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From 1840 to 1891

Author(s): A. L. Bowley

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COMPARISON OF THE CHANGES IN WAGES IN FRANCE, THE UNITED STATES, AND THE UNITED KINGDOM, FROM 1840 TO 1891.¹

TILL recent times there has been a great dearth of wage statistics covering any long series of years or any wide area, and, in spite of the progress that has been made since 1886 in this direction, no general trustworthy comparison of wages current in different countries is yet extant.

The difficulties of ensuring similar methods of computation are so great when two countries are concerned, that simple statements of average wages, *e.g.*, in France and England, although correct in themselves, may quite easily be wrong in comparison. I have, therefore, not made the more tempting calculation of estimating and comparing the present average wages in France, the United States and the United Kingdom, but have confined my attention to a different problem, of equal interest, and with less liability to concealed error; namely, the comparison of the rates of increase of wages in these three countries during the period for which statistics are to be found. The errors which may exist in this estimate are no longer due to uncertainty as to the meaning of figures, but **only to the incompleteness of former estimates; and I place great reliance on the fact that in comparing wage statistics given for different years by one authority and calculated on uniform principles, the numerical ratio of the average wages stated for two dates is more likely to be independent of bias on the part of the statistician, or peculiarity in the methods of averaging or calculation, than is a single concrete average for a given date.** For in both calculations the same classes, ages and sexes will have been included or omitted; similar estimates will have been made for payment in kind, loss of work, and all the small items which make the calculation of wages so

¹ A paper read before Section F., British Association, Bristol, 1898.

complex ; and the average will have been taken on the same principle ; and it is easily shown theoretically, and is soon verified by experiment, that in an industry employing a large number and many classes of workpeople, differences in arranging and selecting the figures, although influencing considerably the average at a single date, have very little effect upon the computed rate of increase or decrease of the average.

My results are given in five tables : the first two relating to wages in the United Kingdom, the third comparing nominal wages in the countries in question, and, the last two, comparing real wages.

In dealing with French and American figures I have not attempted to make a new or independent estimate. For France, I have relied entirely on the recent publication of the French Labour Department, *Salaires et Durée du Travail*, in which there is a systematic attempt to state wages in different industries and districts, resembling in many respects the recent wage census (1886-1891) for the Board of Trade, and affording many opportunities of interesting comparisons ; but, besides the statical estimate of wages in 1891, a section of the Report is devoted to a recapitulation of former general enquiries and special returns, and these are carefully collated, and the resulting rate of increase decade by decade exhibited. It was this table which led me to make the attempt to construct a similar one for English wages from material I had already collected for another purpose. As regards the United States, I have made further use of the Senate report on Wholesale Prices, Wages and Transportation, which formed the basis of a former investigation (see *ECONOMIC JOURNAL*, September, 1895). Although the lists of wages on which the information for the earlier dates there dealt with are few in number, yet they have a special importance as satisfying exactly the canon that those figures are most valuable which are collected by the same estimator on precisely similar methods for all the dates in question. The peculiarities of the American methods and the value of the results were discussed in my former article, where a detailed comparison was made with English wages ; for the latter my figures were taken from a more elaborate calculation already published.¹

I am using the results obtained and the methods employed in these papers without further explanation. The new work in the present calculation is in carrying back the evaluation of English wages to 1840 by the help of freshly collected material, (the pre-

¹ *Journal of Royal Statistical Society*, June 1895.

vious calculations having included no figures prior to 1860) ; in adjusting the figures since 1860 by the help of more complete material, and in part reworking them so that they should refer to those industries only for which material exists for the whole period ; while, of course, the comparison with French wages for the whole period, and with American wages prior to 1860, is altogether new.

1840 is a convenient date in many ways for the starting point of the comparison. It is just half-a-century before 1890, the date at which the French and American reports stop, and to which the English wage census refers ; it is also the date at which the American report commences, and the earliest one for which the French report quotes full figures. It has, too, special convenience, as regards English wages ; for machine industry was then fully established, the hand-loom weavers, for instance, being very near extinction ; and at that date we have reports of very many commissions relating to manufacture of all kinds, and to agriculture. In other respects the period is rich in wage statistics and in literature on the condition of the working classes, so that it would not be impossible to make a rough wage census for 1840 which might be compared with that of 1886—91. This I have not yet attempted, preferring to rely on the comparative, or dynamical, rather than the statical method ; but the information may ultimately prove of particular value, for if we carry back wage statistics step by step from 1890 to 1840 by the dynamical method, and so calculate the increase in this period, and then separately compare the rates shown by statical estimates for the two dates, the agreement or disagreement of the two increments shown will indicate the degree of accuracy of the result. Similar processes might be applied to the comparison of wages in the time of Eden and Arthur Young with those at the present date.

