factory employees increased 76 per cent; of cotton manufacturing employees, 63 per cent, etc.

INDEX NUMBERS OF EMPLOYMENT AND OF PAY ROLL, JANUARY, 1915, TO DECEMBER, 1917.

[January, 1915=100.]

Month and year.	Boots and shoes.		Cotton manufacturing.		Cotton finishing.		Woolen manufacturing.		Hosiery and underwear.		Silk.		Iron and steel.	
	Number on pay roll.	Amt. of pay roll.	Number on pay roll.	Amt. of pay roll.	Number on pay roll.	Amt. of pay roll.	Number on pay roll.	Amt. of pay roll.	Number on pay roll.	Amt. of pay roll.	Number on pay roll.	Amt. of pay roll.	Number on pay roll.	Amt. of pay roll.
1915.														
January	100	100	100	100	100	100	100	100	100	100	100	100	100	100
February	99	96	100	104	111	112	101	99	105	106	102	108	96	106
March	95	88	101	107	108	110	104	104	105	111	102	110	104	116
April	89	76	101	105	110	113	107	108	108	112	99	102	108	122
May	91	82	102	106	110	115	107	107	110	118	99	105	111	120
June	92	89	101	101	102	107	102	97	112	122	98	102	115	132
July	93	91	101	101	109	105	105	98	110	118	97	103	117	121
August	94	95	100	102	106	109	103	96	108	118	100	104	121	135
September	94	95	99	103	106	107	113	111	113	117	101	104	125	140
October	103	111	100	96	111	114	113	102	114	129	103	113	130	147
November	107	120	101	101	122	116	117	117	116	132	106	121	131	159
December	125	129	101	100	115	124	117	121	119	138	108	121	130	164
1916.														
January	114	125	99	102	118	124	114	124	115	132	109	120	135	162
February	115	123	100	110	119	129	117	133	116	138	107	126	138	184
March	115	125	100	111	121	132	117	134	118	142	109	131	141	186
April	113	120	100	113	115	127	119	136	120	142	110	130	141	186
May	111	123	100	118	112	136	120	145	121	146	109	130	146	204
June	113	127	100	117	113	137	117	139	120	144	110	133	147	207
July	114	125	100	114	113	133	116	136	119	135	110	120	149	181
August	113	123	98	114	114	132	111	129	117	134	109	124	152	203
September	112	122	98	116	113	134	115	138	119	142	109	125	155	211
October	112	123	98	111	113	136	117	134	121	147	109	131	155	219
November	117	141	99	117	116	141	117	144	123	156	107	129	158	224
December	122	156	101	125	119	156	119	158	124	164	109	135	160	234
1917.														
January	123	157	100	123	117	152	122	163	123	160	109	134	164	246
February	123	159	100	125	116	151	122	161	124	158	108	137	165	242
March	122	156	100	127	116	154	123	162	125	164	107	142	168	257
April	119	145	99	124	113	150	120	154	122	154	106	138	167	241
May	118	152	99	129	115	163	120	173	124	166	104	141	172	286
June	120	165	99	137	116	166	119	172	123	169	102	136	173	286
July	117	153	99	137	111	153	119	173	121	166	102	128	175	267
August	110	153	97	131	111	152	116	168	119	161	100	128	180	296
September	105	150	97	135	113	155	119	176	120	165	98	128	179	290
October	107	151	97	137	112	158	122	192	121	176	96	134	182	343
November	115	171	99	156	116	174	126	208	122	190	97	134	183	347
December	115	202	100	163	118	180	128	216	124	195	96	134	183	335
Per cent of increase in per capita earnings in December, 1917, over January, 1915		76		63		53		69		57		40		83

VOLUME OF EMPLOYMENT IN THE UNITED KINGDOM (GREAT BRITAIN AND IRELAND) IN NOVEMBER, 1917.

The table below pertaining to the condition of employment in Great Britain and Ireland was compiled from a report published in the British Labor Gazette of December, 1917.

No material changes relating to the number of employees in November, 1917, as compared with October, 1917, are shown except for seamen which show a decrease of 8.9 per cent in the number of men. The carpet trade shows an increase of 2.4 per cent, but no other trade shows a change of more than 2 per cent.

In comparing November, 1917, with November, 1916, as to numbers employed, more important changes are seen. Dock and riverside labor shows a decrease of 25.7 per cent; seamen a decrease of 21 per cent; food preparation a decrease of 14.5 per cent; while dressmaking and millinery, quarrying, tin plate, steel and galvanized sheet, cotton, and corset trades, show a decline of from 10 to 12.1 per cent each. Iron and steel and tailoring trades show the greatest increases—6.8 per cent and 5.1 per cent, respectively.

In November as compared with October but two trades show a decrease in earnings, namely: Cotton, 0.1 per cent; and bleaching, printing, dyeing, and finishing, 1.2 per cent. The jute trade shows an increase of 10.7 per cent; bookbinding, 8.2 per cent; printing, 6.9 per cent; while the other trades show increases ranging below these figures.

Comparing November, 1917, with November, 1916, on the question of earnings of employees important changes are shown, all of which are increases, except in the cotton trade which shows no change. The tailoring trades show an increase of 40.5 per cent; linen, an increase of 38.4; brick, an increase of 30.1 per cent; jute, an increase of 23.5 per cent; and worsted, an increase of 20.7 per cent. Ten trades show increases ranging from 10.3 per cent to 19.6 per cent, while the other trades reporting increases of earnings of employees show changes of less than 10 per cent.

VOLUME OF EMPLOYMENT IN THE UNITED KINGDOM (GREAT BRITAIN AND IRELAND) IN NOVEMBER, 1917, AS COMPARED WITH OCTOBER, 1917, AND NOVEMBER, 1916.

[Compiled from figures in the Labor Gazette (London), December, 1917.]

Industries, and basis of comparison.	Per cent of increase (+) or decrease (−) in November, 1917, as compared with—	
	October, 1917.	November, 1916.
Coal mining: Average number of days worked	(1)	− 2.2
Iron mining: Average number of days worked	+ 1.5	+ 2.9
Quarrying: Number of employees	+ .5	−10.6
Pig iron: Number of furnaces in blast	+ 1.0	+ 3.5
Iron and steel works:		
Number of employees	+ .4	+ 6.8
Number of shifts worked	+ .4	+ 7.0
Engineering trades: Number of employees [2]	− .06	− .31
Shipbuilding trades: Number of employees [2]	+ .08	− .02
Tinplate, steel, and galvanized sheet trades: Number of mills in operation	(1)	−12.1
Cotton trade:		
Number of employees	− .5	−11.4
Earnings of employees	− .1	(1)
Woolen trade:		
Number of employees	+ .1	− 3.9
Earnings of employees	+ 4.9	+16.3
Worsted trade:		
Number of employees	(1)	− 1.4
Earnings of employees	+ 4.9	+20.7
Hosiery trade:		
Number of employees	− .2	− 4.3
Earnings of employees	+ 2.5	+14.2
Jute trade:		
Number of employees	+ .4	+ 1.1
Earnings of employees	+10.7	+23.5
Linen trade:		
Number of employees	+ 1.6	+ 4.7
Earnings of employees	+ 5.0	+38.4
Silk trade:		
Number of employees	+ .1	− 1.9
Earnings of employees	+ 2.1	+19.6
Carpet trade:		
Number of employees	+ 2.4	+ 2.6
Earnings of employees	+ 2.2	+18.8
Lace trade:		
Number of employees	+ .2	− 5.7
Earnings of employees	+ 1.6	+ 6.8
Bleaching, printing, dyeing, and finishing:		
Number of employees	− .6	− 3.4
Earnings of employees	− 1.2	+13.6
Boot and shoe trade:		
Number of employees	− .5	− 6.0
Earnings of employees	+ .4	+ 7.7
Leather trades: Number of employees	+ .3	+ 2.1
Tailoring trades:		
Number of employees	+ 2.0	+ 5.1
Earnings of employees	+ 4.3	+40.5
Shirt and collar trade:		
Number of employees	− .2	− 8.3
Earnings of employees	+1.5	+10.3
Other clothing trades:		
Dressmaking and millinery—		
Number of employees	− .8	−12.1
Wholesale mantle, costume, blouse, etc.—		
Number of employees—London	+ .8	+ .7
Number of employees—Manchester	− .7	− 2.4
Number of employees—Glasgow	−1.0	− 2.8
Corset trade—Number of employees	− .5	−10.8
Building and construction of works: Number of employees [2]	− .04	+ .17
Sawmilling and machining: Number of employees [2]	+ .1	− .2
Brick trade:		
Number of employees	+1.3	+ 1.2
Earnings of employees	+5.2	+30.1
Cement trade:		
Number of employees	− .1	− 9.4
Earnings of employees	+3.0	+11.6
Printing, bookbinding, and paper trades:		
Printing trades—		
Number of employees reported by trade-unions [2]	+ .2	+ .2
Number of employees reported by employers	+ .9	− 8.4
Earnings of employees reported by employers	+6.9	+ 6.1
Bookbinding trade—		
Number of employees reported by trade-unions [2]	+ .3	+ .1
Number of employees reported by employers	+ .2	− 5.4
Earnings of employees reported by employers	+8.2	+17.4
Paper trades—Number of employees	− .2	− 1.7
Pottery trades:		
Number of employees	−1.0	− 2.0
Earnings of employees	+1.1	+19.6
Glass trades:		
Number of employees	+1.9	+ .2
Earnings of employees	+6.0	+13.2
Food preparation trades:		
Number of employees	+ .3	−14.5
Earnings of employees	+4.6	+ 7.1
Dock and riverside labor: Number of employees	+2.0	−25.7
Seamen: Number of employees	−8.9	−21.0

[1] No change.

[2] Based on unemployment returns.

The table following shows, by occupation groups, the number of individuals registered, the vacancies notified and the vacancies filled, indicating the extent of unemployment in Great Britain during the four weeks ending November 9, 1917. The totals for this period are also compared with the totals for the five weeks ending October 12, 1917:

INDIVIDUALS REGISTERED, VACANCIES NOTIFIED, AND VACANCIES FILLED IN THE 4 WEEKS ENDED NOV. 9, 1917.

A.—Insured trades.

Occupation group.	Adults.						Juveniles.			
	Individuals registered during period.		Vacancies notified during period.		Vacancies filled during period.		Vacancies notified during period.		Vacancies filled during period.	
	Men.	Women.	Men.	Women.	Men.	Women.	Boys.	Girls.	Boys.	Girls.
Building:										
Carpenters, joiners, etc....	3,157	291	4,602	85	2,537	91	52	2	45	2
Bricklayers.....	1,497	.....	3,189	.....	1,201	.....	6	.....	3	.....
Masons.....	321	2	92	.....	40	1	1	2	1	.....
Plasterers.....	529	1	209	.....	161	.....	4	.....	4	.....
Painters, decorators, etc..	2,558	293	1,485	313	1,192	296	24	9	16	9
Plumbers, glaziers.....	716	5	812	.....	310	.....	38	.....	26	1
Other skilled occupations..	75	.....	95	1	15	.....	.....	.....	.....	.....
Laborers.....	5,992	148	7,269	199	4,163	191	148	.....	124	.....
Works of construction.....	6,358	63	10,689	95	6,595	112	11	7	11	5
Sawmilling.....	1,081	1,371	815	795	483	793	227	87	198	82
Shipbuilding:										
Platers, riveters.....	1,381	17	1,331	5	893	7	69	.....	40	.....
Shipwrights.....	374	1	456	3	327	3	9	.....	10	.....
Laborers.....	1,998	311	1,693	108	1,283	110	141	4	120	4
Engineering:										
Molders.....	927	166	861	99	511	79	62	31	48	15
Smiths.....	666	85	592	105	355	86	13	1	7	.....
Erectors, fitters, turners...	8,545	1,828	7,966	1,025	6,086	884	756	32	706	30
Metal machinists.....	2,822	6,906	1,876	7,119	1,416	6,818	641	292	604	278
Wiremen.....	610	81	719	73	368	89	58	15	50	8
Other skilled occupations..	2,999	4,885	2,714	2,912	1,545	3,002	266	116	240	132
Laborers.....	9,459	2,183	7,838	2,036	7,029	1,965	481	72	423	60
Construction of vehicles.....	933	297	415	155	345	208	72	20	61	20
Cabinetmaking, etc.....	265	116	368	30	78	17	19	17	18	9
Miscellaneous metal trades....	1,995	2,053	2,052	994	1,572	981	380	404	271	290
Precious metals, etc.....	136	238	129	198	48	181	35	77	26	57
Bricks and cement.....	84	66	288	63	73	48	12	3	10	3
Chemicals, etc.....	687	730	1,169	827	929	829	197	97	164	80
Rubber and waterproof goods.	177	805	292	687	146	561	39	81	35	49
Ammunition and explosives...	3,475	31,255	2,343	12,365	2,297	11,437	353	510	359	460
Leather—Boots and shoes.....	204	265	193	162	99	106	49	54	35	41
Leather—Excluding boots and shoes.....	207	607	131	232	61	190	34	83	30	80
Total.....	60,228	55,069	62,683	30,686	42,158	29,085	4,197	2,016	3,685	1,715
Total, males and females.	115,297		93,369		71,243		6,213		5,400	
5 weeks ending Oct. 12, 1917...	129,542		100,066		76,589		7,726		6,526	

INDIVIDUALS REGISTERED, VACANCIES FILLED AND VACANCIES NOTIFIED IN THE 4 WEEKS ENDED NOV. 9, 1917—Concluded.

B.—Uninsured trades.

Occupation group.	Adults.						Juveniles.			
	Individuals registered during period.		Vacancies notified during period.		Vacancies filled during period.		Vacancies notified during period.		Vacancies filled during period.	
	Men.	Women.	Men.	Women.	Men.	Women.	Boys.	Girls.	Boys.	Girls.
Mining and quarrying	468	22	3,070	12	230	14	58	2	28	.....
Textile:										
Cotton	400	865	375	766	185	470	137	115	79	72
Wool and worsted	163	305	180	141	107	124	55	60	45	49
Silk, flax, linen, etc	215	1,444	355	628	145	505	127	323	109	249
Dress:										
Tailors and tailoresses	148	640	97	743	20	451	37	164	26	109
Dressmakers and milliners	.....	575	.....	198	.....	151	.....	213	.....	151
Seamstresses	.....	1,006	.....	552	.....	443	.....	192	.....	158
Others	80	1,329	49	661	9	600	36	104	24	101
Conveyance of men, goods, etc.:										
On railways	181	305	505	241	269	229	118	3	90	2
On roads, seas, rivers, etc	9,378	2,949	6,577	1,093	4,694	870	2,556	1,178	1,813	828
Agriculture	654	1,260	820	1,715	247	1,459	462	253	430	248
Paper, prints, books, and stationery	189	671	295	590	102	461	211	530	165	415
Wood, furniture, fittings, etc	28	88	49	44	10	43	121	50	112	46
Pottery and glass	84	250	206	146	73	95	100	76	79	35
Food, tobacco, drink and lodging:										
Bread and biscuit, etc., makers	126	270	115	231	27	209	44	98	32	85
Waiters	123	1,942	50	868	29	744	17	39	12	32
Others (jam, cocoa, and tobacco)	117	621	313	672	111	587	81	333	77	287
Brushes, brooms, etc	12	37	17	14	8	16	17	55	17	54
Gas, water, electrical supply, and sanitary service	106	44	1,098	118	411	89	17	.....	13	.....
Commercial and clerical	3,459	10,002	1,582	3,759	974	3,176	854	1,290	646	1,089
Domestic:										
Laundry and washing service	1,492	1,020	1,194	1,110	594	895	406	77	292	50
Private indoor servants		1,861		2,324		669		303		113
Other indoor servants		8,236		6,003		4,680		337		207
Charwomen, day girls, day servants		12,229		7,153		5,830		1,178		657
Others		364		210		157		26		20
General laborers	12,235	10,215	4,042	1,120	3,381	997	578	438	482	379
Shop assistants	434	3,509	214	628	68	408	146	600	91	459
Government, defense, and provisional	1,284	5,953	873	1,288	557	1,202	173	262	137	246
All others	1,469	9,590	721	271	470	231	2,098	710	1,937	617
Total	32,845	77,602	22,797	33,299	12,721	25,805	8,449	9,009	6,736	6,758
Total, males and females	110,447		56,096		38,526		17,458		13,494	
5 weeks ending Oct. 12, 1917	132,165		62,373		43,667		20,822		15,602	
Casual employment (men only)	57		.....		1,484		.....		.....	

This table shows that, during the period considered, in the insured trades, 115,297 adults registered for work—60,228 men and 55,069 women. There were 99,582 vacancies reported—62,683 men, 30,686 women, 4,197 boys, and 2,016 girls. The number of positions filled was 76,643—42,158 men, 29,085 women, 3,685 boys, and 1,715 girls.

The occupation groups in which the largest number of positions were filled by adults were: Ammunition and explosives, 13,734; laborers—engineering, 8,994; metal machinists, 8,234; erectors, fitters, and turners, 6,970; works of construction, 6,707; other skilled occupations—engineering, 4,547; and laborers—building, 4,354.

In the uninsured trades there were 110,447 registrations—32,845 men and 77,602 women. The number of vacancies reported was 73,554—22,797 men, 33,299 women, 8,449 boys, and 9,009 girls. The total number of positions filled was 52,020—12,721 men, 25,805 women, 6,736 boys, and 6,758 girls. The occupation groups in the uninsured trades, in which the largest number of positions were filled by adults were: Domestic service, 12,825; conveyance of men, goods, etc., 6,062; general laborers, 4,378; commercial and clerical, 4,150.

The total number of positions filled by adults in both the insured and uninsured trades during the 4 weeks ending November 9, 1917, as compared with the preceding 5 weeks, shows a decrease of 8.7 per cent. The decrease in the number of positions filled by men was 5.2 per cent; by women, 12 per cent. Much the largest number of women were employed in the manufacture of ammunition and explosives and in domestic service.

No comparison can be made between the number of registrations in the employment exchanges of Great Britain and the number of applications for work reported by the employment offices of the United States, owing to the differences in method of registering applicants. It is possible, however, to make a comparison of positions filled by the offices in the two countries. The figures show the following results:

	Number of offices.	Positions filled.		
		Total.	Average per day.	Average per day, each office.
Great Britain	383	128,663	5,361	14.0
United States	145	122,610	4,715	32.5

The above figures are significant in view of the fact that a very large percentage, if not practically all, of the employment office work of Great Britain is done through the free employment exchanges, while in the United States but a very small proportion of the placements is made through the public employment offices, the much greater proportion being handled by the private employment agencies.

EMPLOYMENT MANAGERS' CONFERENCE AT PHILADELPHIA.

Bulletin 227, recently issued by this bureau, contains the proceedings of the Third Conference of Employment Managers, which was held at Philadelphia, April 2 and 3, 1917. This conference was attended by about 500 representatives of employment managers' associations located in Boston, Chicago, Cleveland, Detroit, Newark, New York, Philadelphia, Pittsburgh, Rochester, and San Francisco, though the membership of the associations is not confined to firms in the cities named; the Boston association, for example, includes the most important industrial centers in New England. About 1,000 industrial companies are enrolled as members of the 10 associations.

The organization of these associations was the result of the recognition by employers that a changed policy must be adopted toward their employees; that the greatest waste in all industries is the waste of labor due to bad systems or no systems of handling employees, resulting in irregular work, too little work, too much work, no work, unsuitable work, no training for work, training for no work, and bad conditions of work; and that employment managers should have opportunity for exchange of ideas in order that the best methods of handling the labor force may be adopted, thus bringing about a reduction in the cost to the employer of a high labor turnover. The first employment managers' conference was held at Minneapolis in January, 1916; the second at Boston in May, 1916.

It is believed that the output of labor per man could be greatly increased—perhaps as much as 60 per cent—by a rational system of management which would give due regard to the worker's health and safety. A proper system of labor management would provide for workers ample time and facilities for rest and healthful recreation. Wages must be sufficient to provide the workers with needed food, clothing, shelter, and fuel to maintain health and strength at the maximum. Economy of consumption, that is, the art of spending the dollar wisely, is even more important than economy of production, the art of earning the dollar. Employers, working as citizens, can do much to develop and improve in their workers the art of getting 100 cents' worth of utility for every dollar paid in wages.

All this has nothing whatever to do with speeding up machinery, cutting down piece rates, working longer hours, and the like stock methods of trying to increase output per man per day and per dollar of wages. It has rather to do with shortening the working day, providing rest periods at convenient intervals, advancing piece and time rates, cutting out all overtime, re-creating in the employee an interest in the job he is doing, and helping him to get the most out of his earnings and his leisure.

The addresses and discussions contained in this report show that the employers and employment managers in attendance at the Philadelphia conference realized the importance of the employment problem and manifested real industrial statesmanship in attacking it. The matter of labor turnover—the proportion of the number of employees engaged in a year to the total number of employees on the pay roll—was given particular attention, since this is one of the greatest problems with which employment managers have to contend. Among the practical plans mentioned for reducing labor turnover were proper selection of employees, payment of adequate wages, provision of steady work, promotion of physical efficiency, fostering of good habits, hearing of complaints, and provision for the future of workers by pensions, profit sharing, etc. The question of selection of employees and termination of employment formed the basis of discussion during an entire session, and the matter of following up after hiring, including service work, employees' benefit associations, and mutual aid associations, was discussed at length by a number of speakers.

A feature of the conference was the adoption of a resolution providing for a national committee of employment executives with one representative from each employment managers' association. This committee was subsequently appointed and at a meeting held in May decided that its purpose should be to bring about a closer cooperation between organizations devoted to the study of employment problems, to arrange for national conferences, and to assist in the interchange of reports of meetings, investigations, and information of interest to local associations. It was decided not to form a national association as yet, although if the movement continues to grow such a step will probably be taken in the near future.

LABOR ORGANIZATIONS.

GERMAN FREE TRADE-UNION COUNCILS IN 1916.[1]

The statistics of the German Free Trade-Union Councils (*Gewerkschaftskartelle*) for the year 1916 show even more than those for the preceding year the unfavorable influence of the protracted state of war upon the trade-union movement. Of the 641 trade-union councils carried on the lists of the Central Federation (*Generalkommission*), to which questionnaires were transmitted by the latter, only 469, or 55 less than in the preceding year, participate in the statistics for 1916. In many instances local unions affiliated with trade councils failed to report to the councils their membership so that the membership returns of a considerable number of councils are incomplete.

The trade councils have suffered to greater extent from the war than the local unions. The latter, even if they have lost members and officers during the war, have always found strong support in their federations (*Zentralverbander*), while the former, as local organizations of the trade-unions, are more loose creations, and their activities become paralyzed whenever there is a lack in the locality of leaders able to maintain the combine of the local unions even in the face of greatly reduced membership. The annual report, however, points out that the nonparticipation of a number of councils in the statistics does not mean that these councils have been dissolved or have discontinued all their activities. Failure to transmit a report was in most instances due to the lack and continuous change of officers. In some instances, to be sure, the activities of councils have been temporarily discontinued, but the combine of the local unions is nevertheless being maintained. For all these reasons the number and membership of trade-union councils can not be determined correctly for the present and only after the termination of the war will it be possible to ascertain the actual extent of their decrease.

It should be noted here that the present statistics do not include all trade-union councils existing in Germany but only those of the free trade-unions. The Hirsch-Duncker trade societies and the Christian trade-unions have not published trade-union council statistics since 1913, nor are they expected to do so in the near future.

