THEME

A Comparative Study of Union Wages in the Skilled Trades in the United States and Great Britain

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A COMPARATIVE STUDY OF UNION WAGES IN THE SKILLED TRADES IN THE UNITED STATES AND GREAT BRITAIN

BY

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Approved by

Head of Department of Economics

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A COMPARATIVE STUDY OF UNION WAGES
IN THE SKILLED TRades IN THE
UNITED STATES AND GREAT
BRITAIN.

by

Arthur Caryl Kelley.
TABLE OF CONTENTS.

Chapter I. .......................... Page 1
Chapter II. .......................... 5
Chapter III. .......................... 10
Chapter IV. .......................... 13
Chapter V. .......................... 15
Chapter VI. .......................... 17
Chapter VII. .......................... 22
Chapter VIII. ......................... 25

Table I. ............................ Following Page 8
Table II. .............................. 10
Table III. ............................. 14
Table IV. ............................. 21
Table V. ............................. 22
Table VI. ............................. 22
Table VII. ............................. 25

Graph I .............................. Following Page 12
Graph II .............................. 15
A COMPARATIVE STUDY OF UNION WAGES IN THE SKILLED Trades 
IN THE UNITED STATES AND GREAT BRITAIN.

Chapter I.

Introduction.

It is the common opinion that wages in the United States are higher than in any other country in the world, and protectionists especially make use of this assertion as a strong argument for the high tariff. The present inquiry has for its object the determination of what are the wages in the United States, and secondly, the comparison of these wages with those in a foreign country, viz., Great Britain. In several respects Great Britain, including England, Ireland and Scotland, is representative of old-world conditions and offers a marked contrast with the United States. It is an ancient nation, with long established and firmly settled economic institutions. Its tariff policy is free trade, and the supply of free land, which has been such an important factor in the economic development of the United States, in the case of the United Kingdom has long been exhausted.

There are two meanings of the word "wages." The first is money or nominal wages, and the second meaning is real wages, or money wages changed into terms of purchasing power. The plan here followed is to determine first the nominal wages in the two countries, then to find the cost of living, and finally to combine these two factors, money wages and cost of living, into one ratio which will represent the real wages of the United States and Great
Britain. The wages presented here are as of the year 1910. This is not an historical survey of wages in the two countries, but an instantaneous snapshot, as it were, of the comparative wage levels in the year 1910.

This requisite of up-to-date statistics has caused considerable difficulty, especially in the matter of getting retail prices, for the purpose of determining the cost of living in the year 1910. On the subject of wages in these two countries there is an unaccountable lack of recent literature. It has been necessary, therefore, to rely almost entirely upon governmental publications. The Bureaus of Labor of the different States, the United States Department of Labor, and the British Board of Trade, have been the principal sources of material. It might be that since each State has a Bureau of Labor Statistics, there would be a great wealth of data in the annual reports of those bureaus. Unfortunately such is not the case. The work which these State Labor Bureaus are carrying on is very different, one from another, both in quality and quantity. The fact is that the majority of the States publish labor reports that are of little use, and a few are well-nigh worthless, so far as obtaining correct wage statistics from them, is concerned. The cause for this condition is probably that the State Bureaus of Labor do not employ statistical experts who know how to collect, tabulate and present wage statistics properly. The report of the Pennsylvania Bureau of Industrial Statistics\(^1\) is an example of a poor presentation of wage statistics. In this report wages are classified by towns

\(^1\) Annual Report of the Secretary of Internal Affairs. Part III, Vol. 37, pp. 299 et seq.
and industries, not by occupations. The information given consists of stating the aggregate amount of wages paid in the industry to males and females, the average yearly earnings per individual, and the average daily wage. The great defect in such statistics as these is that they give us no idea of the distribution of wages around the average. If, however, instead of giving only the arithmetical average wage, the Pennsylvania Report had presented the entire distribution of the wages in each industry and in each occupation, similar to the method used in the California Report, the resulting statistics would have been far more valuable.

The great obstacle to good labor statistics in the United States is the lack of uniformity among the State Labor Bureaus as regards what statistics they collect and how they present them. A few reports, such as that of New York, deal with union wages alone. Some States collect wage statistics only for the skilled labor, unionized occupations, while other States pay no attention to occupations, but classify the wages according to industries. A comparison between such two kinds of statistics of evidently impossible. There are several States, however, which collect and present wage statistics in a very commendable manner. Among these States may be mentioned Massachusetts, Oklahoma, California, Kansas, Minnesota and New York, all of which publish wage statistics of high value and comparable with each other.

The task of getting information for Great Britain was much simpler because of the British Board of Trade publications. It was not necessary to collect data from several different Bureaus, since the British Board of Trade publishes wage statistics for
the whole of the United Kingdom in one publication. This one report, hence, took the place of some ten or more State Reports in the United States.

Data on the cost of living were not as easily obtained as those on wages. The difficulty was to obtain retail prices of commodities entering into a family budget, for the year 1910. Wholesale prices were obtainable from several sources, but retail prices were much scarcer, and were principally found in the Report of the Select Committee of the United States Senate to investigate wages and prices of commodities, and in the Report of the Massachusetts Commission on the Cost of Living.

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2. Senate Document No. 847, Vol. III.
Chapter II.
The Method of the Investigation.

The problem before us must be studied by means of the statistical method. In doing this, it is well to remember the common statement, "You can prove anything by statistics." However, this statement is not strictly accurate, for correct statistics by themselves prove only the truth, but it is the interpretation and presentation of the statistics which may prove anything. If the method of presenting and interpreting the data is faulty, the results will be misleading and worthless. Hence in a study of this character, the statistical method employed is the foundation of the entire work, and on this method must rest whatever claims for value it may have.