It is useless to attempt to obtain minute accuracy in such calculations as these, which resemble in their general methods those relating to index numbers for prices. Supposing that it were possible to determine the change in English wages to one per cent, the comparison with foreign wages would hardly be furthered ; for this accuracy is not found in either report, and is not even attempted in the French. It is as if we had the lengths of three alternative routes to compare ; one of which (the French) is given roughly in miles, while the second, (the American) is stated apparently correct to an inch, but we know that a faulty measure is employed : in such a case it would be useless to measure the third route more accurately than to the nearest furlong.

As regards the English and American figures at any rate, accuracy diminishes as we go to earlier dates. In the English, because of the general changes in the organism of industry, and because modern sources of information (such as Trades Union Reports, and Sliding Scale Lists) drop out as we go back; in the American, because, while the series of wages paid in various factories in most cases go back to 1860, they extend in few cases to 1850, and in still fewer to 1840. As regards the French figures, it is possible that the two enquiries of 1840—5, and 1860—5, on which the comparison is chiefly based, are nearly equally comparable with that of 1891—3. The law of error would, I believe, throw light on the accuracy to be expected; the basis of the calculation being the number of items of information included, the accuracy of each, and the distribution of the various ratios obtained about their mean; but the method would only be applicable to the most minute calculation possible, not to this rough one. For the present I have contented myself with watching the effect which the inclusion of various items, or the adoption of various estimates, has upon the result: that is to say, I have seen roughly how far it would be possible to alter the result by treating the figures in use in various ways. And I have come to the conclusion that the information I have found does not admit of a variation of more than about 10 per cent in the earlier figures, or of 5 per cent in the later: now, 10 per cent on the numbers I obtain for the earlier dates is about 5, the same number, though not the same percentage, as the possible variation in the later figures. So that it follows that the tables given should all be read with the mental proviso ± 5 ¹ for each number. Thus if we represent average money wages in England, as in Table II, by 100 (± 5) in 1891, they are represented by the number 61, (± 5) in 1840. For France I have no means of making any such estimate; for the American figures this margin will about represent the different possible methods of taking the average of the percentages they result from. It is to be understood that even with this precaution, the figures do not represent wages generally, but only in that sphere of industry of which the various trades selected are typical. In all cases the calculations only refer to persons in regular employment, and do not include allowance for slackness, or inflation of trade in special years. The French² and American figures do not include agricultural wages; and this is unfortunate

¹ This I take to be not the *probable* error, but the *extreme limit* of error for calculations based on my data.

² For French Agriculture, see note to Table III.

for information as regards English agriculture is especially complete: on the other hand, the exclusion of agriculture has practically no effect on the calculated course of English wages, as may be seen in Table II. It may appear at first sight as if these possible errors entirely destroy the value of the result, but I do not think that such is the case. We cannot of course from such figures formulate a law of progression of wages, nor find the exact proportion they bear to national capital, nor to national income; but, for the particular purpose in hand, I submit it is immaterial whether the number to represent wages in 1840 is 55 or 65. Considering all the other causes which influence the well-being of the working classes, the changes in habits during 50 years, and the vagueness of the term *average*, I do not think that we obtain much more light on their change of condition if we say, "the average weekly wage was 26s. in 1891, while it was 15s. 7½d. in 1840," than if we say, "it was from 25s. to 27s. in 1891, while it was 14s. to 16s. in 1840;" or if we say nominal "wages increased 63·7 in these 50 years," instead of, "in round numbers wages increased 60 per cent.:" the two statements can hardly be distinguished by the mental vision. I may mention in passing that we get an advantage in this respect by taking 100 to represent the wage at the end rather than at the beginning of the period. Looking at "real" wages, Table III, and supposing a margin of error of ±8 in the earlier figure, the statement as it stands is:—If 100 represents the purchasing power of the average wage, or, in brief, real wages in the United Kingdom, in 1891, some number between 35 and 50 represents a similar quantity in 1840; it would otherwise be:—If we took 100 to represent the quantity in 1840, real wages have increased by 100 to 190 per cent in this period; from the modern point of view the former statement gives the truer perspective.