The 469 trade-union councils included in the statistics for 1916 had affiliated with them 5,846 trade-unions with a total membership of 837,492. At the close of the second quarter of 1914, i. e., shortly be-

[1] Correspondenzblatt der Generalkommission der Gewerkschaften Deutschlands. Statistische Beilage No. 2. Berlin, Sept. 1, 1917.

fore the outbreak of the war, the same councils had a membership of 2,090,637. A comparison of the figures for these two years shows that the membership has decreased 60 per cent. Of the above 837,492 members, 4,189 belong to the independent South German Railroad Employees' Federation and 833,303 to national federations affiliated with the general commission. According to the statistics of the general commission the federations affiliated with it (inclusive of the domestic servants' and agricultural workers' federations) had a total membership of 944,575 at the end of 1916. In the statistics of trade-union councils 88.2 per cent of this membership were therefore included, as against 88.4 per cent in 1915 and 91.4 per cent in 1913. For the proper understanding of these percentages it should be remarked that not all the members of national federations are affiliated with trade-union councils.

Of the trade-union members affiliated with councils, 235,604 belonged to the metal workers' federation, 73,120 to the factory workers' federation, 60,529 to the building trades' federation, 60,321 to the woodworkers' federation, and 57,617 to the transportation workers' federation. These five federations furnished over one-half of the total membership of all councils. The following trade-union councils had, in 1913, a membership in excess of 25,000, and in 1916 the membership shown below, with the membership for 1913 shown within parentheses: Berlin, 138,901 (302,052); Hamburg, 47,522 (143,338); Dresden, 46,161 (95,629); Leipzig, 32,059 (76,185); Munich, 30,036 (63,594); Nuremberg, 21,296 (55,723); Frankfort-on-the-Main, 12,914 (43,807); Stuttgart, 16,333 (43,483); Chemnitz, 15,751 (42,403); Bremen, 12,617 (37,311); Hanover, 13,932 (37,311); Breslau, 1,274 (31,732); Cologne, 3,865[1] (31,176); and Magdeburg, 15,025, (30,766).

The importance of the councils for the trade-union movement is of a strictly local character. Their principal task consists in the promotion of the expansion and in the strengthening of the local unions. During the war, however, most of the councils have discontinued their propaganda activity. This is shown by the fact that the number of meetings held by them was very small in 1916. The total number of meetings held during the year was 672, of which 410 were general meetings and 262 trade meetings. Another important activity of the councils, the making of arrangements for the elections of workmen's representatives to the socio-political bodies, has been discontinued entirely during the war because the Government has extended the term of office of the present representatives indefinitely until the termination of the war. The state of war has not made any changes in the character of the institutions created by the trade-union councils.

[1] Incomplete.

The number of committees created for special purposes has, however, decreased considerably, and, according to communications and business reports received by the general commission, many of these committees have reduced their activities to a minimum or discontinued them temporarily. The 469 councils included in the statistics for 1916 report the existence of 256 educational committees and 241 committees on juvenile membership. Committees for complaints relating to matters of factory inspection were in existence in 59 localities, committees for the combating of boarding and lodging systems in 28 localities, and committees for the protection of building trade workers in 134 localities.

Institutions very valuable to the working classes are the workmen's secretariates and legal information bureaus maintained by trade-union councils. The state of war has even increased their importance and made imperative their maintenance under all circumstances in spite of financial difficulties. In localities in which the councils on account of greatly decreased membership were unable to maintain workmen's secretariates from their own means the general commission has granted subsidies for their maintenance. The total number of secretariates maintained in 1916 was 113 as against 115 in the preceding year. The number of legal information and aid bureaus has decreased considerably in the year under review, their total number being 123. The reason for this decrease is to be found in the great lack of persons sufficiently familiar with social legislation to be able to give information and aid in disputes at law. Trade-union bureaus in which the affairs of trade-union councils are attended to by salaried employees were in existence in 21 large localities.

In the period preceding the war trade-unions in large localities generally endeavored to create a point of concentration for the trade-union movement by the establishment of trade-union halls. For financial reasons these endeavors could not be continued during the war. The statistics for 1916 show the existence of 73 trade-union halls, of which only 42 are built on land owned by the local council, the other 31 being located in rented buildings; 240 councils had made provisions for the lodging of traveling trade-union members, 33 councils having lodging houses of their own, mostly located in trade-union hall buildings, while the remaining 203 councils had made agreements with private hotels and lodging houses. The educational requirements of trade-union members were taken care of by the councils by the maintenance of libraries in 365 localities and of reading rooms in 88 localities.

The trade-union councils are supported by the contributions of the affiliated trade-unions. As a rule, the contribution is fixed per member per year. Separate contributions are sometimes levied for the council proper, for the secretariate, and for educational purposes.

Some councils assess female members lower than male members. The annual contributions of male members vary between 0.20 and 2.60 marks (4.8 to 61.9 cents).

The following two tables show the membership movement and total receipts and expenditures of German trade-union councils for the 16 years ended 1916, and their expenditures in detail for the years 1912–1916:

NUMBER, MEMBERSHIP, RECEIPTS, AND EXPENDITURES OF GERMAN FREE TRADE-UNION COUNCILS, 1901 TO 1916.

Year.	Councils reporting.		Number of—		Receipts (exclusive of strike collections).	Expenditures (exclusive of strike benefits).	Strike benefits paid from—	
	Number.	Per cent.	Affiliated trade-unions.	Affiliated trade-union members.			Council funds.	Strike collections.
1901	319	90.00	3,995	481,718	$70,016.98	$49,587.06	$6,508.35	$50,956.75
1902	365	93.00	4,742	614,722	64,829.77	67,941.38	3,337.47	14,455.88
1903	387	93.50	5,207	758,723	103,640.91	72,641.88	14,487.06	170,770.95
1904	405	93.50	5,559	924,026	94,179.46	94,867.04	10,466.29	62,789.64
1905	465	96.90	6,495	1,180,940	121,949.77	118,921.70	8,110.33	209,134.17
1906	526	95.10	7,390	1,500,206	160,065.71	133,275.48	6,644.72	63,675.71
1907	558	95.06	7,777	1,596,409	186,745.99	162,573.28	4,266.63	23,157.88
1908	606	97.27	8,438	1,560,896	210,940.35	206,954.80	1,396.58	1,840.22
1909	619	94.65	8,548	1,619,666	232,437.70	225,008.29	5,192.68	176,744.51
1910	656	95.91	8,883	1,892,953	268,261.22	245,614.81	5,580.39	153,786.08
1911	691	97.74	9,261	2,160,728	360,187.53	309,749.38	5,995.46	65,158.69
1912	717	93.38	9,418	2,339,571	437,630.12	389,300.88	5,024.18	31,001.88
1913	771	93.38	9,682	2,311,837	510,058.04	510,521.66	2,310.03	2,056.08
1914	578	70.49	7,847	1,384,355	396,517.28	423,446.03	870.37	546.69
1915	524	69.22	6,601	884,147	231,837.70	273,537.68	.....	.....
1916	469	.....	5,846	837,492	258,059.12	270,732.14	.....	.....

EXPENDITURES OF GERMAN FREE TRADE-UNION COUNCILS, 1912 TO 1916.

Object of expenditures.	1912		1913		1914		1915		1916	
	Number of councils.	Amount.	Number of councils.	Amount.	Number of councils.	Amount.	Number of councils.	Amount.	Number of councils.	Amount.
Propaganda	548	$23,739.55	612	$30,978.32	429	$18,669.44	243	$8,750.55	197	$4,888.76
Election of workmen's representatives	288	10,246.61	581	41,623.11	279	9,546.18	35	297.74	33	303.45
Statistics	83	1,544.62	71	1,460.61	75	2,173.42	29	412.93	18	118.05
Trade-union halls and rent of meeting places	58	36,767.19	76	40,454.05	71	50,169.21	48	28,483.13	56	39,340.45
Lodging houses and employment bureaus	144	13,937.28	177	15,248.90	127	9,266.29	47	9,045.43	26	11,330.23
Secretaries and bureaus of information	260	88,782.57	331	115,950.74	304	128,523.09	271	106,689.93	246	106,187.27
Libraries	507	26,552.95	543	40,145.84	468	26,728.35	286	14,058.42	200	13,255.41
Other educational purposes	.....	.....	.....	.....	236	21,445.94	139	10,763.31	67	6,450.28
Juvenile education	.....	.....	.....	.....	233	10,791.87	169	8,320.00	139	9,034.24
Strikes (from council funds)	180	5,024.18	88	2,310.03	24	870.37	.....	.....	.....	.....
Subsidies to families of soldiers and unemployment benefits	.....	.....	.....	.....	.....	.....	113	8,686.29	29	6,352.46
Costs of administration	616	56,058.04	663	68,428.09	494	61,619.39	423	43,055.63	368	35,173.78

The first of the preceding two tables shows that up to and including 1913 the financial strength of the trade-union councils has with small fluctuations steadily increased. The Correspondenzblatt, the organ of the general commission, in reviewing the statistics, states that "this upward movement of receipts is not the sole result of the increased trade-union movement but is largely due to the increased sphere of activities of the councils. With the outbreak of the war the total receipts and expenditures of the councils show, of course, a great falling off. That this falling off of the total receipts and expenditures has not decreased the importance of the councils within the trade-union movement can, however, be proved by the per capita receipts and expenditures. Per member and per year the receipts in 1901 were 61 pfennigs [14.5 cents]. By 1913 they had increased to 93 pfennings [22.1 cents] and in 1916 they amounted to 1.29 marks [30 cents]. During the war the per capita receipts have therefore not decreased but considerably increased and the per capita expenditures have moved parallel to the receipts."

WORKMEN'S COMPENSATION.

WORKMEN'S COMPENSATION PAYMENTS TO ENEMY ALIENS OR THEIR DEPENDENTS.

The declaration of war by the United States, and especially the Trading with the Enemy Act, has brought up the question of the rights of aliens to accident compensation under the various State compensation laws. Most of the State laws specifically provide that nonresident alien beneficiaries are entitled to compensation, although some of the acts establish limitations either by reducing the amount of benefits or by limiting the classes of beneficiaries to whom payment may be made.

This problem has become increasingly important since the declaration of war against Austria-Hungary. As pointed out in an article in the Economic World by Mr. A. R. Marsh,[1] in all of our important industries multitudes of Austrians, Hungarians, Bohemians, and Austrian Slavs of the various kinds, are to be found; and in certain of these industries, as coal mining, they do a very large part of the work. An authoritative and immediate declaration as to the legal status of enemy aliens and their dependents under the State compensation laws becomes apparent. A concrete case has just arisen in Wisconsin because of the refusal of a casualty insurance company to pay compensation to enemy aliens on the ground that such payments are now contrary to the Trading with the Enemy Act. The Wisconsin Industrial Commission immediately took the matter up with the War Trade Board, which advised the commission that a distinction is to be made between compensation payments to enemy aliens resident in the United States and those to alien residents in an enemy country itself.

> The former class of persons are in fact not "enemies" in a technical sense, under our laws, unless they engage in hostile acts or give aid and comfort to the enemy by trading with actual enemy aliens or otherwise. Accordingly, until citizens of Germany and Austria-Hungary * * * who are employed in American industries are guilty of acts of war against the United States, or until they are specifically proclaimed by the President to be "enemies," they stand upon precisely the same footing as American citizens in respect of their

[1] "Workmen's compensation payments to enemy aliens or their dependents," by Arthur Richmond Marsh. The Economic World, New York, Dec. 8, 1917, p. 812.

rights under workmen's compensation laws—at least in so far as payments of compensation benefits to themselves or to beneficiaries resident in the United States are concerned. It is, therefore, in the opinion of the War Trade Board, not a valid defense for an insurance carrier against workmen's compensation claims that the insured or their beneficiaries (if resident in the United States) are nationals of an enemy country. Such a defense can come into play only upon sufficient proof that the recipients of the compensation have created for themselves a status as "enemies."

With regard to payments of compensation benefits to persons actually resident in enemy countries and nationals thereof, the War Trade Board seems to have found it much less easy to interpret the law. It was able to give the Wisconsin commission, at the conference, no definition of the rights of such persons nor of the manner in which they should proceed to enforce these rights, if they possess them. So far as is known at this writing the War Trade Board has even yet arrived at no final determination of the question. In the meantime insurance companies, employers or others holding moneys in trust for enemy alien dependents of fatally injured workers of enemy nationality are required by the Federal statute to report the fact to the Alien Property Custodian, Hon. A. Mitchell Palmer, Washington, D. C.

SELECTION OF PHYSICIANS UNDER ILLINOIS COMPENSATION ACT: A CORRECTION.

In an article on "Tendencies in workmen's compensation legislation in the United States," which appeared on pages 144 to 148 of the MONTHLY REVIEW for December, 1917, it was erroneously stated that Illinois in 1917 for the first time granted injured employees the right to select the physician under the compensation law. There has been no change in this medical provision since the enactment of the original law. An employee can select his own physician now as always, but does so at his own expense. He does not, however, as in the other States mentioned, possess the right of selecting the physician when the expenses are borne by the employer.

AMENDMENT OF WORKMEN'S ACCIDENT INSURANCE LAW IN AUSTRIA.[1]

The law of August 21, 1917, passed by both houses of the Austrian Parliament (*Reichsrath*), amends the workmen's accident insurance law of December 28, 1887, and the extension law of July 20, 1894, as follows:

The maximum amount of the computable annual earnings has been increased from 2,400 to 3,600 crowns ($487.20 to $730.80). In the case of apprentices working without or for a nominal compensation the maximum computable earnings are fixed by the new law at

[1] Austria. Reichsgesetzblatt, No. 156. Vienna, Aug. 31, 1917.

1,200 crowns ($243.60), in place of 600 crowns ($121.80), and the minimum computable earnings at 600 crowns. In the case of apprentices earning more than 1,200 crowns per year their actual earnings are to be considered as computable earnings.

The new law provides that in the future accidents occurring during the performance of domestic or other services, to which the insured is assigned by his employer, or by a superior in addition to his insurable occupation and during the period of employment in this occupation, shall also be compensated. It also settles a question which has been brought up ever since the enactment of the insurance law by explicitly providing that accidents occurring during the journey of the insured from his place of residence to his working place, or vice versa, shall be compensated in the same manner as accidents occurring while the insured is in the actual exercise of his employment.

The maximum amount of the pension (full pension) in case of total disability has been increased from 60 to 66⅔ per cent of the annual earnings. The full pension may also be granted temporarily as a *reconvalescence pension to injured persons who are no longer totally disabled* but need special care in order that their full earning capacity may be restored or their condition improved. One and one-half times the full pension may be granted to injured persons who, consequent to an accident, are so helpless after the termination of the medical treatment that they need an attendant and care. The maximum funeral benefit has been increased from 50 to 100 crowns ($10.15 to $20.30).

The provisions relating to survivors' pensions have been amended as follows: Illegitimate children, provided their paternity has been recognized or legally established, are given the same status with respect to pension claims as legitimate children. The maximum total amount of the combined pensions of all survivors of an insured person has been increased from 50 to 66⅔ per cent of the latter's annual earnings. Grandchildren and brothers and sisters of the deceased insured person have up to their completed fifteenth year of age a claim to pension in the amount of 20 per cent of his annual earnings, provided that the deceased has during his lifetime essentially contributed to their support. In case of their total disability on the completion of the fifteenth year of age their pension may be continued as long as the disability lasts.

The new law provides that the employer must pay the entire insurance premium. Formerly the employer paid only 90 per cent of the premium. The law became effective July 1, 1917, and all accidents occurring after June 30, 1917, are to be compensated according to the provisions of the new law.

RETIREMENT OF EMPLOYEES ON STATE RAILWAYS IN CHILE.[1]

The law of February 15, 1911, designated as "the law requiring State railroads to establish a savings fund," provides for the retirement of incapacitated salaried employees and laborers and for the compensation of persons injured while in the course of employment. The fund is constituted by deducting 5 per cent from the wages of all employees; by retention of the first monthly increase in wages automatically provided by law; of that part of the month's wages not paid to an employee on account of absence due to inability to work, or to the death of employees; of fines or penalties deducted from wages because of imperfect work; of unclaimed pay; of 1½ pesos (54.8 cents) out of every 1,000 pesos ($365) of receipts; and from other sources.

Office employees who have been in the service 10 years at the time this act becomes effective, and who are absolutely incapacitated for labor, may be retired with as many fortieths of 75 per cent of earnings as they may have been years in such service.

Day laborers employed as engineers, in maintenance of way, upkeep of engines, cars, etc., having 10 years' service may be retired when absolutely incapacitated for labor, with 50 per cent of wages.

Persons engaged in the upkeep of rolling stock, having completed 30 consecutive years of service, and being 65 years of age, or who become incapacitated, may be retired on 50 per cent of wages.

For computing earnings a year's work must be considered as not less than 250 days' work.

Permanent incapacity due to injuries resulting from accident is to be compensated by the payment of full wages.

Employees who by reason of accidents while in service receive injuries or contusions which result in temporary incapacity shall be compensated by the payment of full wages, not exceeding 6 months. If upon the expiration of this period they should not have recovered, their position shall be assured them for 6 months, but without pay.

In case of death from accident, the widow, children, and mother, if a widow, have a right to a yearly compensation for 10 years equal to one-fourth of the wages earned by the deceased employee.

Bonuses, extra pay, etc., are not considered as wages. All compensation is computed on the basic pay and biennial increases provided by law.

[1] Lejislacion sobre Accidentes del Trabajo. Ministerio del Interior. 1917. P. lxviii.

INDUSTRIAL ACCIDENTS AND DISEASES.

REPORT OF CALIFORNIA INDUSTRIAL ACCIDENT COMMISSION.

The following summary of the California Industrial Accident Commission's report for the year ending June 30, 1917, is taken from an advance press notice furnished by the commission. The report itself has not yet been received.

In 1916 there were 94,879 industrial injuries reported to the commission. This large total is divided into three main groups: Fatal injuries, 657; permanent injuries, 1,709; temporary injuries, 92,513. Fifty-seven of the fatalities occurred on the high seas. Total dependents to the number of 663 were left as the result of 300 fatalities; 113 partial dependents were left in 53 fatal cases, and in 304 fatal cases there were no dependents. The average age of the wives left dependent was 39.9 years, and the children's average age was 10.5 years. Twelve of the serious and permanent injury cases resulted in the commission awarding life pensions. There were 16,294 injuries that caused a time loss of 15 days or more. The remaining injuries came within the two weeks waiting period.

COMPENSATION AND MEDICAL COSTS.

California's 94,879 hurt workers were awarded $2,398,232.01 in compensation. This sum includes the estimates in all death and permanent injury cases. The medical, surgical, and hospital payments totaled $1,109,072.82. The total for both compensation and medical costs is $3,507,304.83.

ELECTION OF COMPENSATION.

Compensation can be elected by farmers and householders and their employees, as well as by those hiring casual employees outside of the regular business of the employer. The thousands of acceptances during the past fiscal year bring the grand total filed up to 25,890, divided as follows: Farming and kindred occupations, 13,619; domestic, 1,533; casuals, 10,738.

COURT DECISIONS.

On February 3, 1917, the Supreme Court of the State of California, by a unanimous vote, decided the Industrial Accident Commission had jurisdiction over injuries sustained in maritime service. The case is known as the North Pacific Steamship Co. *v.* Industrial Accident Commission. On May 21, 1917, the Supreme Court of the United States decided by a five to four vote that the New York compensation statute could not be admitted to operate in cases of maritime employment. The test case is known as Marie Jensen *v.* Southern Pacific Co. The similarity of the New York and California compensation laws resulted in the nullification of the California Supreme Court's decision when

the highest court of the land decided the issue. (Since this decision Congress has amended the Judicial Code to give concurrent jurisdiction to States having compensation laws.)

COMPENSATION DEPARTMENT.

There was an increase of about 18 per cent, compared to the previous year, in the number of controversies between employers and employees submitted to the commission for decision. The average time of the ordinary case between filing an application for adjustment of claim and a decision was 62½ days. The previous year's average was 75 days. Some cases required answers to interrogatories sent to Europe. In some instances years elapsed before the returns were made.

In deciding 1,393 contested cases there were held 1,962 hearings, and 260 cases were acted upon without hearing. The supplementary proceedings before the commission numbered 850.

Compensation was awarded to employees in 61 per cent and denied in 22.9 per cent of the cases filed. The main issues presented to the commission were "Extent and duration of disability" and "Whether injury was in the course of the employment."

RATINGS FOR PERMANENT DISABILITIES.

The California law stands alone in considering loss of earning power as the sole basis for awarding compensation in permanent injury cases. The three factors on which awards are based are: (1) Nature of injury or disfigurement; (2) occupation; (3) age. There were 1,487 permanent injuries referred to the department. Of this number 1,420 were rated; 31 were found not to be permanent; 3 lacked the necessary data, and 33 were undecidable at the end of the fiscal year.

MEDICAL DEPARTMENT.

During the last fiscal year the medical departments of the Industrial Accident Commission and the State Compensation Insurance Fund were separated. There were 529 formal opinions rendered in the San Francisco office and 82 in the Los Angeles office. These figures do not include the greater number of informal and personal examinations. There were 290 medical examiners appointed by the medical director in San Francisco and 150 by the assistant medical director in Los Angeles. The acceptance of industrial injury cases by poorly equipped medical men is deplored and "constant practice" is condemned. A plea is made for skilled surgery as not only the best, but also the cheapest for all concerned.

STATE INSURANCE.

The continued success of the State Compensation Insurance Fund is referred to with pride by the commission. The State insurance commissioner now has more power in supervising companies writing compensation insurance. A law requires that companies deposit surety bonds or securities with the State treasurer to an amount not less than the loss reserve. When it was proposed to increase compensation insurance rates to California employers approximately 37 per cent, the commission attempted, unsuccessfully, to have the law amended so the State Compensation Insurance Fund could make independent rates based upon its lower operating cost. The fund has, under the law, to continue to

charge the minimum rate approved by the insurance commissioner, but the excess will be returned to the policyholders in dividends.

The fund is now doing about 25 per cent of the total compensation business transacted in California and nearly three times the business done by its nearest competitor. The fund's business in 1917 shows an increase of approximately 40 per cent over the previous year, and will exceed $1,250,000. The sum of $268,208.27 has been paid in refunds to policyholders at date of this report.

EFFORTS TO PREVENT INJURIES.

Boiler safety orders became effective on January 1, 1917. Committees of employers and employees and the commission's engineers were engaged during the year in preparing safety orders for window cleaning, trench construction, air-pressure tanks, electrical utilization, logging, and sawmill operations. After public hearings, these safety orders became effective on January 1, 1917, excepting the safety orders for logging and sawmill operations, which became effective on March 15, 1917.

The formation of shop committees was continually urged. All sources of publicity were utilized and the safety department reports a continuance of the fullest cooperation on the part of California's employers and employees.

The mining division was carried on in cooperation with the Federal Government, a mining engineer of the United States Bureau of Mines continuing to head the division. Practically all the operating mines, gold dredges, quarries, and construction tunnels in the State were carefully inspected at least once during the year. The safety requirements affected the safety of about 16,500 men.

United States mine rescue car No. 1 visited various mines in the State and gave training to employees in mine rescue and first-aid work. This car operates in Utah, Nevada, and California.

STATISTICAL INFORMATION.

The comparison of injuries by years is interesting. Deaths: 1916, 657; 1915, 533; 1914, 691. Permanent injuries: 1916, 1,709; 1915, 1,264; 1914, 1,292. Eyes suffering an impairment of vision or removal: 1916, 202; 1915, 175; 1914, 172. Arms amputated: 1916, 20; 1915, 13; 1914, 28. Fingers lost: 1916, 900; 1915, 798; 1914, 872. Legs or feet lost: 1916, 26; 1915, 28; 1914, 45. Toe amputations: 1916, 33; 1915, 40; 1914, 54. In 1916 there were four women workers killed, two in 1915, and two in 1914.

The average age of the killed during the three years 1914–1916 was 38 years and the average wage $19 a week.

Occupational diseases reported in 1916 numbered 348.

INDUSTRIAL ACCIDENTS AMONG BRIDGE AND STRUCTURAL-IRON WORKERS.