The wages of one country may be compared with those of another either by industries or by occupations. In the present instance the lack of British wage data for industries has compelled the use of the occupational plan. Thirteen occupations, common to both countries, have been selected for the wage comparisons. These occupations arranged in alphabetical order follow: blacksmiths, boilermakers, bookbinders, bricklayers, carpenters, compositors, electrical workers, laborers, machinists, masons, painters, plasterers, and plumbers. The reason for selecting these particular occupations was only the availability of statistics. Material could be found on wages in these occupations for both countries, whereas statistics for several occupations such as barbers, bartenders, locomotive engineers and miners, were available in the United States but not in Great Britain. All of the thirteen occupations considered are unionized, and the wages here
presented are union rates. Most of the report of the State
Bureaus of Labor present only union rates for occupations, and this
condition is also true of the British Board of Trade Report.
The method of collecting the statistics by correspondence with
the unions, which is used by nearly all the Labor Bureaus, is
responsible for this abundance of data on union wages and
scarcity of data on non-union wages for the same or different
occupations.

For each occupation considered, has been constructed a
frequency distribution, and from this distribution the average
wage has been calculated. The ideal method of constructing the
distributions would be to ascertain the number of individual
workmen receiving a wage that falls into the respective group.
This, however, has been impossible to do, because the Labor Bureau
Reports, with the exception of that of New York, fail to give the
number of workmen effected by that rate and belonging to that
union. Since there is no way of telling the number of workmen
operating under the rates presented, it is impossible to form a
distribution with the individual workmen as the unit. The alter-
native was to make the town or union the unit of frequency. Every
town reported in the Labor Bureaus' statistics had at least one
union, and in case there were more than one union reported in a
town, the unions instead of the town were taken as the unit of
frequency, in order to give greater weight to the larger towns
which contained several unions in the same occupation.

In forming the distributions all wages were reduced to a
per diem basis. If the wages were given by the week, the amount
was divided by six, and if the rate were given by the hour, the
amount was multiplied by the number of hours in the working day.
The whole range of wages was divided into 25½ groups as follows:
$1.50-1.74; 1.75-1.99; 2.00-2.24; 2.25-2.49; etc. The method of
procedure was to take one sheet of paper for each occupation,
and rule it off into squares with the wage groups at the top of
each column. Letters were mailed to some fifteen State Labor
Bureaus, requesting the Commissioner of Labor to send the 1910
Report of his Bureau. Each report was then studied and all statistics bearing on the occupations considered, were tabulated on the
proper occupational sheet.
The method of tabulating the statistics into distributions
will be shown by taking the Massachusetts Report as an example.
Part I of this report deals with union wages and the first occupa-
tion presented is that of bricklaying. The table is divided into
the following columns:

<table>
<thead>
<tr>
<th>Localities</th>
<th>Rates of Wages</th>
<th>Hours of Labor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hour</td>
<td>Full Week</td>
</tr>
</tbody>
</table>

In the "Localities" column are printed the names of the towns
in which the unions are located. Under both the "rates of wages"
and "hours of labor" division of the table there is in the original
report a third column indicating the year when the present rate
went into effect, but this last information had no material bearing
upon the question under investigation. The task was, therefore,
to go down the list of towns in the localities column and separate
all the towns which had the same day wage. The number of towns

which had a $4.00 per day rate, for example, was 5, the number of towns having a $4.40 per day rate was 17, the number having a $4.50 rate was 4, and the number having $4.66 as the rate was also 4. These frequencies, 5, 17, 4, 4, were recorded on the Bricklayers Sheet under the proper wage groups respectively. The Bricklayers occupation is now finished for Massachusetts and the same procedure is followed for the next occupation, that of carpentry. When all the occupations have been tabulated from one State Report, another is studied and handled in the same way. When all the State Reports have been studied and the statistics tabulated, the occupational sheets present an appearance similar to the following example for the carpenters occupation. (Table I.)

It is seen that the object of this method of tabulation is to collect together all those towns which have the same rate, in this way forming a frequency distribution of towns. After the distribution is ascertained, the average wage is calculated. The averages used throughout this inquiry have been the "mode" \(^1\) and the "median," \(^2\) one to serve as a check on the other. The mode is the point of greatest frequency, it is the wage group at which can be found the greatest number of individuals, which in the case of the carpenters occupation is the group $3.50-3.74, which has a frequency of 96 localities. The median wage is that received by the half-way item or middle individual of the population. In the

1. "No single measurement expresses completely even the economic condition of a group of workmen, but if we are taking a single measurement, that of the "mode" is often the most useful. It is at the mode that we find the greatest number of whose greatest good we may be thinking." Bowley's Elements of Statistics, p. 123.

2. This average with its dependents, the quartiles and deciles is used extensively in the U.S. Census of Wages for 1900.
Table I.

Carpenters' Occupation. Distribution of Union Rates by Towns.

<table>
<thead>
<tr>
<th>Wage Groups</th>
<th>$200/</th>
<th>$225/</th>
<th>$250/</th>
<th>$275/</th>
<th>$300/</th>
<th>$325/</th>
<th>$350/</th>
<th>$375/</th>
<th>$400/</th>
<th>$450/</th>
<th>$500/</th>
</tr>
</thead>
<tbody>
<tr>
<td>States</td>
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<td>Mass.</td>
<td>1</td>
<td>4</td>
<td>15</td>
<td>7</td>
<td>56</td>
<td>12</td>
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<td>Md.</td>
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<td>1</td>
<td>1</td>
<td>4</td>
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<td>Okla.</td>
<td>4</td>
<td>1</td>
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<td>12</td>
<td>7</td>
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<td>Colo.</td>
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<td>4</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Cal.</td>
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<td>1</td>
<td>13</td>
<td>17</td>
<td>12</td>
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<td>Iowa</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>2</td>
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<td>Kan.</td>
<td>1</td>
<td>8</td>
<td>4</td>
<td>5</td>
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<td>Minn.</td>
<td>2</td>
<td>1</td>
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<td>2</td>
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<td>N.Y.</td>
<td>7</td>
<td>32</td>
<td>11</td>
<td>24</td>
<td>25</td>
<td>9</td>
<td>7</td>
<td>24</td>
<td>30</td>
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<td>Ore.</td>
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<td>1</td>
<td>7</td>
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<td>Wash.</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>16</td>
<td>7</td>
<td>10</td>
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<tr>
<td>Totals</td>
<td>9</td>
<td>41</td>
<td>31</td>
<td>55</td>
<td>56</td>
<td>96</td>
<td>41</td>
<td>67</td>
<td>39</td>
<td>52</td>
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</tbody>
</table>