I have recognised the roughness of the result throughout the numerical calculation. Knowing the small effect that careful "weighting" has on averages in certain circumstances, I have generally taken a simple unweighted average. Thus, in finding the rate of change in wages of Scotch compositors, I have averaged the rates for the various towns without paying attention to the number of workers in each. I have even taken Glasgow and Edinburgh as typical of the whole country, having noticed that in selected years such was the case. In other cases I have taken the median rate or the average of maximum and minimum rates of increase, when the result was to form only one item of a general calculation; and to simplify the work, and obtain a result before the French report was out of date, I have adopted many

similar simplifications. When the result was to be doubtful even in the units, it was useless to calculate the items to the second decimal place: when we only want a telescopic effect it is of no use to work under a microscope.

My attempt has been to form an index-number for wages for each country. Let us suppose that the term "average wage" has a concrete meaning; that, for instance, it is the wage of the median man, the man half-way up the scale of wage-earners; then the wage of the man occupying this position is continually, if slowly, changing; and taking any year, say 1891, as standard, and representing this wage in that year by 100, and wages in other years as percentages of that in the standard year, we have a series of index-numbers showing the change of this wage. The process is similar when the number represents, not the wage of a definite typical man, but the vaguer quantity, *average wage*. Regard this index-number as similar to that which represents the general price of commodities. Wages of different classes of workpeople are continually changing at different rates, just as are prices of different commodities. Special cases affect each industry and each wage group. In those trades where wages are increasing above the average, the numbers employed will also tend to increase, just as rapidly falling prices are accompanied by increasing consumption; so that the weight that various trades or commodities should have in the general average continually changes. But behind these special causes, affecting only sections of the population or separate commodities, there are general ones influencing all: in the case of prices, for instance, the supply of gold; in the case of wages, the change in demand for labour, the stronger position and better combination of the workers, the greater efficiency of their work and so on; and the problem is to disentangle the effect of these general causes from the special ones. We may expect that the various sectional averages we obtain will be grouped about the general average in rough accordance with the curve of error, so that the nearer to the general average the more instances of the special ones will be found; and which is of more immediate importance, the method of samples will apply. That is, if we take a few trades, or a few classes of workers, and find the index-numbers for these, they should together give an average near the general index-number; and the larger and larger the groups of samples, the smaller and smaller should be the distances of their averages from each other, and, therefore, the narrower and narrower the limits within which the general average must lie. This process is seen clearly in the

numerical working. To illustrate by numbers, not altogether hypothetical :—It becomes evident almost at once that the index-number for 1840 for England is, say, between 50 and 70; as more and more items are included, and weighting is done more carefully, it is clear that 70 is too great, and 50 too small, and that 55 and 65 are limiting values; and as the calculation is made still more detailed, it is found that only numbers within, perhaps, the limits 59 and 63 are admissible. It is clear that this process admits of considerable refinement; and when our investigations show these signs, we can place considerable reliance on our results.

The chief characteristic of the English wage statistics is their miscellaneous character.¹ For purposes of comparison on my method the wage census of 1886 and 1891 and the standard rates of the Labour Department are of course not yet of much use. The Reports of Commissions are perhaps the best single source. Decade after decade it is possible to find agricultural wages county by county. In the Labour Commission and the Commission on Depression of 1886, together with the Commissions of mines in the forties, and that on hand-loom weavers of 1839 and 1840, we have miscellaneous figures for most trades, in very many cases in precisely the form most useful, that is careful comparisons of wages at different dates by competent witnesses. Allied to these we have the factory inspectors' reports, where now and again we find a comprehensive estimate for all Lancashire extending over short series of years. There are many valuable reports of Trades Unions, some of them recently brought to light by Mr. and Mrs. Sidney Webbs' investigations, which show minimum rates district by district for various occupations; and though these rates may not be those earned on an average, yet their rates of change in an interval of years afford very useful data. In my former paper I made use of many of these, and of the Board of Trade publication, "Return of Wages, 1830-1836," which is most complete for recent dates, but for some wages goes back to 1839. None of these sources of information are sufficient by themselves, but when each little statement is put into the form of index-numbers, the wage-history of a trade gets gradually built up, period by period, and, in a remarkable way, the gaps can often be completely filled up. Then, very frequently, an independent estimate of the change over a wide interval is to hand, and if this result confirms that found by building piece by piece both are placed on fairly safe ground. I have made free use of all such calculations which I have found in recent or former pamphlets or books, and have for