The Bridge and Structural Iron Workers' Union No. 1, of Chicago, has recently published a study of industrial accidents among its own members during the year April 1, 1916, to March 31, 1917. Aside from its intrinsic value, in throwing much light upon acci-

dents in a very hazardous trade, the study is of much significance as representing one of the few instances of a labor union making an effort to diagnose scientifically the accident problem as affecting itself. The following excerpts are taken verbatim from the report.[1]

During the 12 months ending March 31, 1917, there were reported to our office 239 accidents to our members while engaged in their regular employment. These 239 accidents in one year is on the very face of it, an entirely too high a toll for the privilege of earning our meager existence. It is regrettable that this local union does not have any previous records with which to make comparisons, in order to ascertain as to whether the present conditions of rushing or speeding up makes our work more hazardous than formerly. To the best of our knowledge no local union within our international organization has ever paid attention to the large waste of human life and efforts with its attendant suffering, incidental to the industrial hazards of our trade. But comparing the above figures with the records of Painters' Local Union 194 of this city—the only local union of the building trades in Chicago that has for a number of years kept statistical records as to causes and prevalence of accidents in their trade—it is shown that the percentage of occurrence is almost twice as high in our trade as compared with the painting trade, the percentage being 4.2 as against 2.2 amongst the painters. It may be added that in the latter are not included accidents causing less than a week's disability, while a small percentage—about 4 per cent—included in our report suffered no actual disability.

The following table gives a general summary of the conditions existing in our local union as to the average age of our members, conjugal relations, number of dependents, the total and average compensation, and amount of local accident benefit paid in accident cases; it also gives the percentage of members injured who did not receive any compensation or accident benefit.

GENERAL SUMMARY OF CONDITIONS OF INJURED MEMBERS OF BRIDGE AND STRUCTURAL IRON WORKERS' LOCAL NO. 1, APR. 1, 1916, TO MAR. 31, 1917.

Number injured.	Average age.	Per cent married.	Dependents.	Compensation.	Average compensation.	Local benefit.	Average local benefit.	Per cent receiving no compensation.	Per cent receiving no local benefit.
	yr. mo. da.								
21	26 6 8	52	20	$2,339	$111.38	$340	$16.00	38	38
82	34 6 3	73	128	8,025	97.86	1,355	16.52	39	40
70	44 1 11	81	126	6,091	87.00	1,065	15.21	33	39
35	53 4 14	86	46	11,244	330.74	890	26.20	40	50
4	61 3	75	3	564	141.00	175	43.75	25	25
27	No age.	90	42	924	34.22	330	12.22	63	63

* * * Of members injured * * * 21 were between 20 and 30 years of age; 82 were between 30 and 40 years; 70 between 40 and 50; 35 between 50 and 60; 4 were over 60 years of age, and 27 had neglected to report how old they were. More than three-fourths of our injured members were married and had a total of 365 persons depending upon them for support and protection.

[1] Industrial Accident Report to Bridge and Structural Iron Workers' Union, No. 1, of Chicago, Ill., for the period Apr. 1, 1916, to Mar. 31, 1917.

One of the interesting features of the information gathered through our accident records is the amount of compensation received by our injured members under the workmen's compensation law of Illinois. Although a considerable portion of them—40 per cent—received no compensation, presumably because their disability did not last more than one week, or through their neglect to make a proper demand for same, the total amount of compensation reached the respectable sum of $29,187. * * * Deducting the 96 members constituting the 40 per cent who received no compensation, we have an average of $204.10 for each of the injured members who did receive compensation.

This may be considered a fairly good argument against those who are averse to political activity by the forces of organized labor. Prior to the adoption of the workmen's compensation law of Illinois, it was almost impossible for the average workmen to secure any financial redress by the filing of personal damage suits, as the three judge-made defenses of the employers, viz., contributory negligence, assumption of risk, and the negligence of fellow servant, were generally strong enough to defeat the case of the injured worker. According to the report of the Liability Commission of Illinois (pp. 12, 13), the average amount recovered in settlement in and out of court, in personal damage suits, where the injury resulted in death, amounted to the paltry sum of $348.68. The long litigation necessary, and the great expense involved for attorneys and court costs, often left the widow or the dependent children without sufficient recompense to pay the bills contracted during the trial, much less any money to compensate her—as far as money can be considered a compensation—for the loss of her husband and the supporter of their children.

But large as the amount of compensation received may seem, and pleased as we may be for the great improvement secured as the result of the legislative activity of organized labor, we have no reason to be satisfied either with the present compensation law or with the methods of its administration. The insufficiency of the amount of compensation, the frequent delays in securing the same, owing to the refusal of the insurance companies to pay compensation when due, and the necessity of hiring an attorney to take up the legal fight with the shrewd attorneys for the insurance company, are all matters that will have to be taken care of, before we have any right to be satisfied in the matter of compensation for industrial accidents.

HOUR OF DAY WHEN ACCIDENTS OCCURRED.

	Accidents.		Accidents.
8– 9 a. m	12	12.30–1.30 p. m	4
9–10 a. m	30	1.30–2.30 p. m	31
10–11 a. m	43	2.30–3.30 p. m	24
11–12 a. m	37	3.30–4.30 p. m	30
	122		89

Out of a total of 211 accidents that occurred during the regular working hours, 122, or 57.8 per cent, occurred in the forenoon; and 89, or 42.2 per cent, occurred in the afternoon.

CLASSIFICATION OF CAUSES OF ACCIDENTS.

Cause.	Number.	Per cent of accidents.
Struck by machinery or falling objects	124	51.9
Slipped and fell (lost balance)	43	18.0
Caught in machinery or material	23	9.6
Injured through defective scaffold	21	8.7
Stepped on nail, injured by rusty iron	14	5.9
Injured by own tools, slipped or broken	8	3.3
Burned by electric wires	2	.8
Overcome with heat	1	.4
Twisted ankle (no cause given)	1	.4
Scratched hand on column	1	.4
Motorcycle skidded, going to new job	1	.4
Total injured	239	100.0

That nearly 52 per cent of all accidents are caused by being "struck by machinery, or falling objects," gives a good indication as to what means of protection is most necessary. No work should be allowed to proceed where the workmen are exposed to the danger of falling objects, from men working above them, unless a safety floor or netting has been provided to intercept falling objects. A similar protection would also decrease the danger for those 18 per cent who slipped and fell. Accidents caused by defective scaffolding could be prevented by a more efficient inspection and supervision.

But in spite of all the care possible being exercised by the workman, a certain amount of accidents will occur in hazardous employment, as long as present "rushing" or speeding up is permitted to continue.

By shortening the hours of labor, by providing more time for rest and recreation, by making every accident much more expensive to the employer not only as an individual, but as a class, we will be able to most effectively combat the danger to which members of our craft are exposed.

The degree of injury varies from death within a few days or weeks, in five cases; fracture of skull, broken arms, ribs, and legs in a number of cases; scalp wounds and burns, that disabled the victim for weeks and days, to slight bruises that in a few cases did not disable the injured to continue his work. Permanent incapacity resulted in several cases, through the fracture of skull, the crushing of an eye, the loss of fingers in several cases, and through electric burns.

During the 12 months covered by this report, there occurred 12 deaths of members of our local union. A large percentage—41.7 per cent—was caused by accident at work. Of these five deaths, one occurred in May, one in July, two in August, and one in September. In one case death resulted within one day, in two cases within two days, in one case the injured lived six days, and in the one case resulting in lockjaw, the records do not state the period elapsing between injury and death.

SOCIAL INSURANCE AND ACCIDENT PREVENTION URGED BY THE GOVERNOR OF MASSACHUSETTS.

In his address to the legislature on its assembly in January, 1918, Gov. McCall, of Massachusetts, repeated his recommendation for some form of health and old-age insurance and also urged the neces-

sity of better accident prevention methods. As regards the need of accident prevention he said:

During the last two years accidents have nearly doubled in number and severity. Reports indicate that since last June the increase has amounted to an even greater degree—due in a measure to the supplanting of old and experienced workers by those who were inexperienced. It has been estimated that more people are now killed and injured in industry in the United States in a four-year period than were killed in battle or died of disease or wounds during the entire Civil War. This wastage of human life creates a heavy and an unpardonable drain in time of peace, but it is even more deplorable in time of war. We should increase the safeguards against accidents. There is a great social loss in addition to the individual loss which is suffered. Compensation is a very necessary and beneficent thing, but the prevention of the destruction of the lives and limbs of workers is far better than compensation, which can not restore them again. It is estimated that the economic waste from accidents alone in the Commonwealth exceeds $15,000,000, every year. I recommend that the legislature carefully investigate this subject, with a view to providing remedial legislation.

He refers to a recent study of the causes of dependency in Massachusetts, showing that dependency in three cases out of four was caused by the death from sickness of the father.

Where the dependency was caused by incapacity instead of death, sickness was again the preponderating cause. The men whose families were thus deprived of support had previously been employed as skilled workmen with good wages, and yet they were unable to make provision against death or serious illness. Life insurance had been sought by many of them, but the amount of the insurance had been totally inadequate—amounting in most instances to but a few hundred dollars—and was largely consumed by expenses of the last sickness and of burial. I believe these facts, and others to be found in the report to which I have referred, should receive the consideration of the general court. They indicate that the illness of our workers is a chief cause of the dependency which costs us great sums of money each year, and that a further cause is to be found in the premature death of productive workmen. A great amount of this staggering loss and the resulting expense might be averted by prompt and adequate medical care, such as a well-organized system of health insurance would supply, and such as it does supply in those countries which have established such a system. As I have said, general legislation should at the present session be undertaken with unusual caution. But the care of the workers has a very special reference to our efficiency in war. Their labor becomes all the more necessary, for the struggle is not merely between men, but between the productive forces of the nations.

It is especially important, the governor urges, to conserve the health and strength of the women workers who are replacing men in so many industries—

if we are to avoid the costly mistakes made by some of the nations during the earlier years of the war.

The places left in our social order by the men who have entered the military service must be taken by others, who in the first instance require training and are particularly subject to accident. We should not permit our in-

dustrial life to slacken. The farms and mills and factories which are essential to our strength should be kept producing at full capacity. Good authorities declare that for every man on the battle front seven are required at home to keep him an effective fighting unit. No subject can better engage your attention at a time like this than that which relates to the conservation of the human resources of the Commonwealth and the preservation and the efficiency of her men and women. A comprehensive system which would so far as possible do away with the waste resulting from accident and sickness would be a wise, humane, and beneficent measure. It would strengthen the hands of the country in war, and would result in the saving of very many millions of dollars each year to the Commonwealth. At the last session the committee of the legislature which considered my recommendations for health and old-age insurance were of the opinion that the advent of the war, after I had made my recommendations, made it advisable, as a measure of present economy, to adjourn their consideration. That view would necessitate their further adjournment until the end of the war. I believe firmly in the wisdom and justice both of health and of old-age insurance, and of the inevitableness of their coming. Very much is to be said in favor of both even in war time, and especially in favor of the immediate conservation of the health of our workers.

HOUSING AND WELFARE WORK.

ESTABLISHMENT DISABILITY FUNDS, PENSION FUNDS, AND GROUP INSURANCE FOR EMPLOYEES.

BY ANICE L. WHITNEY.

A study of the costs, management, benefits paid, etc., of establishment and trade-union disability funds was made by the Bureau of Labor Statistics and the results summarized in the MONTHLY REVIEW for August, 1917.[1]

In this article, which relates to the 431 establishments which were visited in connection with the study of industrial betterment, only those funds to which the employers make substantial contributions are considered. Many establishment funds were reported in which the only help extended by the firm was the use of a room for meeting purposes, some slight clerical assistance, or the promise of financial aid if a deficit should occur. These associations have been excluded from the report as being practically independent organizations. The details asked for in the study of industrial benefit associations were the percentage of the expenses paid by the different firms, the amount of dues brought to a monthly basis, the amount of the weekly sick and accident benefits and of death benefits, the number of sick, accident, and death benefits paid, and the amount paid out in benefits in the last fiscal year.

Of the 431 establishments visited, 80 reported benefit associations which come within the foregoing requirements. The number of employees in 78 of these establishments was 673,095; two establishments failed to report the number of employees. Fifty-eight of the establishments, with 617,342 employees, reported on the association membership. In these 58 associations the membership was 550,177, or 89 per cent of the total number of employees. This is a high percentage, since in 15 of these establishments a period varying from 2 weeks to 6 months must elapse, after employment, before the individual is eligible for membership. In 12 plants membership in these societies is made a condition of employment, 16 failed to report, while the remaining 52 report that there is no rule which compels employees to become members of the association. There is no doubt, however, that in some of the establishments, while there may not be a rule to this effect, yet indirectly there is strong pressure brought to bear upon employees to become members. The following table shows, by industries, the number of associations, the membership, the classified dues and benefits, and the percentage of

[1] Operation of establishment and trade-union disability funds, by Boris Emmet. MONTHLY REVIEW for August, 1917, pp. 17–36.

expenses contributed by the companies. The employees of all plants of one company in the telephone and telegraph industry have been shown in this table, since the data furnished relates to all and not simply to those places visited as in other sections of the study.

NUMBER OF BENEFIT ASSOCIATIONS, NUMBER OF MEMBERS, CLASSIFIED DUES AND BENEFITS, AND PROPORTION OF EXPENSES PAID BY COMPANIES SHOWN BY INDUSTRIES.

Industry.	Establishments having benefit associations.		Benefit associations.				Associations reporting dues per month to be—				
			Establishments reporting.		Members.						
	Number.	Employees.	Number.	Employees.	Number.	Per cent of total employees.	Under 25 cents.	25 and under 40 cents.	40 and under 75 cents.	75 cents and over.	Different sums, according to wages, etc.
Flour and grist mill products	3	1,532	2	1,360	1,100	81	1	.....	1	.....	1
Foundries and machine shops	12	54,270	9	42,180	36,065	86	.....	2	1	.....	9
Gas, electric light and power companies	7	[1] 18,166	4	14,131	12,875	91	[2] 1	.....	1	.....	4
Iron and steel	5	53,852	5	53,852	52,397	97	1	.....	2	.....	2
Mining, other than coal	3	6,549	3	6,549	4,955	76	.....	.....	.....	1	2
Railroads, electric	9	26,528	8	22,928	20,222	88	[2] 2	.....	4	.....	2
Railroads, steam	2	171,318	2	171,318	155,410	91	.....	.....	.....	.....	2
Telegraph and telephone companies	1	[3] 179,000	1	179,000	179,000	100	[2] 1	.....	.....	.....	.....
Textiles	6	14,214	3	7,351	5,221	71	.....	1	.....	.....	4
Other industries	32	147,666	21	118,673	82,932	70	[2] 4	2	4	1	13
Total	80	[1] 673,095	58	617,342	550,177	89	[4] 10	5	13	2	39

Industry.	Associations reporting benefits per week to be—				Associations reporting death benefits to be—					Establishments paying toward expense of associations.				
	Under $5.	$5 and under $7.	$7 and over.	Different sums, according to dues, etc.	Under $100.	$100 and under $200.	$200 and under $300.	$300 and over.	Different sums, according to dues, etc.	Under 50 per cent.	50 and under 100 per cent.	100 per cent.	Definite sums, regardless of proportion.	No fixed sum.
Flour and grist mill products	.....	1	1	1	1	.....	.....	1	1	2	1	.....	.....	.....
Foundries and machine shops	.....	4	.....	8	1	8	1	.....	2	7	2	.....	1	2
Gas, electric light and power companies	.....	.....	2	4	.....	1	1	3	1	1	2	2	1	1
Iron and steel	1	3	.....	1	1	3	.....	.....	1	.....	1	.....	2	2
Mining, other than coal	.....	.....	1	2	.....	1	.....	.....	2	.....	.....	.....	3	.....
Railroads, electric	.....	1	3	4	.....	2	2	2	2	5	2	2	.....	.....
Railroads, steam	.....	.....	.....	2	.....	.....	.....	.....	2	.....	.....	.....	.....	2
Telegraph and telephone companies	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	1	.....	.....
Textiles	.....	1	.....	4	1	1	.....	.....	4	1	2	.....	1	2
Other industries	1	1	3	17	5	2	2	2	9	7	9	3	6	7
Total	2	11	10	44	9	18	6	8	25	23	19	8	14	16

[1] Not including employees of 2 establishments, not reported.
[2] No dues.
[3] Including employees of all plants of one company.
[4] Including 8 associations in which no dues are charged.

As will be seen, the proportion of the expenses of the associations assumed by the employers varies considerably, although as already stated those companies which contribute only a negligible amount have not been considered. One company, which pays $12,500 annually, stipulates that an average membership of at least 50 per cent of the employees shall be maintained. Another company, in addition to its contributions to the benefit association, has provided a fund of $25,000, from the proceeds of which it cares for employees who are not eligible to join the benefit association. Still another company, not included in the count, has a fund of $1,000,000, the income from which is used in paying accident and sick benefits. This company follows no set plan in making the awards, but considers each case on its own merits, the chief factors in determining the amount awarded being length of service and the necessities of the case.

MANAGEMENT OF ASSOCIATIONS.

The management of the benefit associations is participated in largely by employees. For those companies which reported on this subject there were 34 associations which are managed jointly by the companies and their employees, although in four of these the companies really retain control of the management, since a majority of the association officers are company officials. Fifteen associations are managed by the employees alone, in several of these the company contribution being as much as 50 per cent of the benefit fund. The eight funds which are financed entirely by the companies are, of course, administered and controlled by them. There are six funds to which employees contribute, in the management of which they have no voice.

PHYSICAL EXAMINATIONS REQUIRED FOR MEMBERSHIP.

Usually in the large organizations physical examinations are reported as a requisite for membership. A fee of 50 cents or $1 frequently is charged for this examination. In several instances the company emergency hospitals are managed by the benefit associations, and in some others the regular dues of the association cover a certain amount of medical attention. One mining company has turned over its two hospitals, equipped at a cost of about $10,000 each, to the association, which furnishes medical attendance to the members and their families. One association has a provision, recently added to its rules, that $100 in addition to other benefits shall be paid to any member who must undergo an operation.

LENGTH OF MEMBERSHIP REQUIRED BEFORE ELIGIBLE FOR BENEFITS.

The length of time which must elapse after becoming a member before one is eligible for benefits in the various associations is not reported by 37 of the organizations. Thirteen associations pay benefits immediately; 5 have waiting periods of five, fifteen, or twenty-one days; 12 of four weeks; 2 of 2 months, and 2 of three months, and only 1 has a waiting period of six months. In a few cases there is a longer period of membership required before death benefits are paid than is required for payment of sick and accident benefits. One association in which membership is compulsory has a waiting period of four weeks before one is eligible for sick benefits, and three months before death benefits are paid.

It is generally necessary for the employees of those companies which furnish the entire amount of the disability fund to give a longer period of service before they become eligible for sick benefits and before payment is made for death from sickness than is required in those associations which are partly financed by the employees. Two of the eight companies which maintain such funds did not give any information on this question. One company pays sick benefits after 30 days' service, and death benefits after 1 year, though these benefits do not apply to anyone receiving $1,800 or more a year. Another of these companies makes employees eligible for sick and accident benefits during the second six months that they are employed, with compensation amounting to full pay for four days and half pay for eight days, the benefits increasing gradually in amount up to 15 years' service when full salary is paid for one month and half salary for six months. Death benefits are paid after six months' service. Three of the companies require one year of continuous service before sick benefits are paid. The one remaining company does not provide in its plan for any benefits for sickness under two years of service, but quite generally the plan has been supplemented by provisions for payment during the first seven days of absence for those employees of two years' service or more, and for payments after the first eight days of disability to employees of less than the required two years' service. These supplemental payments are being gradually systematized. Payments under the disability plan are graded according to length of service. Benefits for death from sickness are not paid to dependents except for five years or more of continuous service. This company which is a great public utility whose business extends over a large portion of the United States pays accident benefits from the date of accident even in those States in which there are as yet no compensation laws for workmen.

TIME BETWEEN BEGINNING OF DISABILITY AND PAYMENT OF BENEFITS.

The necessity of guarding against the feigning of sickness or the making of slight illness an excuse to be absent from work is undoubtedly the reason that so large a proportion of the associations do not pay from the beginning of sickness. Many of these associations which do not pay from the first in cases of sickness do, however, pay from the date of injury in accident cases, since the risk of malingering in cases of injury is not so great. Eighteen of the associations do not report the number of days intervening between the beginning of the disability and the payment of benefits. In 9 instances benefits are payable from the first day; 9 pay after three days; 2 each after four, five, and six days; 33 pay after seven days, and 1 each after ten days and fourteen days. One association pays from the first if the sickness lasts more than three weeks, another has a seven-day waiting period unless disablement lasts more than fourteen days when payment is made from the first, and still another pays nothing if disability lasts less than a week, but pays from the first if it lasts longer.

The maximum time for which benefits are paid in any twelve months is reported in all but nine cases. Seventeen associations pay benefits for a period of three months, 14 for six months and 12 for one year, the remaining associations paying for various fractions of a year. In one association those employees who have been members of the society for ten, fifteen, or twenty years may draw benefits, if necessary, for two, three, or four years, respectively. Several associations pay benefits for a longer period for injury than for illness.

INITIATION FEES.

The majority of the associations do not charge an initiation fee, only 20 of the 78 associations reporting that this is a requirement for membership. These fees vary from 25 cents to $2, the usual fee being $1. The entrance fee in four societies varies according to the different classes of dues, and in one depends upon the age of the applicant.

It might be expected that charging a substantial initiation fee, especially if there were a fairly large turnover, would have the effect of reducing the monthly dues or of increasing the benefits paid, but this does not seem to be borne out by the figures as reported. One of the associations, which has a membership of over 15,000 and which charges a fee of $2, reports the monthly dues to be 50 cents, and the benefits but $5 a week for a period of 27 weeks. In this association the company pays 20 per cent of the dues. In the other associations, which charge a fee of one or two dollars, if there is a reduction in the

dues or an increase in the benefits over these figures, it seems to be due to the fact that the company pays a much larger percentage of the expenses of the association.

FORFEITURE OF MEMBERSHIP.

In nearly all cases membership is forfeited upon leaving the employ of the company, but several associations provide that employees upon terminating their connection with the company shall be paid benefits, which they may be receiving at the time, until recovery or until the expiration of the time to which they are entitled to them. In two associations, members on leaving the employ of the company may retain their association membership by vote of the board of directors. In another association, if the person remains a resident of the town and is a member in good standing at the time of leaving, or if he is a pensioner of the company, membership may be retained, while still another allows an employee who has been a member for 10 years and who does not engage in other business or occupation to retain death benefits for himself and wife by paying the regular dues.

The variation in the length of time which elapses between the beginning of the illness and the payment of benefits in the various associations results in a great difference in the proportion of employees receiving benefits and is also an important factor in the cost of the scheme since a waiting period of from 7 to 14 days excludes a large proportion of the cases.

The following table shows the establishments which reported the sick, accident, and death cases and the amount of benefits which were paid during the fiscal year of each association preceding the date of the schedule covering the association:

NUMBER OF BENEFIT CASES AND AMOUNT OF BENEFITS PAID BY ASSOCIATIONS, BY INDUSTRIES.

[The data for the different associations cover in each case the fiscal year previous to the date the schedule was taken.]