Total number of localities 488.
the carpenters distribution the middle item is the 244th town, which falls in the group $3.50-3.74. Both the mode and the median, hence, in this particular occupation fall in the same wage group, and it is probable that the arithmetical average would fall in the same wage group. However, the mode and median have been used in all cases rather than the arithmetical average, because they are far more easily determined. In order to obtain greater accuracy in the final results, the mode and the median were compared for each occupation.
Chapter III.

Nominal Wages in the United States.

On the following page is a table showing the wage distributions for all the occupations. (Table II.) The most striking fact brought out by this table is the great variability of wages within the United States. For example, in the occupation of carpenters wages range all the way from $2.00 to $5.00. According to the theory of wages the rates should be arranged uniformly around a definite mean according to the skill of the carpenters, for the reason that in any occupation the greatest demand is for ordinary, medium-priced workmen, and as the workmen become more and more highly skilled, and their wages rise correspondingly, the demand falls off and the number employed decreases. We might expect to find considerable variability, but we should not expect to find such a great variability and irregular distribution.

Theoretically, wages in any occupation should have a definite mode around which on both sides the frequencies should decrease to zero. But in the present case of carpenters, for example, the mode is in the $3.50-3.74 group, and instead of decreasing regularly as the wage increases there is a pronounced secondary mode of 52 towns in the highest group, $5.00-5.24, the group which should have the smallest number of towns in it.

Several of the other occupations show the same tendency to concentrate the frequencies at or near the highest wage group, forming thereby a marked secondary mode. This grouping is especially noticeable in the bricklayers' occupation where there is a frequency of 29 localities in the $6.00-6.24 group; in the masons occupation in the $4.50-4.74 group where there are 25 localities;
Table II.
Nominal Wage Distributions in the United States, By Occupations. For the year 1910.

<table>
<thead>
<tr>
<th>Wage Groups</th>
<th>150</th>
<th>175</th>
<th>200</th>
<th>225</th>
<th>250</th>
<th>275</th>
<th>300</th>
<th>325</th>
<th>350</th>
<th>375</th>
<th>400</th>
<th>425</th>
<th>450</th>
<th>475</th>
<th>500</th>
<th>525</th>
<th>550</th>
<th>575</th>
<th>600</th>
<th>625</th>
<th>650</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Towns</td>
<td>48</td>
<td>58</td>
<td>20</td>
<td>180</td>
<td>488</td>
<td>166</td>
<td>103</td>
<td>56</td>
<td>147</td>
<td>67</td>
<td>206</td>
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</table>

Total number of localities 1,714.
and in the plumbers' occupation in the $5.00-5.24 group which has a frequency of 18 towns. In order to see more clearly the cause of these irregular variations we may turn to the statistics for the carpenters' occupation in Table I. Taking the wage distribution of New York as an example, we find there is no distinctive primary mode, but the median wage is $3.75. Above this wage, however, are pronounced secondary modes in the $4.50 and $5.00 group. This last wage group, the highest in the table has the large frequency of 29 localities. An examination of these frequencies of 30 and 29, in the $4.50- and $5.00- wage groups respectively, brings to light the fact that every one of them are unions within New York City. This fact is very significant in showing that the usual distribution which has one mode, from which the frequencies decrease regularly on both sides to zero, is transformed in the present instance into an irregular distribution with high frequencies near the highest wage groups, caused by the union rates in the large cities. Because of the strongly organized labor market in the great cities, the rates are forced up to an unusually high point. Generalizing from this instance, we may say that the cause of the secondary modes in the higher wage groups in all the occupations is the artificial boosting of wages in strongly unionized centers, and this condition is contrary to the theory of wage distributions. There is no reason for thinking there are more highly skilled carpenters whose services are worth $5.00 per day than workmen worth $4.50. We should expect to find more carpenters receiving $4.50 than receive $5.00 per day, but the actual figures are 39 towns for the former and 52 for the latter wage group.
The more we study the distributions of the American wage, the more we come to realize that the normal working of the law governing wages has clearly been interfered with, so that instead of presenting a regular distribution, the statistics actually show an irregular distribution with several secondary modes. The cause for this irregular variability is that the raising of wages is in large part an artificial increase, and is not due to the superior skill of those who receive the increased wage. In other words, if the custom of individual bargaining for wages still existed, instead of the collective bargaining at present used, the probability is that the wage distributions in the several occupations would be much more normal and regular, and would not exhibit such pronounced fluctuations throughout the whole range. If such a condition as individual bargaining still prevailed, the primary mode would probably not change much, but there is a strong probability that there would be no secondary modes near the highest wage groups, such as we find in several of the occupations under consideration.

In order to show this irregular variability better, the carpenters' statistics are graphed on the following page.
Graph No. 1

Carpenters' Occupation

In U.S. Occupation,

1900 200 300 350 400 450 500 750 1000

150 200 250 300 350 400 450 500 750
Chapter IV.

Nominal Wages in Great Britain.

The source of information for British wages was the Report of the British Board of Trade on "Time-Rates and Hours of Labour" in Great Britain for the year 1910. This publication contains statistics for the building trades, engineering trades, printing and a few other trades. The information constituting the report is furnished by the unions themselves, or in some cases by the employers' associations, and the rates are classified by towns. These statistics, therefore, are directly comparable with the statistics furnished by the American State Bureaus of Labor. The wages were divided into groups corresponding to the 25½ divisions in the United States statistics, as follows: 25-37d.; 38-49d.; 50-62d.; 63-74d.; 75-87d., etc. After the rates were tabulated in English money they were changed into United States money on the basis of 1d. = 2½. This transmutation into American money is, of course, not strictly accurate, but the error is so small that it has no appreciable effect on the result.