¹ See "Bibliography of Wage Statistics," *Economic Review*, October 1898.

each industry tabulated all the resulting index-numbers, and have generally found that there is very little difficulty in choosing those which harmonise all the partially inconsistent estimates. If there is much divergence, it is necessary to refer back to the original figures and find exactly whence it arises: in the case of cotton, for instance, where the differences in the estimates of the authorities are considerable, the difficulty chiefly comes in the estimate of the average number of looms worked by a weaver, and in the gradual changes in the personnel of the group inside the mule-gate. The process may be described as taking that series of numbers which in the whole period shows least divergence from the results of calculations from records of wages, or from the estimates of experts in the industry in question; and its accuracy is measured by the smallness of the divergence of these estimates from one another. We may be left in doubt as to the wages in a particular trade for certain years to a quite considerable percentage so that we cannot in reality give a satisfactory history of that trade; but when we come to combine the figures with those of other industries for the same year the greatest possible effect on the average is remarkably small. Thus the figures I am at present most doubtful about in Table I. are those for cotton in 1840 and 1860; but supposing that the 50 which stands for cotton wages in 1840 is 20 per cent wrong, and should in reality be 40, the general index-number for that year would merely be 60 instead of 61. Remembering the roughness of result we are aiming at, I contend that this method is sufficient for the present purpose, although greater accuracy could be obtained from the same material for separate trades if needed. For these reasons, Tables I. and II., referring to individual trades, must be regarded as subject to correction, and as not so trustworthy as Table III., which gives general results.

It would be tedious to mention at any length the sources of information and detailed nature of the estimates for separate trades, but it may be worth while to state in which cases the information is still insufficient. There can be very little doubt as to the general course of money wages in English *Agriculture*, and there is not much room for error in the rate of change even in allowing for payment in kind; but the figures relating to Scotland and Ireland are deficient, and the estimates of payment in kind more difficult. It is unfortunate that there is little to correspond to these wages in the French or American reports. For the *Building* trades we have very full information from about 1860 onwards, and for the largest towns from 1840; but there is some doubt as to country and provincial wages at the earlier dates.

Precisely similar remarks apply to *Printers' Compositors*, except that in this case provincial wages have less effect on the average. For *Sailors* we have the officially recognised wages for many ports and voyages (both in sailing and steamships) from 1847; but earlier figures are very deficient and the value of food and quarters difficult to estimate. The chief difficulty in *Mining* wage statistics is to know whether the figures refer to piece rates, nominal days' earnings, or actual receipts, and statements of the number of days averaged per week are often lacking: but in this case it is possible to piece together little items of evidence, and obtain a result on which we can rely as far as a general view is concerned. In *Iron and Steel* trades we are hampered greatly by the want of an occupation census. The rates of change can be found with fair certainty for moulders and engineers, and, in many years, for puddlers and at blast furnaces; but the combination of the different rates of change in these various groups is difficult. In the *Cotton* manufacture we suffer from too much information, and the difficulty is to reconcile the various estimates. There are also puzzling questions as to the inclusion or not of half-timers, and as to the gradual changes between male and female labour. My numbers are chiefly based on Mr. Merten's paper, read to the Manchester Statistical Society in 1894, and the authorities he quotes, or the four periods he deals with. For *Wool* we have many trustworthy estimates making comparison possible for the manufacture of particular kinds of goods at various dates; but the course of wages appears to have varied from town to town and for different classes of goods, and the change from male to female, and from child to adult labour to have been very considerable, so that a great deal of investigation is still necessary to obtain certain results. The information in hand, however, points clearly to the figures given which harmonize many statements. The actual estimates I have adopted are given in Table I.

TABLE I.

Course of average money wages in selected trades in United Kingdom. Wages in each trade expressed as percentages of their value in 1891.