Industry.	Sickness benefits.					Accident benefits.					Death benefits.				
	Associations reporting.		Number of cases.	Total amount of benefits.	Average amount of benefit.	Associations reporting.		Number of cases.	Total amount of benefits.	Average amount of benefit.	Associations reporting.		Number of cases.	Total amount of benefits.	Average amount of benefit.
	Number.	Members.				Number.	Members.				Number.	Members.			
Flour and gristmill products	1	1,000	55	$3,451.50	$62.75	.....	.....	.....	.....	.....	1	1,000	4	$900.00	$225.00
Foundries and machine shops	1	2,500	219	5,766.83	26.33	1	2,500	334	$2,970.60	$8.89	1	2,500	14	1,400.00	100.00
Gas and electric light and power companies	2	2,610	[1] 490	[1] 10,224.27	[1] 20.87	2	2,610	[2] 349	[2] 9,266.99	[2] 26.55	2	2,610	17	14,250.00	838.24
Iron and steel	2	21,819	[1] 1,800	[1] 41,247.57	[1] 22.92	3	32,172	[2] 1,482	[2] 24,573.83	[2] 16.58	2	32,136	238	48,820.95	205.13
Mining, other than coal	3	4,955	2,055	51,948.19	25.28	3	4,955	2,335	28,649.97	12.27	3	4,955	42	42,729.00	1,017.36
Railroads, electric	6	18,871	[3] 3,442	[3] 53,178.51	[3] 15.45	4	5,105	[4] 63	[4] 1,151.74	[4] 18.28	5	18,720	109	36,891.50	338.45
Railroads, steam	2	155,410	59,209	881,201.51	14.88	2	155,410	21,555	412,111.90	19.12	2	155,410	1,369	714,870.28	522.18
Telegraph and telephone companies	1	[5] 179,000	18,760	959,729.00	51.16	1	[5] 179,000	10,646	557,979.00	52.41	1	[5] 179,000	214	162,961.00	761.50
Textiles	1	1,340	[1] 152	[1] 2,625.01	[1] 17.27	2	5,040	[2] 74	[2] 1,040.41	[2] 14.06	1	1,340	2	100.00	50.00
Other industries	5	5,516	[3] 963	[3] 16,198.50	[3] 16.82	4	4,706	[4] 415	[4] 5,326.40	[4] 12.83	4	4,991	35	3,150.00	90.00
Total	24	393,021	[6] 87,145	[6] 2,025,570.89	[6] 23.24	22	391,498	[7] 37,253	[7] 1,043,070.84	[7] 28.00	22	402,662	2,044	1,026,072.73	501.99

[1] Including accidents for 1 association.
[2] Not including accidents for 1 association; included in sickness.
[3] Including accidents for 2 associations.
[4] Not including accidents for 2 associations; included in sickness.
[5] Including employees of all plants of 1 company.
[6] Including accidents for 7 associations.
[7] Not including accidents for 7 associations; included in sickness.

The benefit associations have been affected in recent years in many of the States by the enactment of workmen's compensation laws and in the majority of cases the by-laws of these societies have been amended to exclude cases of injury incurred in the course of employment. Since the majority of these laws do not provide for payments for injuries the disability from which lasts less than two weeks, many of the associations provide for payments for this intervening period. In a number of instances, also, where the compensation laws have been less liberal than the provisions of the benefit associations for disability from industrial accidents, the employers have voluntarily assumed the larger payments. A number of companies also which do not contribute to the associations and which have not been included in the statistics, pay a death benefit to the dependents of employees, usually stipulating a certain length of service as prerequisite to the payments.

PENSIONS.

The establishment of a definite pension system has been a comparatively recent manifestation among employers of the belief that the worker has a just claim on those for whom he works for some provision for his declining years. It is probably true, however, that while the majority of the plans state that the pensions are granted for "loyal and efficient" service, still the fact that the provision of these funds tends toward a more stable force, toward keeping the services of the more experienced and skillful workmen who might be able to command higher wages elsewhere, and toward moderating industrial unrest generally, has its weight also in determining firms or corporations to establish such funds.

There were 75 establishments of those visited, with a total of 1,101,500 employees, which maintain pension funds and which have a definite plan which is followed in the granting of old-age allowances. The conviction that it is both desirable and necessary to provide for the many workers who are unable for various reasons to save enough to care for themselves in old age seems to be growing among employers. Of the 66 funds for which the date of the inauguration of the plan was given, 32 were established in the years 1913 to 1917, 20 were established from 1910 to 1913, while only 14 were established previous to 1910.

The following table shows, by industries, the number of establishments having pension funds and the number of employees on pension rolls, and the amount paid out in pensions during the fiscal year preceding the date of the schedule covering the establishment. The employees of all plants of one company in both the iron and steel

and the telephone and telegraph industries have been shown in this table since the data furnished relates to all and not simply to those places visited as in other sections of the study.

NUMBER OF PENSION FUNDS, NUMBER ON PENSION ROLLS, AND AMOUNT OF PENSIONS, BY INDUSTRIES.

Industry.	Establishments having pension funds.		Establishments reporting employees on pension rolls.				
	Number.	Employees.	Number.	Total employees.	Number of employees pensioned.	Total amount of pensions.	Average amount of pension per year.
Foundries and machine shops	12	49,132	10	45,608	265	$125,427.00	$473.31
Gas, electric light, and power companies	6	25,705	4	13,670	201	96,300.00	479.10
Iron and steel	2	257,978	1	[1] 250,000	697	174,389.40	250.20
Offices	7	[2] 8,946	3	3,493	14	10,369.00	740.64
Ore reduction and smelting	3	[2] 3,315	2	[2] 200	156	49,275.00	315.87
Railroads, electric	9	[2] 36,775	6	[2] 22,421	148	68,305.55	461.52
Railroads, steam	7	381,595	4	307,407	4,163	**1,321,297.32**	317.39
Telegraph and telephone companies	2	[2] 179,000	1	[1] 179,000	284	153,360.00	540.00
Other industries	27	159,054	16	71,763	631	288,384.73	457.03
Total	75	[3] 1,101,500	47	[4] 893,562	6,559	2,287,108.00	348.70

[1] Including employees of all plants of 1 company.
[2] Not including 1 establishment, not reported.
[3] Not including 4 establishments, not reported.
[4] Not including 2 establishments, not reported.

CLASSES OF EMPLOYEES ELIGIBLE FOR PENSIONS.

In general the pension plans apply to all grades of employees, but there are four which exclude officials and directors, four which exclude salaried employees whose yearly earnings exceed amounts varying from $1,500 to $5,000, and only one which does not include the factory force. This company has about 11,000 employees, and since the plan covers only those in the office it necessarily debars from participation in its benefits many of those employees who most need such assistance. This seems to be true in a measure of all industrial pension plans since the lower paid and more unskilled class of workmen are less likely to give the continuous service necessary to the granting of a pension, and, if they do, in those cases where no minimum is established the amount is so small as to be of little practical help to the recipient. A case in point is that of one company which has on its pension rolls men receiving as little as $3 per month.

EMPLOYEES' CONTRIBUTIONS TO FUNDS.

The majority of the funds are supported and managed exclusively by the companies. Only four of them require contributions from employees. Three of these assess the employees 3 per cent of their

annual pay, and one assesses them 2 per cent, the amount contributed being returned without interest if the employee leaves the service of the company, although one firm pays 4 per cent interest if the employee is dismissed. The amount, exclusive of the initial fund, set aside by the companies each year for the maintenance of these funds, is usually a certain per cent, most frequently 1 per cent, of the total annual pay roll, or it may be a sum aggregating the amount of the pension allowances or the interest from trusts or other funds which may have been provided.

GENERAL RULES AND REQUIREMENTS.

There is a very decided similarity in many of the regulations governing the payment of pensions. The acceptance of a pension in nearly all cases does not debar the one receiving it from engaging in other work which is not prejudicial to the interests of the company. Usually a temporary absence due to illness or a reduction of the force is not counted in computing the length of service unless it exceeds six consecutive months, and most of the companies allow a break of one or, in most cases, two years in the continuity of service. Assignment of pension allowances is never permitted nor are the pensions subject to attachment for debts of the beneficiaries. Pensions are forfeited usually because of misconduct on the part of the pensioner or at the discretion of the pension board. The maximum employment age in most cases, for those reporting, is 45 years, but sometimes for inexperienced workers this limit is placed at 35 years.

The usual ages at which male employees are retired are 60, 65, and 70, by far the largest number of companies fixing this age at 65 years. For women the average retirement age is about five years less than that of men, although there are several cases where they do not become eligible for pensions before reaching the age of 70. The usual number of years of continuous service requisite to the allowance of a pension is 20, although the requirements in this regard range from 10 to 40 years. Many of the companies have several classes of service requirements, those employees with the longest required period of service to their credit being retired at an earlier age. Pensions for cases of total disability are given at the discretion of the company in many cases; in others a service period varying from 10 to 30 years is a requirement of the pension rules.

A minimum pension allowance is fixed by about half of the companies. In two cases this amount is as low as $5 a month, but the greater number fix the lowest amount paid at $18 or $20 a month. The method of determining the amount of the pension is much the same in the majority of cases, the most usual method being to compute the pension on the basis of the earnings for a certain period of

years. The required number of years of service and the percentage of the earnings are fairly uniform in the different establishments.

SPECIAL ALLOWANCES.

There are 53 firms which reported that while they have no pension fund or system of caring for aged employees, still provision is made for deserving cases. In several instances quite a number of persons are thus cared for, but while this may be a liberal arrangement on the part of the firm, there can be no certainty on the part of the employee that it will be continued and there is also the feeling that it is a gratuity instead of the "deferred wages" to which the employee may feel himself entitled because of his long and faithful service.

The chief objection to industrial pensions as now administered is not in the amount of pensions allowed, which in most cases is fairly liberal, but in the element of uncertainty which results from the fact that the firms universally stipulate that the establishment of such a fund does not form a contract, and that the right to discharge an employee is not affected by the length and character of the service he has rendered. There also can be no assurance to the employee that the firm may not be dissolved and that the assistance which he has confidently expected in his old age may thus be denied him.

GROUP INSURANCE.

One of the most recent evidences of the interest employers are taking in their relations with their employees is found in the growth of the group insurance idea. As in the case of the pension plan, it undoubtedly works toward more harmonious relations and toward the reduction of the labor turnover since it offers a strong inducement to employees to remain with the firm. Individual life insurance is too expensive to be within the reach of most workmen. The guaranty that, in the event of death, a sum will be paid which will be adequate to care for the family during the adjustment to the changed conditions and responsibilities must appeal strongly to that class of workmen who are unable to save anything toward the future and to those also who have reached an age where the rates would be greatly increased or who would be unable to pass the necessary physical examination.

CONDITIONS UNDER WHICH GROUP INSURANCE CAN BE PROVIDED.

The group plan can be offered to firms by the life insurance companies at greatly reduced rates since it does away with the medical examination and much of the usual expense incidental to the selling

of life insurance. In order to secure a satisfactory rate from the insurance company, the employer must offer conditions of employment which measure up to a certain standard. The occupations must not be extrahazardous, sanitary conditions generally must be good, and good drinking water must be supplied. This does not offer an obstacle in the case of most firms, for the ones most likely to wish to introduce such a plan are those which have already progressed far toward safeguarding the plant and providing good working conditions. It is evident, too, that the elimination of medical examinations is made possible through the physical examination on entrance which many companies require and through the work of the emergency hospital departments in caring for the health of employees, which results in lowering the number with serious diseases and maintaining the general health of the force at a high standard.

METHOD OF INSURANCE.

The method of insuring is to issue to the company a blanket policy which covers the entire group to be insured. The insurance company has a list of the employees included, with the age of each and the amount for which each is insured. A certificate is given to each individual, which names the beneficiary, the amount of insurance, and also gives the conditions under which it will remain effective. Naturally the employee's eligibility to the plan ceases upon leaving the employ of the company, but several of the plans allow the employee to continue his insurance at the regular rates, about the only advantage being that he does not have to take the medical examination, with perhaps the consequent increase in the premium.

COST AND SCOPE OF INSURANCE PLANS.

There were 32 firms, with a total of 136,318 employees, which reported that a part or all of their employees had been insured under the group plan. The largest number of these plans cover all employees, but some limit the plan to include those with a stated length of service to their credit. This service is for periods varying from 30 days to 2 years. One large company had insured as yet only its day laborers of one year or more of service, although it was planned to extend the insurance to other groups as fast as possible. Three companies make eligibility for life insurance contingent upon membership in the relief association, and still another company insures all below a salary of $4,000. One company, which insures only foremen and clerks, has an endowment feature which takes effect upon the employee reaching the age of 65.

Most of the companies pay the entire cost of the insurance scheme, but two of the companies pay 50 per cent, and another pays all after

five years' service, while those in the employ of the firm from one to five years are assessed according to their length of service. This had not worked out very satisfactorily, as those to whom it was free were ready to avail themselves of it, but comparatively few of the others had done so. One company which pays half of the costs has insured under the "term" plan. This differs from the ordinary group plan in the respect that the policy is renewed each year and that the premium increases from year to year as the employee grows older. The plan of this company, as well as of several of the others, carries a disability clause, agreeing to pay for total disability incurred before the ages of 60 or 65 are reached. Only one company is reported as making a rule that joining a labor union or participating in a strike invalidates the claim for insurance benefits.

CONCLUSION.

The plans in force vary somewhat in the extent of the provisions. Probably the most equitable and most satisfactory in its working out is one where the equivalent of one year's salary or wages, with of course a maximum limit, is paid in installments. This takes into consideration automatically any change in the employee's wages and provides for the family a year's income on the same basis to which they have been accustomed. This plan has been adopted by a number of the companies. Several of the plans provide for the payment of a fixed sum, these sums varying in the different establishments from $200 to $1,000, and still others for the payment of sums varying with the years of service until the maximum is reached, which is $1,000 in most cases, but which is as high as $2,500 in several instances.

The benefit, pension, and group insurance plans which have been outlined in this article, in so far as they tend toward the amelioration of the economic conditions under which the ordinary workingman struggles, are, it seems probable, steps toward the ultimate goal of better understanding and more cordial relations between employers and their employees.

FEDERAL HOUSING.

The problem of housing the large labor supply at the shipyards under the control of the United States Shipping Board has been under active discussion since last summer. The section on housing of the committee on labor of the advisory commission of the Council of National Defense first took it up, made a hasty survey to ascertain the house shortage at munitions and shipyard centers in August, 1917, called a conference of experts on August 30, held a meeting in Wash-

ington on September 21, and laid a report before the committee on labor detailing its activities and summarizing the results of its housing survey. As a result of the activities of this committee, the War Industries Board of the Council of National Defense appointed a special housing committee with Mr. Otto M. Eidlitz, of New York City, architect and builder, as chairman. Hearings were held in Washington during September, 1917, and a report submitted to the Council of National Defense containing recommendations for a Federal housing program.[1] The principal features of the proposed program were these:

(1) Giving of financial aid to such industries or communities as can clearly demonstrate their right to relief, preferably in the form of loans at a low rate of interest; (2) creation of an organization of reasonable permanency and authority having broad power to conduct building operations, to deal in real estate, and to borrow and lend money; (3) distribution of future contracts for war material in such manner as to prevent undue concentration of workers in any locality.

The committee emphasized the condition that Government aid for industrial housing should be considered as a war measure and be rigidly confined to cases where restriction of output of war materials would otherwise occur.

The committee has continued its work and drafted a clause for insertion in some appropriation bill for securing an allotment from Congress to permit the acquisition of land and the erection of houses for shipyard and munition workers where, in the opinion of the President, such action would be necessary for the national defense and security.

The United States Shipping Board has also had under consideration the housing problem. Several outside experts have had consultation with the board and the employment division of its Emergency Fleet Corporation has looked into the welfare aspects of the problem. The following letter written to the chairman of the Senate Committee on Commerce by the chairman of the United States Shipping Board concerning the interest of the board in the housing problem appeared in the Official Bulletin of January 2.

One of the most perplexing problems of the war to the United States Shipping Board, the Army, and the Navy has been the lack of housing facilities for the enormously increased army of labor. The War Industries Board appointed a committee on housing, with Mr. Otto M. Eidlitz, of New York, as chairman, to investigate and advise on this situation. This committee has investigated and advised on the immediate necessity of increased housing facilities, but owing to the fact that this problem had not yet reached a critical stage at the time

[1] See MONTHLY REVIEW for December, 1917, pp. 218 to 220.

Congress adjourned at its last session, and that no request had been made to Congress for an appropriation to provide necessary housing, Mr. Eidlitz was unable to do more than suggest. The Shipping Board also had appointed an advisory committee which thoroughly investigated housing conditions at the shipyards and recommended some action toward relieving the situation, but all committees were more or less handicapped by no special financial provisions for taking care of this unlooked-for situation.

In November I appointed Mr. J. Rogers Flannery to see what could be done to help the housing troubles at the shipyards. The demand for immediate action became so apparent when the situation was thoroughly investigated that the Shipping Board decided to start construction at once at the most critical points. Hog Island will be the largest operation and $10,000,000 has been set aside for the erection of thousands of houses to be erected in the vicinity of the Hog Island shipyard. Bristol, Pa., has also been assisted, and a large community site is being constructed.

Sparrows Point, Md., has been in need of housing facilities, and the Shipping Board is helping the Bethlehem Shipbuilding Corporation (Ltd.) to purchase about 400 five and six room brick houses to care for the shipyard employees. Baltimore, which is about 10 miles from the shipyards, is cooperating with the United States Shipping Board to the fullest extent and is giving invaluable assistance in helping to place the shipyard employees in homes, rooms, and apartments.

Chester, Pa.; Wilmington, Del.; Newport News, Va.; Newburgh, N. Y.; and many other shipbuilding points are being investigated and plans are under consideration for alleviating the housing situation.

We are treating the housing proposition from a very broad viewpoint, and in all cases where community sites are being planned are providing all the social, moral, and artistic features that will add to the social, moral, and physical well-being of the shipbuilding employees who will live in these communities. While protecting the investment of the Government, we are also adjusting the rents, purchase terms, etc., on such a basis that they will be within normal reach of the men who will occupy the houses.

The Shipping Board has invited the committee on housing to act as its advisory committee, has provided quarters for and is paying all salaries and clerical expenses of this committee and is attempting to work out this housing problem along the very broad lines that it deserves, hoping that eventually Congress will realize the necessity of providing the necessary appropriation with which to take care of the housing necessities of all branches of the Government. The Shipping Board is building up this housing organization in conjunction with the committee on housing so that no time may be lost, and when Congress decides to appoint an independent housing commission with the necessary appropriation to take hold and construct the necessary housing for all branches of the Government, standard town plans will have been laid out and standard types of houses that will permit of standard dimension parts and standard materials will have been decided upon. Everything will be ready. All preliminary foundation work will have been completed. Immediate action can be assured.

About $35,000,000 will be required to carry out the contemplated housing program of the United States Shipping Board. A very considerable amount will also be required by the Army and the Navy. A bill is being prepared by the housing committee of the Council of National Defense, and I hope that it will be favorably acted upon by Congress, providing finances for the necessary

housing. Housing facilities must be obtained for the large army of labor that must live where the Government's operations are being conducted on such an enormous scale, and should be coordinated and standardized in one commission for all branches of the Government.

The bill (S. 3389) referred to in the above statement was introduced in the Senate on January 5, referred to the Committee on Commerce, amended, and passed by the Senate on January 18. It is now before the Committee on the Merchant Marine and Fisheries of the House, where hearings on it are being held. This bill gives the United States Shipping Board Emergency Fleet Corporation power to purchase, requisition, or condemn any improved or unimproved land for housing purposes for the use of employees in Government owned or controlled shipyards. All necessary powers for maintenance and repair of properties acquired are also granted. The corporation has power to sell or rent houses to employees. Expenditures under its authority are not to exceed $50,000,000.

The corporation will fix the prices which it will pay for any property acquired, the seller, however, having the right to appeal to the court for additional compensation if dissatisfied with the valuations of the Emergency Fleet Corporation. In fixing the price to be paid for acquired property, the bill contains no provision respecting the method of valuation, whether the land should be purchased at prewar values or at values which may have been created as a result of Government work in the vicinity of a shipyard. The Emergency Fleet Corporation, however, under its price-fixing power, may quite conceivably take such values into consideration, and the courts, in their discretion, may or may not follow the policy of the corporation in that respect.

The powers under the bill will terminate upon the declaration of peace.

Pending consideration of this bill the United States Shipping Board Emergency Fleet Corporation has gone ahead maturing its plans as shown by the above letter, and an actual survey has been in progress on the housing of employees in the vicinity of Philadelphia, particularly at the new Hog Island shipyard on the Delaware River.

A group of several thousand homes to house the workers at the shipyard in question has been projected by the corporation after consultation with its housing experts, the city of Philadelphia, the Philadelphia Rapid Transit Co., and shipyard officials.

Under the plan projected the city and the Emergency Fleet Corporation will share the cost of opening certain streets in one of the southwestern wards of Philadelphia, lay sewers, and make other essential improvements. The homes to be constructed will be permanent dwellings and will probably be of brick.

If necessary, in order to safeguard itself against real estate profiteering, the Government will exercise its power to seize the land if the price asked by the owners is not satisfactory.

As a part of this housing enterprise, the rapid transit company of the city of Philadelphia is planning to extend its lines to connect with the section of the city in question.

COMPANY HOUSING.[1]

Rapid labor turnover as emphasizing the difficulty which the employer finds in retaining his men has brought about a situation which requires that the employer should undertake the housing of his workmen. The manufacturer "has long felt that the housing problem is one to which he ought to give serious attention. He has disliked doing so, and for good reason, but the present crisis is forcing upon him the conviction that he has got to tackle it, and that in the future he ought to control it."

In a pamphlet on "Industrial Housing Problems" the author emphasizes the need of practicality in handling housing problems; points out the failure to distinguish carefully in housing matters between skilled and unskilled workmen, low and high paid men; outlines the essentials of a workmen's house; and presents some comparative costs.

Assuming the cheapest construction, wood framing, wood lathed and plastered on the inside and rough boarded and shingled on the outside, as the standard or 100 per cent, the relative costs of various houses would be as follows:

	Per Cent.
Wood framing, inside wood lathed and plastered, outside rough boarded and clapboarded and painted	102
Wood framing, inside wood lathed and plastered, outside wire lathed and stuccoed	108½
6-inch concrete wall, inside furred and lathed and plastered, outside rubbed smooth	112
6-inch concrete wall, inside furred and lathed and plastered, outside stuccoed	116
8-inch hollow tile, inside plastered direct, outside stuccoed	111
8-inch brick wall, inside furred and lathed and plastered	115½
Wood framing, veneered with 4-inch brick, inside lathed and plastered	113

In discussing architectural design the author emphasizes utility and points out the frequent tendency to insist on porches for houses at the expense of sunlight. A layout of streets conforming to the

[1] Industrial Housing Problems, by Leslie H. Allen. Boston, Aberthaw Construction Co. [1917.] 31 pp.

contour of the ground is favored, not only because of the more pleasing effect, but also because of its lesser expense as obviating the necessity of cuts and fills, embankments, and retaining walls. In city development it is considered better to limit the amount of land to the tenant and to use the land that would otherwise be allowed him in the maintenance of parks and playgrounds and allotments for gardening.

For successful company housing the need of large-scale operations is stressed, as well as the need for strict and careful supervision and education of the tenants.

EMERGENCY HOUSING ASSOCIATION OF THE DISTRICT OF COLUMBIA.

The act of Congress approved September 25, 1914 (Statutes at Large, 1913–15, chap. 310) proscribed the erection of new dwellings or the alteration of existing buildings for dwelling purposes in alleys of the District of Columbia, i. e., roadways or passages less than 30 feet wide, and all existing dwellings in alleys were to be demolished or abandoned for dwelling purposes after July 1, 1918.

It is now contended that the enforced evacuation of the houses will work hardship upon the poorer classes of people, mostly low-paid or insufficiently paid wage earners, inasmuch as there is a pronounced shortage of houses in the District of Columbia growing out of the demand for house room for Government war workers. In order to prevent any stay in the enforcement of the law six months hence, an Emergency Housing Association of the District of Columbia has been organized. The object of this association is "to promote in every possible and legitimate manner, the erection of model, sanitary, inexpensive homes for the poor people who will be dispossessed of their present dwellings by congressional action on July 1, 1918." The organization is in the nature of a philanthropic promoter for the organization of a model homes company or for the securing of Government aid to provide homes for these alley people who will be dispossessed of their present dwellings by governmental action. The association has at present about 25 active paying members.