The statistics in the British report are given by rates in pence per hour and hours per week worked. The process was, therefore, to divide the total hours worked per week by six and multiply the quotient by the wage rate per hour, thus arriving at the rate per day which is the unit of this investigation. The prevailing hours worked per week in the occupations considered was 50. This gives a daily rate of 9 hours and 5 hours on Saturday, in contrast to the usual 8 hour day in the United States. The same method of tabulating the statistics was followed in the British report, as in the United States' statistics.
The final figures for each occupation in Great Britain are presented in Table III on the following page.
Table III.
Nominal Wage Distributions in Great Britain,
By Occupations. For the year 1910.

<table>
<thead>
<tr>
<th>Wage Groups</th>
<th>25-37</th>
<th>38-49</th>
<th>50-62</th>
<th>63-74</th>
<th>75-87</th>
<th>88-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-76</td>
<td>45</td>
<td>273</td>
<td>37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>76-100</td>
<td>2</td>
<td>35</td>
<td>83</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-126</td>
<td>24</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>126-150</td>
<td>6</td>
<td>109</td>
<td>140</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>150-176</td>
<td>19</td>
<td>182</td>
<td>170</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>176-200</td>
<td>7</td>
<td>106</td>
<td>59</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200-225</td>
<td>19</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>225-250</td>
<td>4</td>
<td>82</td>
<td>315</td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>250-275</td>
<td>281</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>275-300</td>
<td>8</td>
<td>79</td>
<td>219</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>300-325</td>
<td>45</td>
<td>161</td>
<td>93</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>325-350</td>
<td>5</td>
<td>56</td>
<td>178</td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>350-375</td>
<td>7</td>
<td>102</td>
<td>128</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Occupations:
- Blacksmiths
- Boilermakers
- Bookbinders
- Bricklayers
- Carpenters
- Compositors
- Electrical Workers
- Laborers
- Machinists
- Masons
- Painters
- Plasterers
- Plumbers

Total number of localities 3245.
Chapter V.
Nominal Wages Compared.

The most important fact brought out by a comparison of Table II and Table III is the great contrast of the British wage distributions with the American distributions as regards variability. In Great Britain the wages for every occupation are much more concentrated into a few wage groups, and there are no secondary modes. While the wages of carpenters in the United States range from $2.00 to $5.00, in the Great Britain they range only from $1.00 to $2.00. All the British distributions are regular. The difference between the two types of wage distributions is clearly shown by the graphs of the plumbers' occupation for the two countries on the following page. The great difference between the two countries in the range and variability of wages is common to all occupations. This contrast in the form of the wage distributions may be explained by the difference in the size, age and economic development of the two countries, and also by the greater success of the American union in getting what it wants. The United States' wage distributions seem to point very clearly to the fact that in this country there is much arbitrary and artificial boosting of wages in certain skilled occupations which prevents the free action of the economic laws which would otherwise govern the distribution of wages in any occupation. The American unions have brought about this condition by main strength, thru strikes, boycotts and other methods. The British unions, on the other hand, appear to be unable to artificially boost wages and consequently the distributions are regular.

The difference in the range of wages in the two countries may
Graph No. 2

Great Britain
United States

Numbers on ordinate:
100 150 200 250 300 350 400 450 500

Legend:
Great Britain
United States

Nominal wages 5 cents per day
be caused by the different geographical areas from which the statistics are gathered. In Great Britain the unions are much nearer to each other, and each union knows the rates of its neighbors. In case rates in one part of the kingdom do rise for any reason, it is not difficult for workmen to migrate to that locality. In the United States, however, the immense area of the country and the many different conditions under which men of the same occupation work, make migration to the high wage localities more difficult. The consequence is the wide variability in all occupations. It must also be remembered that these tables present nominal wages only, and if the cost of living were known for each locality, so as to arrive at the real wage prevalent there, the range of wages would very likely be much less in the United States.

The second great difference brought out by the comparison of Table II and Table III is the difference in the amounts of the nominal wages. Not one of the distributions in one country overlaps or coincides with the distribution for the same occupation in the other country. In other words, the highest wage received by a British workmen for any occupation considered, is lower than the lowest wage received by an American workmen in the same occupation. This surprising situation will be seen more clearly in a later Chapter where the average wage is considered.

So far we have completed the first part of the task, viz., the determination of the nominal wages in the two countries. We must now turn to the second part,—the determination of the cost of living in both countries.
Chapter VI.
The Cost of Living in the United States and Great Britain.

A discussion of comparative wages necessarily involves the consideration of the cost of living, and since this study is primarily concerned with the wages of workmen, the best method of determining the cost of living is to consider it from the standpoint of workmen's families. We have ascertained the wages of a certain class, and now must learn the cost of supporting a family of that class. This can only be done by pricing family budgets. Of course, the cost of living could be compared by merely comparing the prices of equal amounts of miscellaneous commodities. But the advantage and purpose of comparing and pricing an identical budget in the two countries is to get a weighted index number, weighted according to the amounts of foodstuffs used in the support of a workman's family. The problem is, therefore, to obtain an average American budget, and price this budget in the prices of both countries.

In making up the budget it has been necessary to take foods that are used in both countries for which prices could be obtained. The quantities of foods used in the budget are average quantities taken from a United States Labor Bulletin\(^1\). The total number of budgets tabulated in the table is 3,215, the greatest number of which lie in the group of families which have an expenditure of $14.60 - 19.47 per week. In this group there are 1,036 budgets and the average amounts of the foods which constitute the budgets are shown in the following table. The actual budget used in the

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\)

present investigation is also presented in the same table, and several differences are at once noted.