WAR HOUSING IN AMERICA, AND BRITISH PRECEDENTS.

While Great Britain has a large background of experimental legislation in housing, the United States is without such experience. Without the compelling necessity arising from economic conditions our efforts at housing and town-planning reform have been tentative

and have consisted mainly in restrictive as distinguished from constructive legislation.

Practically no positive State or municipal action has been taken for the provision of houses for workmen. This matter has been left to speculative building, philanthropic enterprise, and industrial corporations. All these agencies, however, Mr. Frederick L. Ackerman, of the American Institute of Architects, states, in a reprint of an article in the December number of the Journal of the American Institute of Architects (Washington, D. C.),[1] either have failed to solve the problem or at best are only temporary expedients for the solution of the problems of industrial housing.

Mr. Ackerman reviews at length British war-housing precedents. Landlordism and land monopoly in Great Britain have forced upon Parliament a thorough understanding of their retarding effect upon industry and housing particularly, and in its war-housing program provision has been made for absorption of the unearned value of land arising from the establishment of munition plants and housing developments connected therewith. During the war at least and as long as the Government is in possession of land taken over for the purposes indicated, no compensation will be paid for land values created by governmental operations.[2]

A second feature of the British program has been the development of town-planning principles and their acceptance as fundamental to real housing reform. There is, too, a general movement against the tenement as a permanent institution, "and the program of progress in England looks forward toward its complete eradication."

Finally, in the background of British housing experience lies the garden city movement, the aim of which is the dispersion and ruralization of the population. Furthermore, with the garden city movement has been developed experience in cooperative enterprise. The so-called public utility society, which is the organizing agency of the garden city or garden suburb, has, as its central idea, the substitution of the principle of ownership of shares in a company for the personal ownership of the individual home. The shares carry with them the right of tenancy of the house and call for collective responsibility in the management of the whole estate, whereas the system of personal ownership of the house does not necessarily carry with it responsibility for the condition of the surrounding estate.

Certain political institutions in England have also favored housing reform. The Local Government Board has given direction and

[1] Ackerman, Frederick L.: What is a House? Journal of the American Institute of Architects, Dec., 1917.

[2] See also article on "War housing in Great Britain" in the December, 1917, issue of the MONTHLY REVIEW, p. 220.

greater unity to the house-building schemes of the municipalities by the exercise of its power in sanctioning loans to these authorities.

With this precedent of State control and direction and the use of public money for the purpose in question, it has not been a far step for the Government to take direct initiative in the building of emergency and permanent housing for war purposes. Such a step, too, was necessary to increase materially the amount of housing accommodation. For, while the experience in housing by local authorities may have been valuable as an example, it has not sufficed to meet the housing shortage. Local initiative has proved relatively futile, so much so that "the opinion was practically unanimous in favor of State initiative, State construction, and State operation."

The United States, lacking all this background, is in a position, however, to profit by this British experience of "collective ownership and administration," "collective regulation," and "collective provision," quoting the writer. Such a policy "we should adopt and put into immediate execution." This American program, Mr. Ackerman has conceived of as follows:

By all odds, the most important consideration in home building during war or during peace is the land problem. We should secure land for industrial housing purposes by precisely the same methods as were used by the British Government. This includes the safeguarding of adjacent areas by a provision which will enable the Government at a later date, during the war, to secure property for the expansion of an operation at prewar costs. Incorporated and as an essential feature of our scheme, should be a provision whereby the unearned increment in the land thus taken by the Government should be preserved so that the income from it will be used for the sole benefit of the community. The conservation of the unearned increment in the land for the benefit of the community is in itself the prime factor in the economic solution of the housing problem.

The Government should organize a separate department or a nonprofit Government corporation for providing the communities adjacent to munition plants wherever it develops that additional accommodations are required. This organization should acquire land under powers as suggested above, plan new villages, install roads, sewer, water, and light, erect houses and other buildings of amenity required by these communities, and it should operate the properties until such time as they may be transferred to others. This organization should cooperate with the various departments of the Government which operate or control plants providing munitions of war. Control of this organization by the latter departments should be limited to a determination as to the extent and the general nature of the building operation. It is important that the management of the civil community should be in charge of a community manager, working under the direction of the central administration, which would in turn frame a general policy of management in cooperation with the department operating the plant.

The entire property, land and buildings, should be retained and operated by the Government during the war and for a certain period thereafter. Future values and conditions can only be determined accurately at a future date. Therefore, when conditions and values have been adjusted, local nonprofit

land companies with limited dividends should be formed to operate the properties—that is, rent houses, operate the utilities, or rent land to private builders or companies—and use the surplus income from rentals to pay interest and amortization of the Government's loan. The important features of this scheme, which is similar to the British copartnership operations in many respects, are that no land will be sold; title will remain in the original company and be handled as a community investment; rentals will be readjusted from time to time like tax valuations; and, since there can be no profit as a result of an increase of land values due to the development of a community, the increase in rentals would provide for the interest, the amortization of the Government's loan, and an income to be enjoyed by the entire community which would approximate twice the revenue which this community would obtain under ordinary conditions and through the ordinary methods of taxation. This method conserves the unearned increment of land values created by the Government's house-building operations. The new communities gradually purchase the underlying lands and the original houses at cost, thus reimbursing the Government.

It may be argued that these new communities may collapse after the war, in which case the Government loan will, of course, be lost, but by extending the period of Government ownership and control beyond the war and by the organization of local land companies in each community to anticipate that danger, other industries may be secured. The chances that such an investment would be a loss are indeed remote. It is highly probable that a well-planned community, organized upon this basis, with provision of adequate homes and communal buildings, would draw industries to it without effort. This suggestion is not one of theory; it would merely be putting into effect, with but slight modifications, the practices in general use in the garden cities and the garden suburbs of England. The advantage of the scheme lies in the fact that we do not have to determine the complex details of ownership and future management at this date; and the success of this method depends solely upon the degree of thoroughness with which these communities are carried out. If they are well planned, well constructed, and well organized, there is not the slightest doubt regarding the future value of the investment.

SYNOPSIS OF THE PROGRAM FOR THE UNITED STATES.

First, create a central body with—

(*a*) Powers to acquire land under authority equal to that created by the Defense of the Realm Act. The final disposition of property need not now be treated.

(*b*) Powers to survey needs for housing facilities and to determine, in cooperation with a central priority board, the relative importance of industrial operations.

(*c*) Powers to design and construct communities where the needs of such have been made evident by the survey.

(*d*) Powers to operate and manage these communities during the war, and for a few years thereafter, along lines of policy similar to that expressed by what is known as the Copartnership Tenants or Public Utility Societies in England.

(*e*) Powers to maintain a high standard of physical well-being in munition plants (adopting the standards set by our most progressive industrial corporations) and to organize community activities within the communities thus created.

The second step: Create a commission to study the final disposition of these properties. Such a commission should consider such questions as—

(*a*) The organization of local nonprofit corporations to manage and develop the communities created during the war.

(*b*) The saving of the appreciation of land values for the benefit of the community as a whole.

(*c*) The establishment of that part of the cost which should be written off as belonging to the cost of war.

(*d*) The basis upon which such communities could be transferred to municipalities, or nonprofit corporations.

By such a method it would be possible to advance immediately upon new schemes, and in the event of a lack of progress upon schemes now under way, such schemes could be taken over by the Government and handled through the central body.

INFANTS' NURSING ROOMS IN FACTORIES OF FRANCE.[1]

Under the joint supervision of the minister of labor, the minister of munitions, two physicians, and the committee on female labor, an investigation relative to nursing rooms and crèches in factories employing women was recently made in France, covering the period January to May, 1917.

This investigation dealt exclusively with crèches and nursing rooms especially established for working women employed in commercial and industrial establishments, whether under State or private control.

Owing to the invasion the northern and northeastern districts of the country were not included.

The influence of the war was found to vary in different sections. In some localities it had resulted in the closing of such institutions, while in others many new ones have been established and others are under consideration.

Of the 39 establishments included in the investigation, 38 reported the number of female workers employed as 25,443. The following table shows the distribution of crèches and their importance based upon the number of women employed.

[1] Bulletin du Ministère du Travail et de la Prévoyance Sociale, Aug.–Sept., 1917, p. 341.

NUMBER OF CRÈCHES, BY INDUSTRIES AND CLASSIFIED NUMBER OF WOMEN EMPLOYED.

Number of women employed.	Industries.										
	Food.	Chemicals.	Rubber, paper, etc.	Textiles.	Clothing and cloth.	Hides and leather.	Woodworking.	Metallurgy.	Pottery, glass, etc.	Tobacco and matches.	Total.
Not over 100			2		1						3
Over 100 to 200				1		1					2
Over 200 to 300	1	1		2					2		6
Over 300 to 400			1	2			1	2			6
Over 400 to 500											
Over 500 to 600			1	2	1						4
Over 600 to 700											
Over 700 to 800				2						1	3
Over 800 to 900		1		1				1		2	5
Over 900 to 1,000								1		1	2
Over 1,000 to 1,100								1		1	2
Over 1,100 to 1,200		1								1	2
Over 1,200 to 1,300								1			1
Over 1,300 to 1,400											
Over 1,400		1		1							2
Total	1	4	4	11	2	1	1	[1]6	2	6	[1]38

[1] Not including 1 crèche, established jointly by all furnaces in the commune, not reporting number of employees.

Of the 39 crèches reported, 1 was for infants artificially nursed, 1 for infants nursed at the breast, while 37 were open for the care of both classes of infants. In 16 of the latter rooms were designated for each class, in 18 the classes were not separated, and 3 did not report. There were 619 infants cared for in 37 of these institutions, an average of 1 infant for every 40 female workers and 17 for each crèche.

There were 139 persons employed in the 39 crèches, being an average of 1 attendant for every 4.45 infants. A physician is employed in each of 27, and in 2 of these a midwife is also employed; in 10 the community physician is called in; in 4 the physician is a specialist; 1 is supplied with a physician appointed by the city crèche society; and in 1 medical supervision has not been found necessary. In 16 crèches separate rooms are provided for infants whose health is suspected. In 1 an establishment hospital is maintained to which sick infants are transferred. A majority of the crèches refuse admittance to infants whose health is suspected.

The cost of installing crèches per 100 female laborers ranges from less than 500 francs ($96.50) to 30,000 francs ($5,790). Twenty-eight establishments reported the monthly operating expenses per 100 female employees, which ranged from less than 50 francs ($9.65) to 300 francs ($57.90).

Monthly wages, which were reported for 108 of the 139 employees, ranged from 30 francs ($5.79) to 250 francs ($48.25).

Information as to nursing rooms was received from 16 establishments employing 13,491 females. These had established 17 nursing

rooms for infants. Of these 1 had no infants under its care, and 3 were just beginning to operate. In 13 others employing 12,446 females there were 76 infants cared for, or approximately 1 for every 150 women, and 6 for each room.

Medical surveillance was provided for in 15 rooms. In 3 establishments (4 rooms) isolating wards are provided for those who are sick or whose health is subject to suspicion. No room will receive infants whose state of health is under suspicion. A physician may authorize their admittance, in certain rooms, if the health of other infants is not endangered thereby.

The cost of installation per crib (reported for 10 nursing rooms) ranged from 41 francs ($7.91) to 1,250 francs ($241.25), while the monthly operating expenses (reported for 12) per crib ranged from 5.2 francs ($1) to 112.5 francs ($21.71). There were 203 cribs prepared in the 12 establishments.

Many establishments reported that young mothers were permitted to bring their infants and leave them at the watch house, sanitation rooms, dressing rooms, infirmaries, stockrooms, etc., and sometimes even in the rooms of the employer's residence. Special privileges are accorded in some cases regarding absence from work for a half hour or more and reporting late for labor and leaving early.

In many cases these privileges are considered sufficient by the workers themselves. Many mothers prefer to nurse their infants at home. In some cases there is marked opposition to the establishment of crèches. Mothers consider their infants better cared for at home, and that they themselves are there better able to secure the rest needed. In one particular instance (Toulouse), because of the unanimous negative response of mothers when consulted, an enterprise already begun was abandoned.

Establishments often object to providing crèches because of night-work, as that necessitates night guards, and because expense of maintenance would be excessive because of the few mothers in employment.

In some industries work is done both in the shop and at home. This is especially true in industries where the employees are almost exclusively females. As a general rule upon marriage the employee becomes a home worker. In Paris many employers express a willingness to establish nursing rooms, but experience has shown that mothers fail to make use of them.

In response to a circular issued by the Chantiers et Ateliers Augustin Normand at Havre and addressed to employers of female workers, it was decided on May 14, 1917, to establish cooperative crèches in those sections where none are in operation. In this scheme each employer is to share pro rata in the expense fund. An anonymous endowment amounting to 100,000 francs ($19,300) has been placed at the disposal of the city for the establishment of such institutions.

ARBITRATION AND CONCILIATION.

CONCILIATION WORK OF THE DEPARTMENT OF LABOR, DECEMBER 16, 1917, TO JANUARY 15, 1918.

Under the organic act of the department, which gives the Secretary of Labor the authority to mediate in labor disputes through the appointment, in his discretion, of commissioners of conciliation, the Secretary exercised his good offices between December 16, 1917, and January 15, 1918, in 85 labor disputes. The companies involved, the number of employees affected, and the results secured, so far as information is available, were as follows:

STATEMENT SHOWING NUMBER OF LABOR DISPUTES HANDLED BY THE DEPARTMENT OF LABOR, THROUGH ITS COMMISSIONERS OF CONCILIATION, DEC. 16, 1917, TO JAN. 15, 1918.

Name.	Workmen affected.		Result.
	Directly.	Indirectly.	
Strike, Fort Smith Electric Power Co., Fort Smith, Ark..	1,200	7,000	Adjusted.
Controversy, Davis Coal Co., Thomas, W. Va.....	1	.....	Do.
Controversy, Dixie Tannery Co., Bristol, Tenn.....	.....	.....	Pending.
Strike, electricians, Helena Light & Ry. Co., Helena, Mont.	10	90	Adjusted.
Threatened strike, Chesapeake & Ohio R. R. Co., Richmond, Va.	1,900	30,000	Do.
Strike, Porto Rican American Tobacco Co., San Juan, P. R.	15,000	5,000	Do.
Controversy, Tampa Dock Co., Tampa, Fla.....	400	.....	Do.
Strike, Bell Telephone Co., Jacksonville, Fla.....	126	40	Do.
Sympathetic strike, Bell Telephone Co., Waycross, Ga...	12	.....	Do.
Controversy, Garfield Smelting Co. and boiler makers, Garfield, Utah.	80	1,800	Do.
Strike, Terry Shipbuilding Co., Savannah, Ga.....	620	.....	Do.
Controversy, sheet metal workers, Chicago, Ill.....	250	.....	Do.
Controversy, Colorado Midland R. R. Co. and shopmen ..	100	.....	Do.
Threatened strike, packing houses and retail provision markets, Pittsburgh, Pa.	850	2,200	Do.
Threatened strike, slaughterhouses, New York.....	400	.....	Adjusted before commissioner's arrival.
Threatened strike, Big Four R. R. Co., boiler makers and blacksmiths, Indianapolis, Ind.	.....	.....	Pending.
Threatened strike, machinists, boiler makers and blacksmiths, Cincinnati, Indianapolis & Western R. R. Co., Indianapolis, Ind.	.....	.....	Do.
Threatened strike, blacksmiths, Cincinnati & Northern R. R. Co., Van Wert, Ohio.	.....	.....	Do.
Strike, packing-house employees, Seattle and Tacoma, Wash.	.....	.....	Do.
Investigation, Northern Iron Co., Port Henry and Standish, N. Y.	.....	.....	Adjusted.
Strike, Gun Metal Products Corp., Brooklyn, N. Y.....	30	.....	Adjusted before commissioner's arrival.
Strike, telephone operators, Southwestern Bell Telephone Co., Henryetta, Okla.	39	3,500	Adjusted.
Strike, Great Western Sugar Co., Billings, Mont.....	500	.....	Factory closed for season, which automatically disposed of controversy.
Threatened strike, machinists, Oshkosh, Wis., at—			
Challoner Co.....	7	.....	Pending.
S. M. Harding Co.....	6	.....	Do.
Oshkosh Manufacturing Co.....	24	80	Do.
Dobera-Bell Co.....	28	.....	Do.
Termott-McMahon Co.....	26	40	Do.
Universal Motor Co.....	34	50	Adjusted.
Pine Erring Co.....	33	.....	Do.
Dauber-Kratch Co.....	14	.....	Pending.
Threatened strike, street-railway men and electricians, Toledo, Ohio.	.....	.....	Do.

STATEMENT SHOWING NUMBER OF LABOR DISPUTES HANDLED BY THE DEPARTMENT OF LABOR, THROUGH ITS COMMISSIONERS OF CONCILIATION, DEC. 16, 1917, TO JAN. 15, 1918—Concluded.

Name.	Workmen affected.		Result.
	Directly.	Indirectly.	
Strike, Connecticut Electric Steel Co., Hartford, Conn.	30	40	Do.
Strike, box makers and sawyers, Chicago, Ill.	500	1,500	Do.
Threatened strike, boiler makers, Southern Pacific R. R. shop, Ogden, Utah.	114	700	Adjusted.
Strike, Metropolis Bending Works, Metropolis, Ill.	190	300	Unable to adjust.
Threatened strike, meat cutters and packing-house employees, Los Angeles, Cal.	600	200	Adjusted.
Strike of common laborers employed by contractors engaged in construction of buildings for Holt Manufacturing Co., Peoria, Ill.	50	.....	(See note.)
NOTE.—Increase of 1½ cents granted and accepted. Men returned to work. Men wanted further increase which company refused, claiming they were now being paid 1½ cents more than prevailing rate in Peoria. Men did not cease their work.			
Controversy, telephone operators, Boston, Mass.	3,400	8,000	Adjusted.
Controversy, Wyoming Valley Metal Trades Federation and employees, Wilkes-Barre, Pa.	7,000	5,000	Pending.
Controversy, Aluminum Casting Co., Detroit, Mich.	22	.....	Unable to adjust.
Controversy, Curtiss Aeroplane Co. and plumbers, steam fitters, and electrical workers, Buffalo, N. Y.	500	.....	Adjusted.
Threatened strike, Wabash R. R.—railway clerks.	.....	.....	Pending.
Controversy, Kelly Cloak Co., Cleveland, Ohio.	50	60	Adjusted.
Strike, electrical workers, Casper, Wyo.	.....	.....	Pending.
Controversy, Chicago, Terre Haute & Southern R. R. Co., Terre Haute, Ind.	450	1,000	Do.
Controversy between Associated Weighmasters' & Scalesmen's Union and United Weigher's Association, New York.	.....	.....	Do.
Controversy, stationary firemen, Lowell, Mass.	.....	.....	Do.
Controversy, Lincoln Motor Co. and its electricians, Detroit, Mich.	100	500	Unable to adjust.
Controversy, Fairbanks, Morse Co. and its pattern makers, Beloit, Wis.	.....	.....	Adjusted.
Strike, Southern Bell Telephone Co., Princeton, Ind.	15	.....	Unable to adjust.
Controversy, American Steel Foundry Co. and its iron molders, Granite City, Ill.	86	.....	Pending.
Controversy, Florida East Coast R. R. Co. and its shop employees, St. Augustine, Fla.	.....	.....	Do.
Controversy, electrical workers, Pittsfield, Mass.	.....	.....	Do.
Controversy, telephone operators, Little Rock and Pine Bluff, Ark.	.....	.....	Do.
Controversy, Manitowoc Shipbuilding Co., Manitowoc, Wis.	.....	.....	Do.
Controversy, Chicago, Peoria & St. Louis R. R. Co. and its mechanical force, Springfield, Ill.	.....	.....	Do.
Controversy, Maney Milling Co. and stationary engineers, Omaha, Nebr.	2	20	Adjusted.
Controversy and strikes, dyers, Philadelphia, Pa.:			
Piece dyers	80	.....	Pending.
Skein dyers, mercerizers and helpers, etc.	3,000	.....	Do.
Controversy, C. B. & Q. R. R. Co. and car service men, Beardstown, Ill.	.....	.....	Do.
Controversy, Scholl Manufacturing Co. and metal polishers, Chicago, Ill.	.....	.....	Do.
Controversy, Dayton Steel Foundry Co. and its molders and car makers, Dayton, Ohio.	25	.....	Do.
Controversy, Pa. R. R. Co. and carmen, Columbus, Ohio.	.....	.....	Do.
Controversy, Toledo Shipbuilding Co., Toledo, Ohio.	.....	.....	Do.
Controversy, Oregon-Washington R. & N. Co. and clerks, Portland, Oreg.	.....	.....	Do.
Controversy, Alexander Hat Co., Reading, Pa.	.....	.....	Do.
Controversy, General Electrical Co., Schenectady, N. Y.	.....	.....	(See note.)
NOTE.—Employees of General Electric Co. resumed work on advice of president of International Molders' Union.			
Controversy, Allyne-Ryan Foundry Co. and pattern makers, Cleveland, Ohio.	.....	.....	Pending.
Controversy, Delta Electric Co., Marion, Ind.	.....	.....	Do.
Controversy, Local Union, No. 11, heat and frost insulator workers and employers, Baltimore, Md.	38	.....	Adjusted.
Lockout, Dowman Dozier Co., Atlanta, Ga.	.....	.....	Pending.
Controversy, Busch, Diesel, Sulzer Manufacturing Co. and pattern makers, St. Louis, Mo.	.....	.....	Do.
Controversy, Clark Bros. Co. and molders, Olean, N. Y.	.....	.....	Commissioner reports no controversy exists.
Controversy, Nash Motor Co. and pattern makers, Kenosha, Wis.	.....	.....	Pending.

The following cases, noted in the statement of December 14, have been disposed of—

Strike, machinists, American Woodworking Machinery Co., Aurora, Ill. Adjusted.

Threatened strike, Emmonds Coal Co., Bayard, W. Va. Adjusted.

Controversy, firemen, Passaic and Garfield, N. J. Unable to adjust.

Strike, clerks and freight handlers, Norfolk, Va. Adjusted.

Strike, Lake Torpedo Boat Co., Bridgeport, Conn. Adjusted.

Strike, piano and organ makers, Lyon & Healy Co., Chicago, Ill. Factory operating and strikers practically all employed elsewhere.

Strike, street-car employees, St. Paul and Minneapolis, Minn. Adjusted.

Strike, jewelry workers, Chicago, Ill. Union called strike off and urged men to return to work.

Controversy, Utah Light & Power Co., Salt Lake, Utah. Adjusted.

Controversy, machinists, Swift Packing Co., East St. Louis, Ill. Commissioner learned that men had secured work elsewhere.

Threatened strike, packing industries, Chicago and entire West. Adjusted.

Strike, shell shop employees, Pollak Steel Co., Cincinnati, Ohio. Adjusted.

Controversy, Michigan Central R. R. Co. and its machinists, boilermakers, and blacksmiths, Detroit, Mich. Commissioner reports machinists' controversy adjusted; boilermakers and blacksmiths, pending.

Strike, street-railway employees, Charleston, W. Va. Adjusted.

Controversy, A. G. Cuthbert Co., Chicago, Ill. Adjusted.

Threatened strike, electrotypers, Boston, Mass. Adjusted.

Controversy, Chicago, Rock Island & Pacific R. R. Co., Rock Island, Ill. Adjusted.

Strike, shirt manufacturing industry, Mahanoy City, Pa. Adjusted.

Controversy, Tintic mine owners and employees, Eureka, Utah. Adjusted.

Controversy, International Arms & Fuse Co., Bloomfield, N. J. Adjusted.

Controversy, meat cutters, Kansas City, Mo. Adjusted.

IMMIGRATION.

IMMIGRATION IN OCTOBER, 1917.

The number of immigrant aliens admitted to the United States during the year 1916 was 355,767, as compared with 258,678 for the year 1915, an increase of 97,089, or 37.5 per cent. There was also an increase from month to month during 7 of the 12 months in 1916. During 1917 the figures for the first three months show a considerable decrease from month to month. The decrease from the preceding month for January, February, and March, 1917, is 19.9, 22.3, and 19.4 per cent, respectively. For April, however, the number of immigrant aliens admitted shows an increase of 32.3 per cent over the number admitted in March. As compared with April, the figures of May show a decrease of 48.9 per cent. The figures for June indicate an increase of 5.5 per cent over those for May. During July immigration reached a very low point, only 9,367 immigrant aliens having been admitted, a total even smaller than that for May, which was the smallest total for any month in many years. As compared with figures for July, however, those for August show an increase of 7.3 per cent. In September the number fell to 9,228, or 139 smaller than the number admitted in July. As compared with August the figures for September show a decrease of 8.2 per cent. In October there was an increase over the September arrivals of 57, or 0.6 per cent. These facts are brought out in the following table:

IMMIGRANT ALIENS ADMITTED INTO THE UNITED STATES IN SPECIFIED MONTHS, 1913 TO 1917.

Month.	1913	1914	1915	1916	1917	
					Number.	Per cent increase over preceding month.
January	46,441	44,708	15,481	17,293	24,745	[1] 19.9
February	59,156	46,873	13,873	24,740	19,238	[1] 22.3
March	96,958	92,621	19,263	27,586	15,512	[1] 19.4
April	136,371	119,885	24,532	30,560	20,523	32.3
May	137,262	107,796	26,069	31,021	10,487	[1] 48.9
June	176,261	71,728	22,598	30,764	11,095	5.5
July	138,244	60,377	21,504	25,035	9,367	[1] 15.6
August	126,180	37,706	21,949	29,975	10,047	7.3
September	136,247	29,143	24,513	36,398	9,228	[1] 8.2
October	134,440	30,416	25,450	37,056	9,285	.6
November	104,671	26,298	24,545	34,437	.....	.....
December	95,387	20,944	18,901	30,902	.....	.....

[1] Decrease.

Classified by races, the number of immigrant aliens admitted into and emigrant aliens departing from the United States during October, 1916 and 1917, was as follows:

IMMIGRANT ALIENS ADMITTED INTO AND EMIGRANT ALIENS DEPARTED FROM THE UNITED STATES, OCTOBER, 1916 AND 1917.

Race.	Admitted.		Departed.	
	October, 1916.	October, 1917.	October, 1916.	October, 1917.
African (black)	840	961	97	89
Armenian	125	33	1	101
Bohemian and Moravian	37	6	6	5
Bulgarian, Serbian, Montenegrin	156	5	21	14
Chinese	233	154	227	197
Croatian and Slovenian	29	6	1	2
Cuban	316	90	319	158
Dalmatian, Bosnian, Herzegovinian	6	2	4	1
Dutch and Flemish	618	153	62	57
East Indian	9	2	12	5
English	3,796	1,162	764	1,171
Finnish	688	67	126	127
French	3,695	685	199	284
German	1,054	219	45	44
Greek	4,624	376	289	183
Hebrew	1,705	320	8	30
Irish	3,216	411	248	338
Italian (north)	402	193	649	43
Italian (south)	3,383	1,157	1,030	53
Japanese	694	738	85	142
Korean	32	41	11	10
Lithuanian	45	3	1	3
Magyar	50	1	14	1
Mexican	2,253	114	77	62
Pacific islander	.....	.....	.....	.....
Polish	330	39	2	83
Portuguese	1,368	479	33	15
Roumanian	61	21	4	7
Russian	365	98	467	207
Ruthenian (Russniak)	106	.....	2	7
Scandinavian	2,876	294	433	570
Scotch	1,662	599	201	319
Slovak	37	3	.....	2
Spanish	1,232	449	729	384
Spanish-American	248	216	50	47
Syrian	88	22	9	7
Turkish	93	10	.....	11
Welsh	86	30	12	16
West Indian (except Cuban)	120	68	66	47
Other peoples	378	58	32	19
Not specified	.....	.....	817	.....
Total	37,056	9,285	7,153	4,861

PUBLICATIONS RELATING TO LABOR.

OFFICIAL—UNITED STATES.

CALIFORNIA.—*Industrial welfare commission. Bulletin No. 1. Report on the regulation of wages, hours, and working conditions of women and minors in the fruit and vegetable canning industry of California. May 1, 1917. Sacramento, 1917. 176 pp. Illustrated.*

This report is noted on pages 184 to 186 of this issue of the MONTHLY REVIEW.

DISTRICT OF COLUMBIA.—*Report of the Health Officer. 1917. Washington, 1917. 254 pp.*

One section of this report is of interest to labor, namely, that pertaining to the eight-hour law for females. It is stated that during the year ending June 30, 1917, 1,735 establishments came within the purview of this law and that in the execution of the law 11,140 inspections were made. Complaints were received in 109 cases and inspections based on such complaints numbered 112. It is further stated that 9 violations of the eight-hour law for women were referred to the corporation counsel for prosecution and 6 such cases were pending at the beginning of the year. Fines were imposed in 9 cases, amounting to $160; in 1 case personal bonds were taken; in 3 cases a plea of nolle prosequi was entered; 1 case was dismissed; and 1 case was pending at the close of the year. The cost of enforcing the law is given as $4,574.67, exclusive of the undistributed cost of supervision.

INDIANA.—*Bureau of Statistics. Sixteenth biennial report for 1915 and 1916. [Indianapolis] 1917. 881 pp. Illustrated.*

Includes a report of the work of the five free employment bureaus, stating that for the year ending September 30, 1916, a total of 21,381 men and women were given employment, an increase of 85 per cent over the preceding year. The disbursements of the five offices amounted to $8,439.27, making the cost of securing each position approximately 39.5 cents. The private employment agencies, it is stated, have been well conducted during the year. "The abuses formerly so prevalent in this business are now almost exterminated and the agencies are conducting their affairs on a trustworthy basis."

KANSAS.—*Industrial Welfare Commission. First biennial report. From July 1, 1915, to June 30, 1917. Topeka, 1917. 65 pp.*

This report is noted on pages 142 to 145 of this issue of the MONTHLY REVIEW.

MASSACHUSETTS.—*Bureau of Statistics. Collective agreements between employers and labor organizations in Massachusetts, 1916. Labor Bulletin No. 121 (being Part III of the annual report on the statistics of labor for 1917). Boston, 1917. 234 pp.*

Statistical tables show that of 1,354 unions reporting, 764, in 1916, had written agreements, 67 had verbal agreements, and 523 had no agreements; that of the written agreements, 418 were signed or verbally accepted by all employers, 238 by more than half the employers, and 108 by half or less employers; and that the total membership of unions having written agreements signed or verbally

accepted was 171,311, or 71.5 per cent of the total membership of unions reporting.

MASSACHUSETTS.—*Department of Health. Public Health Bulletin, October, 1917. Boston, 1917. pp. 233–256.*

This bulletin briefly reports all cases of anthrax in Massachusetts during nine months of 1917, noting the fact that the increase (39 cases as compared with 31 during 1916) had been coincident with the shipping of hides from new areas in foreign territory with regard to which knowledge as to prevalence of diseases is meager. A table indicates that there were 8 cases in 1908, 7 in 1909, 7 in 1910, 6 in 1911, 11 in 1912, 8 in 1913, 8 in 1914, 11 in 1915, 31 in 1916, and 39 in 1917 (nine months). Six of the 39 cases resulted fatally; one case was pulmonary anthrax, the remainder being external. Thirty-five of the cases were diagnosed as being infected through the handling of hides, 3 from the handling of hair, and 1 from the handling of wool, this diagnosis being confirmed bacteriologically in 25 cases, and "was undoubtedly correct in 7 other cases—a total of 32 certain cases."

NEW YORK.—*Department of Labor. Industrial Commission. Annual report for the nine months ended June 30, 1916. Transmitted to the legislature April 17, 1917. Albany, 1917. 289, 236 pp.*

This report is presented in 10 parts: Report of the commission; report of the legal bureau; report of bureau of inspection; report of bureau of workmen's compensation; report of bureau of mediation and arbitration; report of bureau of employment; report of bureau of industries and immigration; report of bureau of industrial code; report of bureau of fire hazards, boilers, and explosives; opinions of attorney general construing labor laws. There is appendix giving the proceedings of the first industrial safety congress held at Syracuse, December 11 to 14, 1916, an account of which appeared in the MONTHLY REVIEW for November, 1917, pages 169 to 172. The report of the employment bureau shows a total of 33,625 individual orders from employers asking for 49,624 persons, and that of 50,288 persons referred to positions 29,496 (58.7 per cent) were reported as having actually been placed. Of the males reported placed in positions, 35.11 per cent were laborers and 15.55 were agricultural workers; of the females, 36.32 per cent were day workers and 17.15 per cent were domestics. The bureau of mediation and arbitration reported 328 industrial disputes, involving 222,325 persons directly and 31,629 indirectly, and a total loss of time amounting to 9,581,163 days, or an average of about 29,211 days for each strike or lockout. Increase in wages was the principal cause in 270 disputes. About 74 per cent of the days lost was on account of 17 disputes (5.2 per cent of the total) in clothing and millinery trades. The bureau intervened in 96 disputes and was successful in 52.

OHIO.—*Industrial Commission. Bulletin, vol. 4, No. 13, Dec., 1917. A survey of the workmen's compensation insurance field in this country. Columbus, 1918. 93 pp.*

This report contains a survey of the operations of the Ohio State insurance fund. It is issued as a communication to the subscribers to the fund and is an effort to determine the amount the Ohio plan has saved the employers of the State. This saving is computed at $8,186,942.30 from July 14, 1911, to May 15, 1917. The report further states that for the single year 1917 the Ohio State insurance plan has saved its subscribers, as an absolute minimum, $5,000,000. The report also contains two sets of comparative insurance rates for practically all risks or classifications. One compares the Ohio rates of March 1, 1912, with those in effect July 1, 1917; the other compares the rates

of eight States (New York, California, Illinois, Wisconsin, Indiana, Michigan, Kentucky, Colorado, and Pennsylvania), which were in effect in 1917.

UNITED STATES.—*Civil Service Commission. Thirty-fourth annual report for the fiscal year ended June 30, 1917. Washington, 1917. xxix, 237 pp.*

States that on June 30, 1917, there were 517,805 officers and employees in the executive civil service, of which number 326,899 held positions subject to competitive examination under civil service rules, an increase of 29,973. The remainder, 190,906, held positions not subject to competitive examination and were divided as follows: Presidential appointees, 12,134; clerks in charge of contract stations, 5,600; clerks in third and fourth class post offices, 71,000; mail messengers, 8,150; star-route, steamboat, and screen-wagon contractors, 12,035; pension examining surgeons, 4,502; Panama Canal work, chiefly as laborers and minor employees, 19,938; unclassified laborers, 33,094; excepted from examination, and classified positions filled upon noncompetitive examination, 24,453. About 35,000 mechanics of all kinds were recruited for arsenals and navy yards through the efforts of the commission's local boards (3,000) of examiners, with the assistance of the United States Department of Labor and the American Federation of Labor. The commission recommends that the minimum entrance salary for stenographers, typists, and clerks be placed at $1,000, and "a general system of retiring annuities, based upon length of service, the annuity to be provided by deductions from the salaries of employees invested under the supervision of the Government, the interest on which will be sufficient to provide the annuity to be paid."

A retirement system would give stability to the service, create an inducement to capable men to continue in it, contribute to improved administrative methods, and make possible a standardization of salaries and other needed reforms. The benefits to the service from an equitable retirement system would justify a direct contribution from the public Treasury to create an annuity for superannuated employees in the service at the time the system is established.

—— *Department of the Interior. Bureau of Mines. Seventh annual report of the director of the Bureau of Mines to the Secretary of the Interior for the fiscal year ended June 30, 1917. Washington, 1917. 106 pp.*

This report is devoted largely to an account of the progress of investigations being conducted by the Bureau of Mines. One section includes an outline of some of the more important achievements of the bureau during the year. The laws governing the work of the bureau are also given.

—— *Department of Labor. Children's Bureau. Child Labor in Warring Countries. A brief review of foreign reports. By Anna Rochester. Industrial series No. 4. Bureau publication No. 27. Washington, 1917. 75 pp.*

This report indicates that the countries whose standards of school attendance and protection from premature and exhausting employment are most nearly comparable with our own have maintained their standards without change during three years of war. The hope is expressed that the report will call attention to the growing concern in the warring countries for the welfare of children and the earnest efforts now being made in the midst of war to improve their condition, and that it will aid in showing not only the importance of maintaining here all the present industrial protection afforded to women and children but of carrying this protection forward notwithstanding war conditions. A more extended summary of this bulletin appeared in the MONTHLY REVIEW for July, 1917, pages 32 to 34.

UNITED STATES.—*Department of Labor. Children's Bureau. From School to Work: A study of children leaving school under 16 years of age to go to work, in Waltham, Mass., an industrial community of about 30,000 inhabitants. By Margaret Hutton Abels. Washington, 1917. 59 pp.*

This report is noted on pages 146 to 151 of this issue of the MONTHLY REVIEW.

——— ——— ———. *Maternity and Infant Care in a Rural County in Kansas. By Elizabeth Moore. Rural child welfare series No. 1. Bureau publication No. 26. Washington, 1917. 50 pp. Illustrated.*

OFFICIAL—FOREIGN COUNTRIES.

AUSTRALIA (QUEENSLAND).—*Department of Labor. Report of the director of labor and chief inspector of factories and shops for year ended 30th June, 1917. Brisbane, 1917. 61 pp.*

The following summary, taken from the report, indicates the scope of the activities of the Department of Labor:

Number of registered factories	2,486
Number of shops with employees	3,022
Number of shops without employees	3,069
Number of employees in factories and shops	44,389
Number of factory accidents (Brisbane)	122
Number of industrial awards in operation	125
Number of industrial agreements in operation	32
Overtime for year worked by females in Brisbane factories and shops (hours)	41,143¾
Overtime for year worked by males in Brisbane shops	17,060½
Value of railway and steam passes issued	£4,259 8s. 9d. ($20,728.55)
Amount refunded	£2,643 1s. 1d. ($12,862.42)

During the year ending March, 1917, special permits to commence work were issued to 34 children under the age of 14. Arrears of wages secured by the department on behalf of employees during the period covered by the report amounted to £11,196 1s. 3½d. ($54,485.64). The State labor exchanges registered 30,191 persons seeking employment and sent 15,780 to employment, the number placed being 52.3 per cent of the supply. Of the persons injured 101 were adults and 21 were under 18 years of age; 116 were males and 6 were females.

CHILE.—*Ministerio del Interior. Lejislacion sobre Accidentes del Trabajo. Published under the supervision of the director of the Office of Labor. Santiago de Chile, 1917. lxx, 339 pp.*

This volume gives the text of the law concerning compensation of industrial accidents promulgated December 30, 1916, in the Diario Oficial, and the rules and regulations thereunder decreed, June 19, 1917.

It also reproduces the provisions of the civil code relative to civil responsibility in cases of bodily injuries caused by accidents, as well as the provisions of the law of February 15, 1911, concerning compensation for injury or death of employees caused by accident while in the service of the State railroads. (See page 183 of this number of the MONTHLY REVIEW.)

The director of the Office of Labor furnishes information as indicated by the following titles: History of the law (of accidents); definition and classification of industrial injuries; employer; employees, laborers, apprentices, etc.

GREAT BRITAIN.—[*Census Office*] *Census of England and Wales, 1911. General report, with appendixes. London, 1917. 383 pp. Price, 4s. 6d. net.*

According to this report the population of England and Wales in 1911 was 36,070,492, an increase of 10.9 per cent over the number at the preceding census in 1901. The report contains an abstract of the 10 volumes comprising the full census returns.

—— *Committee on the production and distribution of milk. Interim report. London, 1917. 7 pp. Price, 2d. net.*

This committee was appointed in April, 1916, to report on "the production and distribution of milk, including the consideration of the steps which should be taken (1) to stimulate production, (2) conserve milk supplies during any period of excess, (3) to provide for the special needs of children in urban centers, (4) to effect economies in the cost of production and distribution, (5) to organize supplies by administrative action so as to reach all sections of the community, and (6) other kindred subjects." The committee felt called upon to deal first with the problem of increasing or at least maintaining milk production at its prewar level, giving special attention to the possible shortage and high prices of milk during the present winter. This contingency, it appeared to the committee, could be met by action along the following line: (1) The uncertainty and sense of insecurity which exist among dairy farmers, particularly in respect of prices, labor, and feeding stuffs, should, as far as possible, be immediately reduced; (2) the surplus summer milk should be used to the best national advantage; (3) the loss of milk during the warm months of the year by waste or souring before it reaches the consumer should be reduced. Recommendations along these lines were submitted. The committee also suggested that the use of milk in the manufacture of milk chocolate be prohibited, as was done last year, and also that the surplus milk unavailable for manufacture into dried or condensed milk should be used for making cheese, "as this preserves some 60 to 70 per cent of the nutritive solids of milk (including most of the protein), whereas butter only retains 30 to 40 per cent (excluding the protein)."

—— *Departmental committee on prices. Committee appointed by the Board of Trade to investigate the principal causes which have led to the increase of prices of commodities since the beginning of the war. Second and third interim reports. Bread, flour, and wheat prices; freight charges; and potato, tea, and sugar prices. London, 1917. 22 pp. Price, 3d. net.*

This report is noted on pages 112 to 116 of this issue of the MONTHLY REVIEW.

—— [*Department of Labor*]. *Directory of employers' associations and of trade-unions for 1917. London, 1917 144 pp. Price 2s. net.*

This list of employers' associations, it is explained, is confined to associations which are concerned with matters relating to the employment of labor, the intention being to exclude chambers of commerce, of agriculture and of shipping, trade protection and insurance societies, and all associations with purely commercial or technical objects. The associations are classified by groups of trades, and national associations and federations are distinguished from local associations. Many local associations are, however, affiliated to, or are branches of, national associations.

—— *Department of Scientific and Industrial Research. Advisory Council. Report on the resources and production of iron ores and other principal metalliferous ores used in the iron and steel industry of the United Kingdom. London, 1917. 145 pp. Price 2s. net.*

GREAT BRITAIN.—*Department of Scientific and Industrial Research. Science and Industry. A series of papers bearing on industrial research No. 1. Industrial Research in the United States of America. By A. P. M. Fleming, M. I. E. E., London, 1917. 60 pp. Illustrated. Price, 1s. net.*

The following excerpt taken from the introduction outlines the purpose and scope of the report:

The purpose of this memorandum is twofold. It is intended primarily to furnish a record of some observations relating to industrial research as conducted in the United States. To this end descriptions are given of the laboratories in various works, and in educational, State, and private institutions, with a statement of the endowment funds available, and a discussion of legislative and other influences tending toward the nationalization of research, and of the methods of selecting and training scientific investigators, and coordinating their activities and results. The experience so related suggests naturally the consideration of our own country's position in similar matters, and to the account of what is being done in the United States a discussion in very general terms is subjoined, outlining some fundamental considerations which indicate the increasing necessity for research in this country, and offering some suggestions regarding the development of such work, and the relation which any comprehensive national scheme should bear to British industries and to research institutions in the overseas dominions.

——*Imperial War Conference, 1917. Extracts from minutes of proceedings and papers laid before the conference. London, 1917. 163 pp. Price, 1s. 6d.*

——*Local Government Board. Reports to the Local Government Board on Public Health and Medical Subjects. London, 1917. 57 pp. Price, 9d. net.*

This pamphlet includes statistics of the incidence of notifiable infectious diseases in each sanitary district in England and Wales during the year 1916.

—— ——*Reports to the Local Government Board on public health and medical subjects. (New series, No. 112). Reports on an inquiry into cases of anthrax (malignant pustule or external anthrax) suspected to be due to the use of infected shaving brushes. By Francis J. H. Coutts, M. D., London, 1917. 22 pp. Price, 6d net.*

Reference to a number of cases of anthrax caused by the use of infected shaving brushes was made in the MONTHLY REVIEW for July, 1917 (pp. 127, 128). The report here noted gives details of 19 cases (10 fatal) among civilians and of 18 cases (11 fatal) among soldiers at home, besides noting 28 cases among troops in France. Practically all of these cases occurred in 1915 and 1916. It was not definitely proved, however, that all of the cases resulted from the use of infected shaving brushes but the source was traced to a shaving brush in each of at least 11 of the civilian cases and a shaving brush was suspected in each of at least 8 of the military cases. The report suggests the danger of using Chinese, Siberian, or Russian horsehair in the making of shaving brushes, and calls attention to another danger, namely, that of misdescription of consignments resulting in the receipt by retailers of horsehair labeled as goats' hair, the latter not being subject to the Home Office regulations requiring disinfection. It is admitted that disinfection of hair containing anthrax spores is not altogether a simple matter and that there is some reason to think that some of the cases recorded arose from hair which had been submitted to a process of disinfection in which the complete disinfection of the anthrax spores had not been obtained. It is very important that disinfection should be successful and if effected by the steam process it is stated that the cases or bales should be opened, the bundles removed and most of the strings cut, unless the temperature inside the steam apparatus is maintained at 230° F. for half an hour. Furthermore, anthrax spores may remain dormant and yet develop in full virulence when conditions become favorable, emphasizing the importance of complete disinfection.

The report states that the Local Government Board has under consideration what administrative action is required to secure that hair used in the manufacture of shaving brushes is satisfactorily sterilized before the brushes are manufactured. "It will be necessary also to secure that imported brushes are similarly free from infection. For this purpose a guaranty of origin may be desirable as well as examination of samples of brushes after importation."

GREAT BRITAIN.—*Ministry of Labor. Employment Department. Reports upon openings in industry suitable for disabled sailors and soldiers. No. I. Attendants at electricity substations. April, 1917. 6 pp. No. II. Employment in picture theaters. May, 1917. 6 pp. No. III. Tailoring, June, 1917. 7 pp. No. IV. Agricultural motor tractor work in England and Wales. July, 1917. 6 pp. No. V. The furniture trade. September, 1917. 18 pp. No. VI. Leather goods trade. September, 1917. 8 pp. No. VII. Hand-sewed boot and shoe making and boot and shoe repairing. 1917. 12 pp. London, 1917.*

All of these reports were prepared on behalf of the employment department of the Ministry of Labor, the first four being issued in collaboration with the War Pensions, etc., Statutory Committee, and the last three in collaboration with the Ministry of Pensions. Nos. I to IV were noted in detail in the MONTHLY REVIEW for December, 1917, pages 72 to 78. No. V explains the processes involved in furniture making and the disabilities compatible with each process; the length of training required; the wages and prospects in the trade; and includes a syllabus of instruction for the disabled during the course of training. No. VI deals with such leather work as is not subsidiary to other trades. It includes prospects and suitability for the disabled of trunk making and the fancy leather goods trade. The section on training discusses the nature and length of training, courses offered, and wages received during training and after. No. VII discusses the suitability for the disabled man of hand-sewed boot and shoe making and boot and shoe repairing, taking up the processes involved, the prospects and the training necessary, and including a syllabus of instruction for workshops and for schools offering training in this trade.