Amounts of Food consumed per week in an average American Budget.


<table>
<thead>
<tr>
<th>Food</th>
<th>U.S. Labor Bull. Amount</th>
<th>Amount Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef, Fresh and corned</td>
<td>6.04 lbs.</td>
<td>6. lbs.</td>
</tr>
<tr>
<td>Pork, fresh and salt</td>
<td>2.15 &quot;</td>
<td>2. &quot;</td>
</tr>
<tr>
<td>Mutton and Lamb</td>
<td>.91 &quot;</td>
<td>1. &quot;</td>
</tr>
<tr>
<td>Fish</td>
<td>1.40</td>
<td>1.5 &quot;</td>
</tr>
</tbody>
</table>

Dairy Products.

<table>
<thead>
<tr>
<th>Food</th>
<th>U.S. Labor Bull. Amount</th>
<th>Amount Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butter</td>
<td>1.74 &quot;</td>
<td>1.75 &quot;</td>
</tr>
<tr>
<td>Lard</td>
<td>1.29 &quot;</td>
<td>1.25 &quot;</td>
</tr>
<tr>
<td>Milk</td>
<td>4.77 quarts</td>
<td>5. quarts</td>
</tr>
<tr>
<td>Cheese</td>
<td>.45 lb.</td>
<td>.5 lb.</td>
</tr>
</tbody>
</table>

Cereals.

<table>
<thead>
<tr>
<th>Food</th>
<th>U.S. Labor Bull. Amount</th>
<th>Amount Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bread, Wheat</td>
<td>7.64 &quot;</td>
<td>8. &quot;</td>
</tr>
</tbody>
</table>

Vegetables etc.

<table>
<thead>
<tr>
<th>Food</th>
<th>U.S. Labor Bull. Amount</th>
<th>Amount Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potatoes</td>
<td>18.59 &quot;</td>
<td>20. &quot;(1/3bu)</td>
</tr>
<tr>
<td>Beans</td>
<td>4.45 &quot;</td>
<td>1.5 &quot;</td>
</tr>
<tr>
<td>Sugar</td>
<td>2.8</td>
<td>.25&quot;</td>
</tr>
<tr>
<td>Tea</td>
<td>.93 &quot;</td>
<td>1. &quot;</td>
</tr>
</tbody>
</table>

The United States Labor Bureau budget, shown under the column "U.S. Labor Bull. Amount", contained many kinds of food for which comparative prices were not obtainable. These foods, such as rye bread and flour, maize meal, cakes, doughnuts, molasses and olive oil, were present in the budget only in comparatively small amounts and were discarded. All the important foods are included in the above list. In the column "Amount Used" is shown the actual amounts employed in the present investigation. The changes in the latter column in the quantities of foods have
been made solely for the purpose of facilitating calculations. Thus, 2.15 lbs. pork has been changed to 2 lbs., .91 lb. mutton to 1 lb. etc.

The matter of getting accurate and comparable prices for the two countries was quite difficult because of the lack of the necessary statistics. In the case of the United States it was not possible to obtain figures for retail prices of foodstuffs for the year 1910. The United States Bureau of Labor at the present time is engaged in collecting average retail prices up to the year 1911, but these statistics not being available at present writing, the best material obtainable were those given in the Report of the Massachusetts House Commission on the Cost of Living. The assumption made is that the average prices of Massachusetts represent approximately the average prices in the United States. This assumption is borne out by the finding of the British Board of Trade in its investigation of the cost of living in the United States, that prices in the New England Towns were one or two percent above the average prices for the whole country. The error therefore, if present, is in favor of Great Britain.

In the case of Great Britain the prices of foodstuffs were taken from consular reports on the cost of living, found in the report of the Select Committee of the United States Senate on the cost of living. In these consular reports are given prices of commodities in London, Sheffield, Birmingham and Liverpool.

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for the year 1910, and from these four cities the prices used in the present case are obtained.

The ideal budget to evaluate would consist of five parts in the following proportions: 1 rent, 23.6% of total expenditure; food, 44.6%; fuel and light, 5.8%; clothing, 12.9%; sundries, recreation, education, furniture, dues etc., 13.1%; total 100%. The impossibility, however, of finding a standard measurement for sundries, clothing and even fuel, because of the many kinds and grades used of each article, has prevented the inclusion of these three divisions of a family budget, and we have confined the budget to the two divisions, rent and food, which together comprise 68.2% of the total expenditure of workmen's families. Table IV on the following page presents these two divisions of the budget, rent and food, evaluated in the prices of the two countries.

The first item, rent, includes 4 rooms as the weight, because this is the most usual type of workmen's dwelling house. The figures have been taken from the British Board of Trade Report 2 on the cost of living in the United States and Great Britain. The "Weights" column, (1), are the amounts of food used in the budget; columns (2) and (4) are the prices per unit of measurement in the United States and Great Britain respectively. The figures in columns (3) and (5) are found by multiplying the price per unit by the weight used in the budget. It will be noted that all the British prices are somewhat lower than American prices with the exception of mutton, which is 16% in the United States and

Table IV.
American Food and Rent Weekly Budget Priced in the
United States and Great Britain, for
the year 1910.

<table>
<thead>
<tr>
<th>RENT.</th>
<th>Weights</th>
<th>United States</th>
<th>Great Britain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four room Dwelling @</td>
<td>$ .63</td>
<td>$2.52</td>
<td>$.30</td>
</tr>
</tbody>
</table>

FOOD.