—— *Ministry of Munitions. Health of Munition Workers Committee. Memorandum No. 19, a second appendix to Memorandum No. 3 (Industrial canteens). Investigation of workers' food and suggestions as to dietary. Report by Leonard E. Hill, M. B., F. R. S. (revised edition). October, 1917* [*Cd. 8798*]. *12 pp. Price, 2d. net.*

—— —— —— *Memorandum No. 20. Supplementary to Memorandum No. 5 (Hours of work). Weekly hours of employment. London, October, 1917.* [*Cd. 8801*]. *7 pp. Price 1d., net.*

This memorandum is reprinted in full on pages 82 to 87 of this number of the MONTHLY REVIEW.

—— *Ministry of Pensions. The War Pensions Gazette. A monthly journal for war pensions local committees, and for all interested in their work. Nos. 1–7. May-November, 1917. London, 1917. Price, 1d.*

This publication is devoted to the work for disabled soldiers now centralized under the control of the Ministry of Pensions. In the foreword in the first issue, Mr. George H. Barnes announces it as "a journal which will be devoted to their interests and which will aim at the diffusion of accurate information of the best that is being done for them and the promotion of their treatment and training and general welfare."

Regular departments cover certain phases of the work each month. Under "Local committees at work" the operations of the committees located at Leicester, Manchester, county of Haddington city of Birmingham, the borough

of West Ham, the borough of Swansea, and the county of Dumfriesshire have so far been reviewed with special reference to such matters as organization, cooperation, disablements, training, treatment, and employment.

Under "The treatment and training of the disabled" accounts are given of the purposes and methods of hospitals and schools for treatment and re-education, among which are the Cordwainers' Technical College, offering courses in hand-sewed boot making and in the manufacturing of fancy leather goods; the Pilkington Special Hospital at St. Helens, which is physiotherapic in character; Queen Mary's Convalescent Auxiliary Hospitals, Roehampton, presenting a variety of technical courses ranging from bookkeeping to poultry farming; and the Military Orthopedic Hospital, at Shepherd's Bush, with its curative manual workshops. Under this heading there appears also an account of the interallied conference held in Paris in May, 1917; and a report on training courses for British prisoners of war in Switzerland.

An important feature of the journal is a department devoted to answers to correspondents. Points of difficulty which appear to be of general interest are dealt with, the rulings and decisions published being official.

Under "Notes of the month" attention is directed to official circulars, regulations, and decisions of general interest to local committees.

A department headed "Pensions in Parliament" deals with "Alternative pensions," "Separation allowances," "Disablement," "Medical treatment," and related subjects.

Besides the regular departments there are special articles on such subjects as "Publicity," "Training and trade-unions," "Pensions in Germany," "The employment of deaf and dumb workmen during the war," "A list of industries considered ordinarily unsuitable for training," "Agriculture," "A ministry of restoration," "National health insurance," "The disabled in Italy," "Report of the committee on institutional treatment," "The children," "Arificial limbs," and "A school of lamp working." "The need for reality," by John Galsworthy, in the July number, calls attention to the necessity of encouraging the disabled soldier to consider his future and avail himself of the opportunity for professional reeducation in order that he may compete with the able-bodied worker rather than take advantage of the present abnormal demand for his labor and accept a situation which he will not be able to keep under normal industrial conditions.

GREAT BRITAIN.—*Parliament. The parliamentary history of conscription in Great Britain: Being a summary of the parliamentary debates, etc., with an index and text of the military service acts and a preface by Richard C. Lambert, M. P. London, Allen and Unwin, 1917. 367 pp.*

The story of the British parliamentary struggle for conscription, down to the passing of the Military Service Acts, 1916.

—— *War Pensions, etc., Statutory Committee. Report for the year 1916. London, 1917. 104 pp. Price, 1s. 3d. net.*

This report gives an account of the purpose and work of the statutory committee which was constituted for certain purposes relating to pensions, grants, and allowances made in respect of the present war to officers and men in the naval and military service of Your Majesty, their wives, widows, children, and other dependents, and the care of officers and men disabled in consequence of the present war and purposes connected therewith * * *" from its first meeting on June 17, 1916, to its dissolution. The functions and work of local committees and subcommittees established by the statutory committee are described, and details and statistics given under such headings as "Finance," "Pensions, grants, and allowances," "Education of children," "Special dis-

ablements subcommittee," "Treatment," "Training," "Employment." An important feature of the report is the account of the establishment of the Ministry of Pensions and of the proceedings of the statutory committee from December 31, 1916, until its dissolution and the transference of its functions and staff to the Ministry of Pensions on August 21, 1917. The latter three-fourths of the report consists of an appendix made up of extracts from circulars of an informational and administrative nature, including schedules and tables relating to the work of the statutory committee and the local committees.

GREAT BRITAIN—(*Scotland*).—*Local Government Board. Twenty-second annual report, 1916. London, 1917. xlii, 19 pp. Price, 3d. net.*

Gives the number of poor of all classes, including dependents, in receipt of relief on May 15, 1916, as 95,857 or 19.87 per 1,000 of the estimated population at June, 1916; and states that the expenditure for the benefit of those people amounted to £1,324,241 ($6,444,418.83). The number of poor in 1915 was 103,072 and the expenditure amounted to £1,237,004 ($6,019,879.97). Under the Old Age Pensions Acts of 1908 and 1911, 1,969 applications were received during 1916, 1,814, together with 112 carried over from the preceding year, being disposed of by December 31. The report notes that considerable work was added to the duties of the board by reason of the decision of the Government to grant an additional allowance of 2s. 6d. (60.8 cents) a week to old-age pensioners suffering special hardship from the high prices of food and from other economic conditions arising from the war. Referring to the work under the Unemployed Workmen Act, 1905, the report says: "Owing to the great scarcity of labor available for general industrial purposes, unemployment in Scotland has virtually disappeared. Two distress committees, however—Glasgow and Aberdeen—found it necessary to afford relief in a limited number of special cases. The Glasgow committee employed an average daily number of 10 persons in general farming work and the manufacture of moss litter, etc., * * * and in Aberdeen an average daily number of 12 persons were occupied in the collecting and sorting of waste paper."

IRELAND.—*Registrar General. Fifty-second annual report, containing a general abstract of the numbers of marriages, births, and deaths registered in Ireland during the year 1915. London, 1916. 73 pp. Price, 1s. net.*

ITALY.—*Cassa Nazionale d'Assicurazione per gl'infortuni degli operai sul lavoro. Per la riforma della legge infortuni. Rome, 1915. 391 pp.*

A compilation of proposals for the amendment of the existing workmen's accident insurance law. The first part of the volume gives official proposals, grouped under the following four headings: (1) Proposals by the division chiefs of the main office of the national accident insurance fund (*cassa nazionale*) and by the chiefs of branch offices; (2) proposals of the medical advisory board; (3) proposals of the executive committee; and (4) proposals of the Superior Labor Council. The second part gives a bibliography of Italian and foreign accident insurance legislation, general and special monographs on workmen's accident insurance reform, international congresses on social insurance, and of resolutions relating to accident insurance adopted by congresses and conventions. Statistical data on permanent disability and the capitalized value of pensions are given in an appendix.

The principal reforms proposed are the following: Extension of the classes of workmen subject to insurance; abrogation of the limitation of obligatory insurance to establishments employing at least five workers; more precise indication of the industries subject to insurance; consideration of trade diseases as industrial accidents; designation of the national accident insurance fund as sole authorized carrier of workmen's accident insurance; substitution of pensions

for lump-sum settlements in case of permanent invalidity; increase of indemnities for serious permanent disability; more precise definition of the basic and annual earnings of the insured; obligatory medical arbitration in case of disputes relating to the amount of compensation.

ITALY.—*Cassa Naziona e d'Assicurazione per gl'infortuni degli operai sul lavoro. Rassegna di assicurazioni e previdenza sociale. Bolletino mensile. Vol. 4, No. 4. Rome, April, 1917.*

The April, 1917, number of the monthly bulletin of the National Accident Insurance Fund contains among other matter the text of a circular relating to the liquidation of accident indemnities to workmen employed in military service in the war zone, of another circular on obligatory arbitration of disputes relating to accident insurance of workmen employed in the war zone, and of a third circular relating to the wages of war prisoners employed by public administrations and private parties and the accident insurance of these prisoners. Considerable space is devoted to the reproduction of the discussion by the Senate of a bill for "the protection and aid of war invalids." The full text of a bill for the obligatory insurance of agricultural workmen is also given.

The only statistical data contained in the present issue show the number of workers insured in the national fund against accidents, by sex, for the years 1914, 1915, and 1916. These data are reproduced here in the following table:

NUMBER OF MALE AND FEMALE WORKERS INSURED IN THE ITALIAN NATIONAL ACCIDENT INSURANCE FUND AGAINST ACCIDENT, 1914, 1915, AND 1916.

Year.	Males.		Females.		Total.
	Number.	Per cent.	Number.	Per cent.	
1914	682,216	89.36	81,242	10.64	763,458
1915	653,939	89.97	72,920	10.03	726,859
1916	580,922	86.28	92,347	13.72	673,269
1914–1916	1,917,077	88.61	246,509	11.39	2,163,586

The above data indicate a large increase in 1916 in the employment of female labor as compared with 1915.

—— —— *Testo unico della legge per gli infortuni degli operari sul lavoro 31 gennajo 1904 e regolamento per la esecuzione del testo unico predetto. Rome, 1915. 182 pp.*

This volume contains the text of the Italian workmen's accident insurance law of January 31, 1904, and of the regulations for its enforcement and application as well as tables for the computation of compensations payable to survivors of insured persons.

NEW ZEALAND.—*Board of Trade. First annual report. Wellington, 1917. 26 pp.*

In accordance with the Cost of Living Act of 1915, the Board of Trade presented this, its first annual report, to the governor general to be laid before the General Assembly. The report covers a period from the inception of the board, March 1, 1916, to March 31, 1917, and gives the results of its investigation of high prices and related questions. A summary of the report on flour, butter, and meat will be found on pages —— to —— of this issue of the MONTHLY REVIEW.

—— *Department of Labor. Twenty-sixth annual report, 1917. Wellington, 1917. 21 pp.*

During the year 1916–17, 2,966 persons were assisted through the men's employment bureaus, a decrease of 3,012 (50.4 per cent) from the preceding year.

In 12,455 factories the number of workers was 78,188, a decrease of 4,823, or 5.8 per cent, from the preceding year, which is "evidence of the effect of the withdrawal from civil employment of a large number of men for defense purposes." The report states that the overtime worked by females and boys (no record having been made of overtime worked by males over 16 years of age) in 15 principal towns amounted to 489,374 hours as compared with 432,250 hours during the year 1915–16. The boot and shoe trade was responsible for 32,178 hours (about 6.6 per cent) of overtime. The overtime in munition works amounted to less than one-half of that worked during the preceding year—16,569 as against 41,534 hours. A total of 1,171 accidents (5 fatal) is recorded, an increase of about 10 per cent over the preceding year. During the year 37 cases were dealt with under the workmen's compensation act, as compared with 52 during 1915–16. The commissioners and councils of conciliation were instrumental in settling, or substantially settling, 159 out of 190 disputes. Appended to the report is a statement by the deputy superintendent of workers' dwellings relating to the operations of the act during the year ending March 31, 1917.

RUSSIA.—*Senate. Sobranie Uzakonenii i Rasporyazkenii Pravitelstva, Izdavaemoe pri Pravitelstvuyushchem Senate. September 1, 1917. No. 209. Part 1.*

This is a collection of governmental decrees and orders promulgated by the Russian Senate, June 30 to August 5, 1917. Decree or order No. 1327 provides for the settlement of industrial disputes by recourse to conciliation. Failing to reach a settlement through this, a board of arbitration is appointed. The board is to consist of an equal number of delegates selected from employers and employees.

SPAIN.—*Instituto de Reformas Sociales. Sección Primera. Legislación del Trabajo. Apéndice undécimo, 1915. Madrid, 1916. 374 pp.*

This volume, in connection with the 10 previously issued under the same title, forms a complete code of labor laws in force in 1915. Proposed laws and amendments presented to the National Congress during the year 1915 are reproduced.

The laws are presented in part 1 under the following titles: I. Industrial accidents; II. Agricultural; III. Associations; IV. Labor contracts; V. Cooperation; VI. Industrial education; VII Laborers' dwellings; VIII. Strikes; IX. Labor inspection service; X. Women and children; XI. Deposit and loan funds; XII. Saving funds; XIII. Agricultural associations; XIV. Other laws. In part 2 are given proposed amendments relative to: I. Associations; II. Labor contracts; III. Hours of labor; IV. Women and children (protection of infants); V. Saving funds; VI. Other amendments.

—— —— —— *Legislacion sobre asociasión. Madrid, 1916. 223 pp.*

A compilation of the more important provisions of the laws and orders and interpretations of legislation relative to associations of a social character in Spain, and more especially those of interest to laborers, cooperative societies, and agricultural credit associations.

The subject matter is classed as follows: A. Laws and regulations; B. Explanations and interpretations of laws and regulations.

Under each of these general heads the laws are divided into the following five classes: I. Associations in general—laborers' associations; II. The right of associations to representation in central bodies; III. Mutual aid and cooperative societies; IV. Credit societies; V. Other associations.

Laws enacted since February 1, 1916, are inserted as an appendix.

SPAIN.—*Instituto de Reformas Sociales. Sección Primera. Legislación sobre Accidentes del Trabajo. Madrid, 1916. 215 pp.*

A compilation of laws relative to industrial accidents. The volume is divided into two parts: A. Laws and regulations; B. Explanations and interpretations. In part 1, which presents the laws, copious references are made to explanations and interpretations appearing in part 2.

—— —— —— *Legislación sobre Descanso Dominical. Madrid, 1917. 276 pp.*

This volume is a compilation of the laws relative to Sunday rest. It is divided into two principal heads: A. Laws and regulations; B. Explanations and interpretations. In part 1, reproducing the laws, copious references are made to royal orders interpreting the laws.

—— —— *Sección 3d. Técnico-Administrativa. Coste de la Vida del Obrero. Estadistica de los precios de los articulos de primera necesidad en toda España, desde 1909 a 1915. Madrid, 1916. 348 pp.*

This is a compilation of prices of principal articles of consumption in workmen's families from 1909 to 1915. The data used in this compilation were in general furnished semiannually by the mayors (alcaldes) of the various municipalities. Prices are reported separately for capital cities and other cities, towns, etc. The number of schedules received for each period covered, after the first, was from 6,000 to 7,000. Index figures have been computed for each province.

UNOFFICIAL.

ACKERMAN, FREDERICK L. *Our National Obligation: The story of England's collossal work in building workmen's houses as a prerequisite to maximum output of war munitions, and as a part of her program of social and economic reconstruction after the war. Washington, D. C., Journal of the American Institute of Architects, [1917] 52 pp. (Reprint from the December, 1917, issue of the Journal of the American Institute of Architects, Washington, D. C., and forming chapter IV of the serial article "What is a House?" which began in the October issue of the Journal.)*

Summarized in this issue of the MONTHLY REVIEW, pages 209 to 213.

ALDRIDGE, HENRY R. *The case for town planning: A practical manual for the use of councillors, officers, and others engaged in the preparation of town planning schemes. London, National Housing and Town Planning Council, 1916. 679 pp. Illustrated.*

An important work by the secretary of the National Housing and Town Planning Council, of Great Britain. In Part I the subject is dealt with from the historical point of view; "so far from town planning being a 'modern fad,' it is one of the oldest of the arts evolved in the slow development of organized civic life in civilized countries." It is further dealt with from the point of view of the officers responsible for the good government of a town, who can be persuaded to undertake such schemes only if it can be proved to their satisfaction that "public health will be improved, the amenities of life increased, and wise economy observed both in saving the money of the ratepayers and in expending it." Part II was written in response to a demand that the powers and duties of the Housing, Town Planning, etc., act of 1909, should be explained in a clear, simple, and concise way, and that the work of actual town planning administration, in its various stages, should be described in detail.

"From one point of view indeed the period in which this book is published is a specially favorable one. The sense of common citizenship was never greater than it is to-day, and proposals in regard to the improvement of the conditions under which the masses of the people live will receive warm support."

ALLEN, LESLIE H. *Industrial Housing Problems. Boston, Mass., Aberthaw Construction Company, [1917] 31 pp. Illustrated.*

Summarized in this number of the MONTHLY REVIEW, pages 208 and 209.

AMERICAN ASSOCIATION FOR LABOR LEGISLATION. *Review of labor legislation of 1917. The American Labor Legislation Review, Vol. VII, No. 3, New York, September, 1917. pp. 529–618.*

AMERICAN MINING CONGRESS, *Utah Chapter. Report on Insurance rates for mining and smelting under the workmen's compensation law of Utah, by I. M. Rubinow, Ph. D., to Utah Chapter, American Mining Congress. June 6, 1917. [Salt Lake City] 23 pp.*

A digest of this report will appear in a future issue of the MONTHLY REVIEW.

BAUER, STEPHAN. *Untersuchungen über die Lebenskosten in der Schweiz. Mit Beiträgen von E. Ackermann, P. Gross, W. Kaufmann, Jacob Lorenz und A. Menzi. (Schriften des Vereins für Sozialpolitik. Vol. 146, Part 1.) Munich and Leipzig, 1917. xxiii, 303 pp.*

At the end of 1913 Dr. Stephan Bauer, professor in the University of Basel and editor of the present volume, was charged by the German Social-Economic Society (Verein für Sozialpolitik), which at that time was conducting an international investigation on the cost of living and the movement of prices, with the duty of making an investigation of the same scope with respect to Switzerland. With the aid of pupils and collaborating friends Dr. Bauer expected to be able to publish the results of the Swiss investigation by the end of 1914. The outbreak of the war in 1914 and the consequent calling into military service or withdrawal from scientific work of several collaborators in the investigation deferred the realization of this expectation. A new problem, the enormous increase of prices during the war, had also arisen. When, therefore, the compilation of the results of the investigation was again taken up in 1917 it was considered very desirable that the two first years of the war be included in the investigation.

Dr. Bauer states that, for various reasons, an investigation including all cantons of Switzerland and conducted on uniform principles was out of the question, but that the collection of monographs contained in the present volume forms a good substitute for such an investigation. First, because the volume contains the results of a mass investigation of prices through cooperative stores in all parts of Switzerland. Secondly, because two monographs on household budgets, each of which covers a period of over 30 years, permit an insight into the movement of household expenditures. Compilations of the results of local investigations conducted in the city of Basel and in the canton Aargau are also given to produce a more complete picture of the trend of the cost of living in Switzerland. In a preface to the above monographs the author summarizes the data contained in them, and compares the cost of living data for Switzerland with similar data obtained in investigations relating to other countries.

BENOIST, CHARLES. *L'Organisation du travail. Tome premier, Paris, 1905. 403 pp. Tome deuxieme, Paris, 1914. 374 pp.*

These two volumes give a history of the development of labor during the last century and one-half in the light of political and economic conditions which the author claims have brought about what he calls "the crisis of the modern State;" and discuss industrial problems of the present. The first volume is divided into two parts: "Work, the mass, and the State," in which the mechanical and social conditions that have influenced labor are traced from the utilization

of steam in mechanics to the present; and "Investigations concerning labor in large industries," under which oil mines, metallurgy, mechanical construction, glass works, and textile industries are considered. The second volume, under the heading "'The species:' The workingman, the working class," discusses "Formation of the working class—the corporation and the old order," "The hierarchy of vocations in the old French society," "The rehabilitation of the mechanical arts," "The apology of labor as the apotheosis of the workman," "The man of 1848," and "The myth of the working class."

BITTARD, A. L. *Les écoles de blessés. Paris, 1916. 251 pp.*

An account of the work which had been done in the line of pensions, prosthesis, apprenticeship, and placement, up to the time of publication, for disabled soldiers of France, with the view of returning them to civil life. There are chapters on wounds and the wounded, recompense and pensions, functional reeducation and prosthesis, vocational reeducation, trades for the wounded, twenty months of scattered efforts, the creations of private initiative, the creations of municipalities and departments, the creations of the State, the school of the wounded, accidents and assurances, placement, general organization of vocational reeducation, the blind and the deaf, and the return to life. A valuable feature of the book is an appendix containing a list of the public services and the principal works and schools concerned with the vocational reeducation and placement of the wounded; a classified list of the principal vocations taught in the schools for the wounded; an outline of the conditions for admission to the centers for reeducation approved by the State; and the parliamentary documents concerning the work for disabled soldiers.

BUBNOFF, J. V. *The cooperative movement in Russia: Its history, significance, and character. Manchester (Eng.) Cooperative Printing Society, Ltd., 1917. 162 pp. Illustrated.*

"The first attempt in the English tongue to give a connected systematic survey of the cooperative movement in Russia," which movement—in spite of the absence of enactments legalizing and regulating it, in spite of "administrative interference and oppression"—has become a power to be reckoned with. The study covers agricultural Russia; the various forms of organization of the cooperative movement; institutions for its promotion and assistance; unions, associations, and banks; effects of the war; international tendencies; and other aspects.

CALHOUN, ARTHUR W. *A social history of the American family from colonial times to the present. Vol. I: Colonial period. Cleveland, Arthur H. Clark Co., 1917. 348 pp. Bibliography.*

The first of three volumes designed to develop an understanding of the forces that have been operative in the evolution of family institutions in this country. "In general, the colonial family is presented as a property institution dominated by middle-class standards, and operating as an agency of social control in the midst of social order governed by the interests of a forceful aristocracy which shaped religion, education, politics, and all else to its own profit."

CALIFORNIA STATE FEDERATION OF LABOR. *Preamble, constitution, and rules of order, as amended at 18th annual convention, held at Sacramento, Cal., October 1–6, 1917. San Francisco, 1917. 24 pp.*

—— *Proceedings of 18th annual convention, Sacramento, October, 1917. 118 pp.*

Includes a report on the labor legislation of the year, and a compilation of the dates of harvesting crops in the various sections of the State which indicates the possibility of organizing seasonal laborers and having them "follow up" the harvesting. The number of organizations in good standing in the Federation is given as 519, with a total membership of 71,500 persons.

CARREL, A. AND DEHELLY, G. *The treatment of infected wounds. New York, Paul B. Hoeber, 1917. 238 pp. Illustrated.*

The researches dealt with in this book were made in France by Dr. Henry D. Dakin and Dr. A. Carrel. They were begun late in December, 1914, and "from May, 1915, it became evident that wounds treated after a certain method by the aid of hypochlorite or the chloramines of Dakin were sterilized, without any harm resulting to the tissues or the patient. From that date it has been possible to prevent, in the greater number of cases, infection of wounds, and to abolish, almost entirely, suppuration in hospitals." The importance of this may be gathered from the fact that the examination of a large number of amputations in a French hospital showed that about 70 per cent of the operations were necessary because of infection and were not due to the extent of the original injury.

In this volume "Carrel's method" is described in minute detail. In their introduction the authors make this statement: "The application of these principles constitutes a 'method,' that is to say, an entity, no portion of which should be altered at random. The deplorable results obtained in several hospitals by surgeons who believed they were using our methods, but who, in reality, were altering them according to their fancy, make clear the necessity for observing exactly the directions which will be laid down in the following pages. The best way to learn the method is to see it applied. Hence this book is especially intended to recall essential details of the technique to those who already know something of its application."

The extreme importance of this strict adherence to the technique is emphasized by Sir Anthony A. Bowlby, surgeon general, British Army Medical Service, who contributes an introductory note, and again by the authors at the close of the book, as follows:

Neither the preparation of Dakin's solution may be modified, nor the processes for mechanical and chemical cleansing of wounds. It is indispensable to learn the method before attempting to apply it, and this apprenticeship demands several weeks, even from an experienced surgeon. But we can be quite sure that, applied in their entirety, the methods just described will produce the desired results. Admitted, their use exacts more precision and more care than the old methods, for any approach toward technical perfection requires more elaborate apparatus and a more specialized staff. But efforts of no great magnitude on the part of doctors and nurses will most certainly yield an immense improvement in results. The Nation has the right to ask from the medical corps that progress in the treatment of the wounded which is so acutely needed.

For formulas of Dakin's solution and discussions of its use, see MONTHLY REVIEW for November, 1917, pp. 173 to 178.

CHAMBER OF COMMERCE (PHILADELPHIA). *The Educational Committee. Eleven pamphlets. Thrift: A short text book for elementary schools of Philadelphia, 15 pp. Trust companies in Philadelphia, 7 pp. The rug and carpet industry of Philadelphia, 16 pp. The locomotive industry in Philadelphia, 11 pp. Truck farming in Philadelphia County, 12 pp. The candy-making industry in Philadelphia, 15 pp. Milk and its distribution in Philadelphia, 12 pp. Telephone, telegraph, and wireless systems in Philadelphia, 17 pp. The manufacture, distribution, and use of gas in Philadelphia, 61 pp. Department stores of Philadelphia, 11 pp. The paint and varnish making industry in Philadelphia, 29 pp. Philadelphia, Pa. [1917].*

EMPLOYERS' FEDERATION OF NEW SOUTH WALES. *Report of annual meeting, 15th November, 1917. Sydney, Offices of the Federation, 1917. 32 pp.*

Report of the fifteenth annual meeting of this federation. Includes the resolutions passed at the eighth annual conference of the various employers' federations of the Commonwealth, a table of anti-strike legislation throughout

Australasia, and a comparison of the number of strikes in New South Wales before the war and since. During the year 1913 there were 134 strikes, involving 40,011 persons, and during the year ending in September, 1917, a total of 330 strikes, involving 157,756 persons. The address of the president of the New South Wales federation, covering more than eight pages, affords a survey of industrial conditions from the standpoint of the employer.

EPSTEIN, ABRAHAM. *The Negro Migrant in Pittsburgh. A study in social economics. Published under the supervision of the school of economics, University of Pittsburgh. Pittsburgh, 1918. 75 pp. Illustrated. Price, 50 cents.*

See pages 155 to 157 of this issue of the MONTHLY REVIEW for an extended summary of this report.

HOBSON, S. G. *Guild principles in war and peace. London, G. Bell & Sons, 1917. 176 pp.*

These essays, reprinted from various sources, present the arguments and considerations that have impelled the author to advocate the abolition of the wage system and the formation of national guilds. "A national guild is the combination of all the labor of every kind, administrative, executive, and productive, in any particular industry. It includes those who work with their brains and those who contribute labor power." The fundamental idea of the guilds is "that they shall exercise full control over labor and enjoy complete autonomy in all industrial transactions."

The book is largely devoted to a critique of the Garton Memorandum, described by Mr. Hobson as "the most representative document issued on the industrial situation." The editor of The New Age, with which publication the author is associated, contributes a 14-page introduction on the subject of unemployment, Mr. Hobson making the assertion that "after the war we can not escape from a dreadful and probably a prolonged period of acute unemployment."

HOXIE, ROBERT FRANKLIN. *Trade-unionism in the United States. New York and London, Appleton, 1917. 426 pp.*

"The book here presented is the result of an effort to reproduce as faithfully as possible the notes and lectures on trade-unionism used by Robert F. Hoxie during his last year of teaching in the University of Chicago, and to combine them with some of his chapters previously published." Great care has been put into the preparation of the volume by friends who knew that Prof. Hoxie had looked forward to the writing of a book on trade-unionism as the main work of coming years.

In his very able introduction, Mr. E. H. Downey makes the statement that, like all social movements which excite the hopes and fears of men, trade-unionism has more often been the object of passionate denunciation or defense than of scientific inquiry; few persons have brought forth from patient research even a partial interpretation of it in causal terms, and among this elect number Prof. Hoxie will hold "a high and secure place."

MAWSON, THOMAS H. *An imperial obligation: Industrial villages for partially disabled soldiers and sailors. London, Grant Richards, 1917. 124 pp. Illustrated.*

A scheme for the establishment of industrial villages for disabled soldiers and sailors and their families, the occupations to be confined to one industry to a village but divided among home, shop, and factory workers. It is suggested that the production be encouraged of articles heretofore imported from enemy countries, such as pencils, office furnishings, toys, chemical preparations,

and bulbs and decorative nursery stock. Around a center already supporting a dominating industry might be established villages to follow the trades and crafts subsidiary thereto.

The method of control proposed is that of committees—central, district, and village; for organization purposes there has been formed "The Industrial Villages Interim Committee," with offices in London. It is recognized that the work must be begun on a subsidized or semiphilanthropic basis, but the villages are expected to become entirely self-supporting.

The appendixes to the book include a synopsis of its contents, a description of Lever Bros.' copartnership scheme, and several articles on the reeducation of the disabled by various existing agencies.

MILLS, FREDERICK C. *Contemporary theories of unemployment and of unemployment relief. New York, Longmans, Green & Co., and London, P. S. King, 1917. 178 pp. Bibliography. Columbia University Studies in History, Economics, and Public Law, No. 183.*

"So far as has been possible the work has been held strictly to a study of theories as to the causes of the modern phenomena of unemployment and as to the methods by which unemployment can be prevented or relieved. Facts concerning the extent of unemployment have been touched upon only where they have a bearing upon either of these two subjects."

The author groups his material according to the development in England and in the United States of unemployment theory and remedial practice, and contemporary theories of unemployment and of its relief in the same countries. A brief compendium of the course of tramp and vagrancy legislation in the United States is included.

M. S. *Domestic service: by an old servant. Boston and New York, Houghton Mifflin, 1917. 111 pp.*

"Written by an old servant who must speak of domestic service as it has been to her 52 years of her life."

MURRAY, MARR. *Drink and the war, from the patriotic point of view. London, Chapman and Hall, 1915. 156 pp. Price 1s.*

Written to the text "The nation that will win the next war will be the one which is the most sober"—a statement by the Kaiser.

NATIONAL HOUSING ASSOCIATION. *Housing problems in America. Proceedings of the sixth national conference, Chicago, October, 1917. 462 pp.*

A brief report of the proceedings of this conference appeared in the MONTHLY REVIEW for December, 1917, pp. 215 to 218. The present volume gives the papers and discussion in full, and includes several valuable contributions on the subject of industrial and war-time housing, of such immediate importance in various sections of the country.

NATIONAL INDUSTRIAL CONFERENCE BOARD. *Analysis of British wartime reports on hours of work as related to output and fatigue. Number 2, November, 1917. 15 Beacon Street, Boston, 1917. 57 pp.*

As announced in the foreword, the National Industrial Conference Board has deemed it advisable, because of the timeliness and importance of the experience of Great Britain with the hours of labor problem, to publish this analysis of reports of certain British commissions and investigators on the efficiency and health of industrial workers under wartime conditions. This analysis is intended to be somewhat critical, but an effort has been made to avoid all expressions of opinion which might anticipate or prejudice the results of the board's broader inquiry into the relation of hours of labor to industrial efficiency, with special reference to the health and safety as well as to

the output of workers. The reports of the British Health of Munition Workers, to which reference is made in this pamphlet, have been noted from time to time in the MONTHLY REVIEW.

NEW YORK ASSOCIATION FOR IMPROVING THE CONDITION OF THE POOR. *Bureau of Home Economics. Food for the family. Publication No. 120. New York, 1917. 15 pp. Price, 5 cents.*

A leaflet suggesting the meals best suited to growing children and giving recipes for the unfamiliar dishes.

PHELPS, EDITH M., ED. *University debaters' annual: Constructive and rebuttal speeches delivered in debates of American colleges and universities during the college year 1916–17. New York, H. W. Wilson Co., 1917. 272 pp.*

This volume, the third of its series, contains speeches on Government ownership of railroads, universal military service, compulsory arbitration of railroad labor disputes, Chinese and Japanese immigration, compulsory arbitration [in general], and progressive inheritance tax.

ROTHBAND, HENRY L. *Employment for disabled soldiers. A scheme for a national roll of employees. [Manchester, Eng., 1916.] 72 pp.*

——— *The Rothband employment scheme for sailors and soldiers disabled in the war. [Manchester, Eng., 1917.] 51 pp.*

Mr. Rothband, a Manchester manufacturer, proposes a Royal appeal by the King or the Prince of Wales, to all employers of labor, inviting them to promise permanent employment for one or more disabled soldiers. The earlier report summarizes the argument for Mr. Rothband's plan and narrates its history from its inception, in March, 1915, through the year 1916. Opinions of various prominent public men are included. The 1917 report, which is a continuation of the earlier one, describes the proposed development of the scheme, and its reception by local pensions committees, and discusses in detail the official objections to it.

SOUTHALL, A. E., ED. *Imperial Yearbook for Dominion of Canada, 1917–18. Third year. Ottawa, Mortimer Co., 1917. 637 pp.*

In addition to the usual great amount of statistical and other information, this volume includes a "war section" of 63 pages, with separate index.

VICTOR, E. A., ED. *Canada's future: What she offers after the war. A symposium of official opinion. Toronto, Macmillan, 1916. 320 pp.*

About 50 short articles on the advantages offered by Canada to the immigrant. A commendable feature is the footnotes which introduce the writers.

WEEKLY UNDERWRITER. *Live articles on accident prevention, No. 5. New York, Underwriter Printing and Publishing Co., 1917. 143 pp. Illustrated. Price $1.05.*

A series of articles reprinted from the monthly liability insurance supplement of The Weekly Underwriter, 1916–17. Includes The shipbuilding industry, by Robert H. Pearson, consulting engineer, and Safety in explosives manufacturing, being the rules established by the departments of labor of Pennsylvania and New Jersey, effective April 1, 1917.

WOOD, T. B. *The national food supply in peace and war. Cambridge (England), University Press, 1917. 43 pp. Price 6d. net.*

The author of this pamphlet was a member of the food (War) committee of the royal society, which made an investigation, at the request of the Board of Trade, of the food supply of Great Britain before the war. The present study is in two parts, dealing with the food supply before the war and in time of war, and has been prepared that the general public may form a fair estimate of the "admittedly difficult situation." Part II includes an estimate of the requirements and of the foods available for 1917–18, deals with sources of supply, distribution, diversion, etc., and suggests a policy of control based on the fact

"that the prices of agricultural commodities are mutually related and that their relationships are susceptible of investigation," which investigation should be the basis of price fixing. There are several important tables giving origin, distribution, consumption, food values, requirements, and other figures.

WORKMEN'S COMPENSATION PUBLICITY BUREAU. *Digest of workmen's compensation laws in the United States and Territories, with annotations. Fifth edition, revised to December 1, 1917. F. Robertson Jones, compiler, 80 Maiden Lane, New York, 1917.*

This digest covers all the compensation laws enacted to date, including the new and amended acts passed in 1917. It contains a tabular synopsis of the principal provisions of the laws arranged in the same form as the preceding editions except that the citations of cases, formerly included in the table, are now grouped separately in a second table. Two new captions, "occupational and other diseases" and "evidence and proof," have been added; while one provision, "employments in interstate commerce," has been omitted in view of the decision of the United States Supreme Court in the Winfield cases, which declared that States had no jurisdiction over accidents sustained in interstate commerce.

SERIES OF BULLETINS PUBLISHED BY THE BUREAU OF LABOR STATISTICS.

[*The publication of the annual and special reports and of the bi-monthly bulletin was discontinued in July, 1912, and since that time a bulletin has been published at irregular intervals. Each number contains matter devoted to one of a series of general subjects. These bulletins are numbered consecutively beginning with No. 101, and up to No. 236 they also carry consecutive numbers under each series. Beginning with No. 237 the serial numbering has been discontinued. A list of the series is given below. Under each is grouped all the bulletins which contain material relating to the subject matter of that series. A list of the reports and bulletins of the bureau issued prior to July 1, 1912, will be furnished on application.*]

Wholesale Prices.

Bul. 114. Wholesale prices, 1890 to 1912.
Bul. 149. Wholesale prices, 1890 to 1913.
Bul. 173. Index numbers of wholesale prices in the United States and foreign countries.
Bul. 181. Wholesale prices, 1890 to 1914.
Bul. 200. Wholesale prices, 1890 to 1915.
Bul. 226. Wholesale prices, 1890 to 1916.

Retail Prices and Cost of Living.

Bul. 105. Retail prices, 1890 to 1911: Part I.
Retail prices, 1890 to 1911: Part II—General tables.
Bul. 106. Retail prices, 1890 to June, 1912: Part I.
Retail prices, 1890 to June, 1912: Part II—General tables.
Bul. 108. Retail prices, 1890 to August, 1912.
Bul. 110. Retail prices, 1890 to October, 1912.
Bul. 113. Retail prices, 1890 to December, 1912.
Bul. 115. Retail prices, 1890 to February, 1913.
Bul. 121. Sugar prices, from refiner to consumer.
Bul. 125. Retail prices, 1890 to April, 1913.
Bul. 130. Wheat and flour prices, from farmer to consumer.
Bul. 132. Retail prices, 1890 to June, 1913.
Bul. 136. Retail prices, 1890 to August, 1913.
Bul. 138. Retail prices, 1890 to October, 1913.
Bul. 140. Retail prices, 1890 to December, 1913.
Bul. 156. Retail prices, 1907 to December, 1914.
Bul. 164. Butter prices, from producer to consumer.
Bul. 170. Foreign food prices as affected by the war.
Bul. 184. Retail prices, 1907 to June, 1915.
Bul. 197. Retail prices, 1907 to December, 1915.
Bul. 228. Retail prices, 1907 to December, 1916.

Wages and Hours of Labor.

Bul. 116. Hours, earnings, and duration of employment of wage-earning women in selected industries in the District of Columbia.
Bul. 118. Ten-hour maximum working day for women and young persons.
Bul. 119. Working hours of women in the pea canneries of Wisconsin.
Bul. 128. Wages and hours of labor in the cotton, woolen, and silk industries, 1890 to 1912.
Bul. 129. Wages and hours of labor in the lumber, millwork, and furniture industries, 1890 to 1912.
Bul. 131. Union scale of wages and hours of labor, 1907 to 1912.
Bul. 134. Wages and hours of labor in the boot and shoe and hosiery and knit goods industries, 1890 to 1912.

Bul. 135. Wages and hours of labor in the cigar and clothing industries, 1911 and 1912.
Bul. 137. Wages and hours of labor in the building and repairing of steam railroad cars, 1890 to 1912.
Bul. 143. Union scale of wages and hours of labor, May 15, 1913.
Bul. 146. Wages and regularity of employment in the dress and waist industry of New York City.
Bul. 147. Wages and regularity of employment in the cloak, suit, and skirt industry.
Bul. 150. Wages and hours of labor in the cotton, woolen, and silk industries, 1907 to 1913.
Bul. 151. Wages and hours of labor in the iron and steel industry in the United States, 1907 to 1912.
Bul. 153. Wages and hours of labor in the lumber, millwork, and furniture industries, 1907 to 1913.
Bul. 154. Wages and hours of labor in the boot and shoe and hosiery and underwear industries, 1907 to 1913.
Bul. 160. Hours, earnings, and conditions of labor of women in Indiana mercantile establishments and garment factories.
Bul. 161. Wages and hours of labor in the clothing and cigar industries, 1911 to 1913.
Bul. 163. Wages and hours of labor in the building and repairing of steam railroad cars, 1907 to 1913.
Bul. 168. Wages and hours of labor in the iron and steel industry in the United States, 1907 to 1913.
Bul. 171. Union scale of wages and hours of labor, May 1, 1914.
Bul. 177. Wages and hours of labor in the hosiery and underwear industry, 1907 to 1914.
Bul. 178. Wages and hours of labor in the boot and shoe industry, 1917 to 1914.
Bul. 187. Wages and hours of labor in the men's clothing industry, 1911 to 1914.
Bul. 190. Wages and hours of labor in the cotton, woolen, and silk industries, 1907 to 1914.
Bul. 194. Union scale of wages and hours of labor, May 1, 1915.
Bul. 204. Street-railway employment in the United States.
Bul. 214. Union scale of wages and hours of labor, May 15, 1916.
Bul. 218. Wages and hours of labor in the iron and steel industry, 1907 to 1915.
Bul. 225. Wages and hours of labor in the lumber, millwork, and furniture industries. [In press.]
Bul. 232. Wages and hours of labor in the boot and shoe industry, 1907 to 1916. [In press.]
Bul. 238. Wages and hours of labor in woolen and worsted goods manufacturing, 1916. [In press.]
Bul. 239. Wages and hours of labor in cotton goods manufacturing and finishing, 1916. [In press.]

Employment and Unemployment.

Bul. 109. Statistics of unemployment and the work of employment offices in the United States.
Bul. 172. Unemployment in New York City, N. Y.
Bul. 182. Unemployment among women in department and other retail stores of Boston, Mass.
Bul. 183. Regularity of employment in the women's ready-to-wear garment industries.
Bul. 192. Proceedings of the American Association of Public Employment Offices.
Bul. 195. Unemployment in the United States.
Bul. 196. Proceedings of Employment Managers' Conference held at Minneapolis January, 1916.
Bul. 202. Proceedings of the conference of Employment Managers' Association of Boston, Mass., held May 10, 1916.
Bul. 206. The British system of labor exchanges.
Bul. 220. Proceedings of the Fourth Annual Meeting of the American Association of Public Employment Offices, Buffalo, N. Y., July 20 and 21, 1916.
Bul. 223. Employment of women and juveniles in Great Britain during the war.
Bul. 227. Proceedings of the Employment Managers' Conference, Philadelphia, Pa., April 2 and 3, 1917.
Bul. 235. Employment system of the Lake Carriers' Association.

Women in Industry.

Bul. 116. Hours, earnings, and duration of employment of wage-earning women in selected industries in the District of Columbia.
Bul. 117. Prohibition of night work of young persons.
Bul. 118. Ten-hour maximum working-day for women and young persons.
Bul. 119. Working hours of women in the pea canneries of Wisconsin.
Bul. 122. Employment of women in power laundries in Milwaukee.
Bul. 160. Hours, earnings, and conditions of labor of women in Indiana mercantile establishments and garment factories.
Bul. 167. Minimum-wage legislation in the United States and foreign countries.
Bul. 175. Summary of the report on condition of woman and child wage earners in the United States.
Bul. 176. Effect of minimum-wage determinations in Oregon.
Bul. 180. The boot and shoe industry in Massachusetts as a vocation for women.
Bul. 182. Unemployment among women in department and other retail stores of Boston, Mass.
Bul. 193. Dressmaking as a trade for women in Massachusetts.
Bul. 215. Industrial experience of trade-school girls in Massachusetts.
Bul. 223. Employment of women and juveniles in Great Britain during the war.

Workmen's Insurance and Compensation (including laws relating thereto).

Bul. 101. Care of tuberculous wage earners in Germany.
Bul. 102. British National Insurance Act, 1911.
Bul. 103. Sickness and accident insurance law of Switzerland.
Bul. 107. Law relating to insurance of salaried employees in Germany.
Bul. 126. Workmen's compensation laws of the United States and foreign countries.
Bul. 155. Compensation for accidents to employees of the United States.
Bul. 185. Compensation legislation of 1914 and 1915.
Bul. 203. Workmen's compensation laws of the United States and foreign countries.
Bul. 210. Proceedings of the Third Annual Meeting of the International Association of Industrial Accident Boards and Commissions.
Bul. 212. Proceedings of the conference on social insurance called by the International Association of Industrial Accident Boards and Commissions.
Bul. 217. Effect of workmen's compensation laws in diminishing the necessity of industrial employment of women and children.
Bul. 240. Comparison of workmen's compensation laws of the United States. (In press.]

Industrial Accidents and Hygiene.

Bul. 104. Lead poisoning in potteries, tile works, and porcelain enameled sanitary ware factories.
Bul. 120. Hygiene of the painters' trade.
Bul. 127. Dangers to workers from dusts and fumes and methods of protection.
Bul. 141. Lead poisoning in the smelting and refining of lead.
Bul. 157. Industrial accident statistics.
Bul. 165. Lead poisoning in the manufacture of storage batteries.
Bul. 179. Industrial poisons used in the rubber industry.
Bul. 188. Report of British departmental committee on danger in the use of lead in the painting of buildings.
Bul. 201. Report of committee on statistics and compensation insurance cost of the International Association of Industrial Accident Boards and Commissions. [Limited edition.}
Bul. 205. Anthrax as an occupational disease.
Bul. 207. Causes of death by occupations.
Bul. 209. Hygiene of the printing trades.
Bul. 216. Accidents and accident prevention in machine building.
Bul. 219. Industrial poisons used or produced in the manufacture of explosives.
Bul. 221. Hours, fatigue, and health in British munition factories.
Bul. 230. Industrial efficiency and fatigue in British munition factories.
Bul. 231. Mortality from respiratory diseases in dusty trades. [In press.]
Bul. 234. Accidents and accident prevention in the iron and steel industry. [In press.]
Bul. 236. Effect of the pneumatic hammer on the health of stonecutters in the Indiana oolitic limestone belt. [In press.]

Conciliation and Arbitration (including strikes and lockouts).

Bul. 124. Conciliation and arbitration in the building trades of Greater New York.
Bul. 133. Report of the industrial council of the British Board of Trade on its inquiry into industrial agreements.
Bul. 139. Michigan copper district strike.
Bul. 144. Industrial court of the cloak, suit, and skirt industry of New York City.
Bul. 145. Conciliation, arbitration, and sanitation in the dress and waist industry of New York City.
Bul. 191. Collective bargaining in the anthracite coal industry.
Bul. 198. Collective agreements in the men's clothing industry.
Bul. 233. The Industrial Disputes Investigation Act of Canada. [In press.]

Labor Laws of the United States (including decisions of courts relating to labor).

Bul. 111. Labor legislation of 1912.
Bul. 112. Decisions of courts and opinions affecting labor, 1912.
Bul. 148. Labor laws of the United States, with decisions of courts relating thereto.
Bul. 152. Decisons of courts and opinions affecting labor, 1913.
Bul. 166. Labor legislation of 1914.
Bul. 169. Decisions of courts affecting labor, 1914.
Bul. 186. Labor legislation of 1915.
Bul. 189. Decisions of courts affecting labor, 1915.
Bul. 211. Labor laws and their administration in the Pacific States.
Bul. 213. Labor legislation of 1916.
Bul. 224. Decisions of courts affecting labor, 1916.
Bul. 229. Wage-payment legislation in the United States.

Foreign Labor Laws.

Bul. 142. Administration of labor laws and factory inspection in certain European countries.

Vocational Education.

Bul. 145. Conciliation, arbitration, and sanitation in the dress and waist industry of New York City.
Bul. 147. Wages and regularity of employment in the cloak, suit, and skirt industry.
Bul. 159. Short-unit courses for wage earners, and a factory school experiment.
Bul. 162. Vocational education survey of Richmond, Va.
Bul. 199. Vocational education survey of Minneapolis.

Labor as Affected by the War.

Bul. 170. Foreign food prices as affected by the war.
Bul. 219. Industrial poisons used or produced in the manufacture of explosives.
Bul. 221. Hours, fatigue, and health in British munition factories.
Bul. 222. Welfare work in British munition factories.
Bul. 223. Employment of women and juveniles in Great Britain during the war.
Bul. 230. Industrial efficiency and fatigue in British munition factories.
Bul. 237. Industrial unrest in Great Britain.

Miscellaneous Series.

Bul. 117. Prohibition of nightwork of young persons.
Bul. 118. Ten-hour maximum working-day for women and young persons.
Bul. 123. Employers' welfare work.
Bul. 158. Government aid to home owning and housing of working people in foreign countries.
Bul. 159. Short-unit courses for wage earners, and a factory school experiment.
Bul. 167. Minimum-wage legislation in the United States and foreign countries.
Bul. 170. Foreign food prices as affected by the war.
Bul. 174. Subject index of the publications of the United States Bureau of Labor Statistics up to May 1, 1915.
Bul. 208. Profit sharing in the United States
Bul. 222. Welfare work in British munition factories.