<table>
<thead>
<tr>
<th>Meats and Fish.</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef (sirloin)</td>
<td>6</td>
<td>.255</td>
<td>1.53</td>
</tr>
<tr>
<td>Pork (bacon)</td>
<td>2</td>
<td>.22</td>
<td>.44</td>
</tr>
<tr>
<td>Mutton</td>
<td>1</td>
<td>.16</td>
<td>.16</td>
</tr>
<tr>
<td>Fish (halibut)</td>
<td>1.5</td>
<td>.20</td>
<td>.30</td>
</tr>
</tbody>
</table>

Dairy Products.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Butter</td>
<td>1.75</td>
<td>.35</td>
<td>.6125</td>
</tr>
<tr>
<td>Lard</td>
<td>1.25</td>
<td>.23</td>
<td>.287</td>
</tr>
<tr>
<td>Eggs</td>
<td>20.</td>
<td>.32</td>
<td>.533</td>
</tr>
<tr>
<td>Milk</td>
<td>5.</td>
<td>.09</td>
<td>.45</td>
</tr>
<tr>
<td>Cheese</td>
<td>5</td>
<td>.20</td>
<td>10</td>
</tr>
</tbody>
</table>

Cereals.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bread, Wheat</td>
<td>8</td>
<td>.0575</td>
<td>.46</td>
</tr>
<tr>
<td>Flour, Wheat</td>
<td>9</td>
<td>.038</td>
<td>.342</td>
</tr>
</tbody>
</table>

Vegetables etc.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Potatoes</td>
<td>1/3 bu.</td>
<td>.73</td>
<td>.243</td>
</tr>
<tr>
<td>Beans</td>
<td>1</td>
<td>.10</td>
<td>10</td>
</tr>
<tr>
<td>Sugar (granulated)</td>
<td>4.5</td>
<td>.06</td>
<td>.27</td>
</tr>
<tr>
<td>Tea</td>
<td>.25</td>
<td>.46</td>
<td>.115</td>
</tr>
<tr>
<td>Coffee</td>
<td>1</td>
<td>.33</td>
<td>.33</td>
</tr>
</tbody>
</table>

Food Total        | 6,2725            | 5,173             |
Rent Total        | 2.52              | 1.20              |
Budget Total      | 8,7925            | 6,373             |

Let \( X = \) Rent Index Number:

\[
252:120 :: 100:X \quad X = 47.
\]

Let \( X' = \) Food Index Number:

\[
6,2725:5,173 :: 100:X' \quad X' = 82.4
\]

Let \( X'' = \) Food and Rent Index Number:

\[
8,7925:6,373 :: 100:X'' \quad X'' = 72.4
\]
20¢ per lb. in Great Britain. In order to see the cause of
the difference in the cost of living in the two countries, the
two divisions of the budget considered, rent and food, have been
added separately. The sum of the food part of the budget is
$6.2727 in the United States and $5.1730 in Great Britain. The
index number based on the cost of food alone is 82.4 in Great
Britain, taking the United States cost as the base 100. The rent
amounts are $2.52 and $1.20 in the United States and Great Britain
respectively, and the resulting index number is 47 for Great
Britain. This fact, therefore, explains the greatest cause of
the different costs of living in the two countries. Rent is more
than twice as high in the United States as in Great Britain. Food
prices are approximately 4/5 as high in Great Britain as in the
United States. Combining these two parts of the budget into
one ratio, we have 72.4 as the final index number which represents
the cost of living in Great Britain as compared with 100 in the
United States. This cost of living ratio 100:72.4, is, of course,
based only on two parts of the total family budget, rent and food,
which comprise approximately 2/3 of the total family expenditure.
The remaining third of the total expenditure, because of the
absence of measurable standard units, had to be excluded from
consideration.
Chapter VII.

Real Wages in the United States and Great Britain Compared.

So far we have determined the first factor necessary to arrive at the real wages of a country, viz., the cost of living. The second remaining factor is the index number representing the nominal wages of each country. The method used to find this index number is to compare the average wage for the same occupation in both countries. The ratio between these average wages represent the difference between the nominal wages of the two countries, and are the index numbers for that occupation. In all the occupations the wage received in the United States is taken as 100. The British index numbers for each occupation are then added and averaged, and the result is the index number for the whole group of occupations for Great Britain. For the sake of accuracy two tables have been presented. Table V. is a table of modes and Table VI is one of median wages. The results of these two tables should, of course, check each other.

In deriving the British index number the ratio used has been that of the lowest wage in each group. For example in the first occupation, blacksmiths, the wage group at the mode includes wages in the United States from $3.50 to $3.74 and in Great Britain wages from $1.26 to $1.48. The ratio used is 350 : 126, which gives the resulting index number 35.7. This process is repeated for each occupation. The reason for using the lowest wage instead of the middle wage in any group, is that the greatest number of workmen, especially in the United States, receive the lowest wage.
Table V.
Comparison of Nominal Wages in the United States
and Great Britain, by modes.

<table>
<thead>
<tr>
<th>Occupations</th>
<th>United States Wage Group</th>
<th>Great Britain Wage Group</th>
<th>British Index Number, U.S. = 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blacksmiths</td>
<td>3.50-3.74</td>
<td>$1.26-1.50</td>
<td>36</td>
</tr>
<tr>
<td>Boilermakers</td>
<td>3.25-3.49</td>
<td>1.50-1.74</td>
<td>46.1</td>
</tr>
<tr>
<td>Bookbinders</td>
<td>3.00-3.24</td>
<td>1.26-1.49</td>
<td>42</td>
</tr>
<tr>
<td>Bricklayers</td>
<td>4.50-4.74</td>
<td>1.50-1.74</td>
<td>33.3</td>
</tr>
<tr>
<td>Carpenters</td>
<td>3.50-3.74</td>
<td>1.26-1.49</td>
<td>36</td>
</tr>
<tr>
<td>Compositors</td>
<td>3.00-3.24</td>
<td>1.00-1.24</td>
<td>33.3</td>
</tr>
<tr>
<td>Electrical Workers</td>
<td>3.00-3.24</td>
<td>1.26-1.49</td>
<td>42</td>
</tr>
<tr>
<td>Laborers</td>
<td>2.00-2.24</td>
<td>1.00-1.24</td>
<td>50</td>
</tr>
<tr>
<td>Machinists</td>
<td>3.00-3.24</td>
<td>1.26-1.49</td>
<td>42</td>
</tr>
<tr>
<td>Masons</td>
<td>4.00-4.24</td>
<td>1.50-1.74</td>
<td>37.5</td>
</tr>
<tr>
<td>Painters</td>
<td>3.00-3.24</td>
<td>1.26-1.49</td>
<td>42</td>
</tr>
<tr>
<td>Plasterers</td>
<td>4.50-4.74</td>
<td>1.50-1.74</td>
<td>33.3</td>
</tr>
<tr>
<td>Plumbers</td>
<td>3.00-3.24</td>
<td>1.50-1.74</td>
<td>50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>5235</strong></td>
</tr>
</tbody>
</table>

British Average Index Number = \( \frac{5235}{13} = 40.2 \).
Table VI.

Comparison of Nominal Wages in the United States and Great Britain, by medians.

| Occupations | United States Wage Group | Great Britain Wage Group | British Index Number: U.S. = 100, 
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blacksmiths</td>
<td>$3.25-3.49</td>
<td>$1.26-1.48</td>
<td>38.7</td>
</tr>
<tr>
<td>Boilermakers</td>
<td>3.25-3.49</td>
<td>1.50-1.74</td>
<td>46.1</td>
</tr>
<tr>
<td>Bookbinders</td>
<td>3.00-3.24</td>
<td>1.26-1.48</td>
<td>42.</td>
</tr>
<tr>
<td>Bricklayers</td>
<td>4.50-4.74</td>
<td>1.50-1.74</td>
<td>33.3</td>
</tr>
<tr>
<td>Carpenters</td>
<td>3.50-3.74</td>
<td>1.26-1.48</td>
<td>36.</td>
</tr>
<tr>
<td>Compositors</td>
<td>3.00-3.24</td>
<td>1.00-1.24</td>
<td>33.3</td>
</tr>
<tr>
<td>Electrical Workers</td>
<td>3.00-3.24</td>
<td>1.26-1.48</td>
<td>42.</td>
</tr>
<tr>
<td>Laborers</td>
<td>2.00-2.24</td>
<td>1.00-1.24</td>
<td>50.</td>
</tr>
<tr>
<td>Machinists</td>
<td>3.00-3.24</td>
<td>1.26-1.48</td>
<td>42.</td>
</tr>
<tr>
<td>Masons</td>
<td>4.00-4.24</td>
<td>1.50-1.74</td>
<td>37.5</td>
</tr>
<tr>
<td>Painters</td>
<td>3.00-3.24</td>
<td>1.26-1.48</td>
<td>42.</td>
</tr>
<tr>
<td>Plasterers</td>
<td>4.50-4.74</td>
<td>1.50-1.74</td>
<td>33.3</td>
</tr>
<tr>
<td>Plumbers</td>
<td>3.50-3.74</td>
<td>1.50-1.74</td>
<td>42.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>5190.</strong></td>
</tr>
</tbody>
</table>

British Average Index Number = \( \frac{5190}{13} = 39.9 \).
in each group. That is, there are many more towns reporting a wage of $3.50 for blacksmiths than reporting a wage of $3.62, the middle wage of the group.

It will be noted that the final British index number in the table of modes, Table V, is 40.2, while the final index number in the table of medians is 39.9. This difference between the two results is caused by two occupations,--blacksmiths and plumbers,--the modes of which are different from the medians in the United States. The mode of the plumbers occupation is $3.00, while its median is $3.50. In the blacksmiths' occupation the mode is $3.50, while the median is $3.25. In all the other occupations the median wage falls within the group at the mode. The cause of the differences in these two occupations is the peculiarity of the distribution. In the blacksmiths' occupation there is no very pronounced mode. The primary mode has a frequency of 13 and the secondary mode a frequency of 10. The group between these two modes contains the median, and therefore, because of the lack of a very distinct mode in this distribution, the median is probably preferable to the mode. In the case of the plumbers, the same considerations apply. The primary mode has a frequency of 26, falling in the $3.00 wage group, and there are strong secondary modes in the $3.50, $4.00 and $5.00 wage groups. The result of the large frequencies among the higher wage groups is to throw the median from the mode to the $3.50 group, which is the preferable average. Because, therefore, these two distributions show no marked primary mode, the median average has been preferred to the mode. Therefore, the final index number of 39.9 as found in Table VI is preferred to the index number 40.2 as found in Table V.
The two factors of real wages, cost of living and nominal wages, are now determined, and we must only combine them to arrive at the real wages of the two countries.

The ratio of the cost of living is 100:72.4, with the United States as 100. The ratio of the nominal wages is 100:39.9, with the United States as 100. The method of combining these two ratios is this. Since the purchasing power of money varies inversely as the cost of living, we have the following proportion:

\[ P : p :: 72.4 : 100, \]

where \( P \) = purchasing power of money in the United States and \( p \) = purchasing power of money in Great Britain. Since real wages equals nominal wages multiplied by the purchasing power of money, the last step necessary to take in order to determine the real wage ratio of the two countries, is to multiply the ratio representing the purchasing power of money by the ratio representing the nominal wages. We have therefore:

\[ R : r :: PN : pn, \]

where \( R \) = real wages in the United States, \( r \) = real wage in Great Britain, \( N \) and \( n \) equal the nominal wages in the United States and Great Britain respectively. Substituting for \( PN \) and \( pn \), we have:

\[ R : r :: 72.4 \cdot 100 : 100 \cdot 39.9, \]

\[ R : r :: 72.4 : 39.9. \]

Letting \( R = 100 \) and solving for \( r \), we find \( r = 55.1 \).

This number, 55.1, then, is the final index number representing the real wages in Great Britain, taking real wages in the United States as 100. In other words, real wages in the United States, in the thirteen occupations considered, are nearly twice as high as real wages in Great Britain.
Chapter VIII.
Conclusions.

The index numbers 100 and 55.1 do indeed show a very great difference between the prosperity of workmen in the two countries. But it must be remembered that all the occupations considered, except one, that of laborers, are highly organized and skilled occupations. Whether or not these large wages are common to workmen in general in the United States is another question. Some light may be thrown on this question by the Table VI presented on the following page. This table shows the general distribution of wages in all industries, obtained from employers payrolls, and not from labor unions. It is, therefore, a good representation of the wages of all classes of workmen, union and non-union.

From Table VI, it is seen that the mode is in the $9.99-9.99 wage group, per week, or from $1.50 to 1.66 per day. The median wage is $1.84 to $1.99 per day, in the $11.99-11.99 wage group. Even if we take the higher average, the median, we have only $1.92 as the average wage of adult males in all industries in the United States. This figure is certainly very different from the average wage of the thirteen unionized occupations before treated, and is here inserted only to caution against drawing hasty conclusions from union rates alone that the laboring class of the United States as a whole receive high wages. The highly organized occupations which have been dealt with in this investigation, do receive in general high wages, but the workmen on the whole in this country receive low wages. The arithmetical average of the median wages for the thirteen occupations considered is $3.46, which is far
### Table VII.

The General Distribution of Weekly Wages of Adult Males in the United States, in all Industries.

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1327 (Mass) 3812</td>
<td>6216</td>
<td>13,584</td>
<td>22,469</td>
<td>31,472</td>
<td></td>
</tr>
<tr>
<td></td>
<td>327 (Kan.)  840</td>
<td>603</td>
<td>1,042</td>
<td>1,453</td>
<td>1,847</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 (Okla.)  100</td>
<td>109</td>
<td>239</td>
<td>296</td>
<td>516</td>
<td></td>
</tr>
<tr>
<td></td>
<td>289 (Minn.) 1510</td>
<td>616</td>
<td>1,019</td>
<td>1,563</td>
<td>1,806</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1963 Totals 6262</td>
<td>7544</td>
<td>15,884</td>
<td>25,781</td>
<td>35,641</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>41,399</td>
<td>61,632</td>
<td>70,293</td>
<td>69,996</td>
<td>19,638</td>
<td>8,370</td>
</tr>
<tr>
<td></td>
<td>7,353</td>
<td>10,126</td>
<td>11,940</td>
<td>10,491</td>
<td>3,338</td>
<td>1,380</td>
</tr>
<tr>
<td></td>
<td>2,286</td>
<td>3,834</td>
<td>4,678</td>
<td>3,357</td>
<td>1,394</td>
<td>522</td>
</tr>
<tr>
<td></td>
<td>5,287</td>
<td>9,480</td>
<td>8,816</td>
<td>6,367</td>
<td>2,322</td>
<td></td>
</tr>
<tr>
<td></td>
<td>66,325</td>
<td>85,072</td>
<td>95,727</td>
<td>90,211</td>
<td>26,692</td>
<td>10,272</td>
</tr>
</tbody>
</table>

Total population = 466,014 workmen.

Median man = 233,007th individual.

Median wage = $11-$11.99 per week, or $1.84-$1.99 per day.

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(2) 25th Report Kansas Bureau of Labor, p. 10.
greater than the general average of all workmen of $1.92 per day. Even the general wage average in the United States is undoubtedly higher than the general wage average for Great Britain. However, it is important to note that the unskilled occupation for which we have statistics, that of laborers, shows a less difference in the ratio of wages than does any other occupation. This fact would tend to show that the greatest difference in wages between the two countries is in the highly skilled and strongly unionized occupations, such as bricklayers and carpenters.

That wages in general in the United States are higher than in Great Britain is borne out by immigration statistics, the barometer of labor conditions. In 1910 618,757 emigrants left Great Britain of whom 303,307 had the United States as their destination, 196,218 were bound for Canada, and the remainder were travelling to Australasia, British South Africa and other places. It is seen from these figures that the United States received in 1910 by far the largest proportion of British emigrants. The high wages of the United States attract emigrants from the whole world. The enormous magnitude of our immigration is common knowledge. In 1910 the enormous number of 1,041,570 immigrants landed on our shores. These statistics are proof of some powerful attraction which draws workmen of all nations to the United States and the principal factor in this attraction is undoubtedly higher wages.

In conclusion we desire to point out the difficulties involved in this investigation, and all similar wage studies.

The lack of uniformity among the State Bureaus of Labor as regards

1. Statesmen Yearbook for 1911, p. 23.
2. Ibid.
the wage statistics they publish, is perhaps the greatest difficulty. The States should have a common plan for publishing wage statistics, so that the statistics of one State can be compared with those of another. This uniform method of presenting the wage statistics should contain the following features: the whole distributions of wages, both by occupations and by industries, should be presented instead of merely an average; these distributions should have the individual workmen as the unit of frequency; the wage groups should be the same in each State Report; and a distinction should be made between union and non-union wages. A similar method should be followed in the presentation of British statistics, in order to make comparisons possible.

The other great obstacle in the way of arriving at the real wages in the United States and Great Britain, is the difficulty of determining the cost of living in both countries. This difficulty is caused by the impossibility of evaluating an entire family budget in the prices of both countries, because of the lack at the present time of prices for articles which constitute the three divisions of the budget, heat and light, clothing, and sundries. These three divisions of a family budget are made up of articles for which it is exceedingly difficult to obtain comparable standard measurements. That is, there are no data existing today which give, the price in the United States of recreation (theaters etc.), for example, and the British price for recreation of the same quality and quantity. Yet recreation is one of the items which comprise the sundries division of a family budget, and until such data are available, giving prices for this item, the budget will always be incomplete.
The present investigation, therefore, has been handicapped, like many statistical investigations, by the lack of material. This lack of material, however, has not prevented an attempt to solve the problem, and we consider the final results the most accurate possible at the present time.