Years.	1840.	1850.	1860.	1866.	1870.	1874.	1877.	1880.	1883.	1886.	1891.
Cotton	50	54	64	74	74	90	90	85	90	93	100
Wool	74	79	87	92	97	105	114	110	105	100	100
Building	66	69	78	90	90	98	100	98	98	98	100
Mining	61	59	68	74	72	100	75	70	75	71	100
Iron	77	76	80	87	90	103	97	94	100	96	100
Sailors	61	59	70	79	72	90	86	71	82	77	100
Compositors	79	80	83	86	94	95	96	96	97	97	100
Agriculture (England)	75	71	87	90	92	110	112	104	100	94	100

TABLE II.

Comparative height of average money wages in selected trades in the United Kingdom for various years, the wages of Agricultural Labourers for 1891 being taken as 100, and the relative average wages in other trades and years being estimated by Table I. and the wage census of 1886; and the general weighted average for all these trades (women and children included).

Years.	1840.	1850.	1860.	1866.	1870.	1874.	1877.	1880.	1886.	1891.
Cotton	49	52	62	72	72	87	87	82	90	97
Percentage No. of Employees	14	14	14	14	14	14	15	15	15	15
Wool	64	69	76	80	84	92	99	96	87	87
No.	9	9	8	7	7	7	7	7	7	7
Building	115	122	138	160	160	174	177	173	174	177
No.	15	15	15	17	18	19	20	21	22	22
Mining	111	108	124	136	132	133	138	128	130	133
No.	9	10	13	14	15	15	16	16	16	16
Iron	144	142	150	164	170	193	182	176	180	187
No.	10	11	11	12	12	12	12	12	12	12
Sailors	102	100	119	134	123	151	145	120	130	168
No.	4	4	5	5	5	5	4	4	4	4
Compositors	142	144	150	155	169	170	172	172	174	180
No.	2	2	2	2	2	2	2	2	2	2
Agriculture (England)	75	71	87	90	92	110	112	104	94	100
No.	37	35	32	29	27	26	24	23	21	21
Weighted average.....	89	90	105	117	119	142	135	129	130	144
The same reduced so that 100 represents average wage in 1891	61	61	73	81	83	97	94	89	90	100
The same when agriculture is excluded.....	62	64	72	83	83	98	92	88	90	100

A second table is necessary for the combination of the figures for the eight industries taken in the first. The percentages must be weighted with the proportional numbers of employees, given in Table II., in each year. The simple average of the eight figures of Table I. for 1840 is 68 : it is again 68 when the percentages are weighted with the proportional numbers of employees supposed the same for 1840 and 1890, and is 66 when allowance is made for the relatively greater increase of employees in those trades where wages have increased most rapidly. The weights need still further correction for the different levels of wages in the different trades, say in 1891 ; for if the average agricultural wage is £40 per annum, and that of compositors is £72, the latter have so much the greater effect upon the general average. The correction has been made by calling the agricultural wage in 1891, 100 ; expressing the average wages in other trades in 1891 as percentages of this, and then applying the index-numbers found for each trade and year in Table I. to these new values for 1891. The numbers so found, given in Table II., represent the relative height of wages of all these trades in all these years ; so that, for example, average wages in the cotton manufacture in 1840 are represented by 49, nearly half that in agriculture in 1883 or 1891. Taking £48 to be the average annual wage in 1886, the other averages can easily be found, for on the scale adopted in the table, £48 is represented by 90. These money wages are essentially based on the wage-census of 1886, and not on any new calculation. It is important to notice that all the figures representing concrete money wages are less trustworthy than those representing the change, and are only obtained incidentally in the course of calculation. I give them simply for any interest they may possess. I have included agriculture in these tables, but the inclusion or exclusion makes no practical difference in the result, so that it is not necessary to discuss the question as to whether it should or should not be allowed to affect the comparison with France and the United States. It must be noticed that women and children are included in the averages for wool and cotton ; hence the lowness of the lines in Table II. referring to them.

It is not necessary to repeat the former discussion of the American wage report. I have here adopted the results then given without alteration, since I found in former work that re-arrangement of the figures, and more scientific averages, had very little effect on the result.

The French report depends, as regards progress of wages, chiefly on three general enquiries. In 1840-5, and 1860-5, questions

were addressed to employers in many industries as to the average daily wage current, for both sexes, in various districts and employments; the investigations are said to have included over a million work-people. In the recent enquiry, which is said to have included 674,000 persons, the unit appears to have been the factory or workshop, and the method very similar to that of the English wage census of 1886-91. The averages in this third enquiry have therefore been taken on a different principle to those of the two former ones; but paying attention to the extensive scope of the investigation, and the variety of industries included, I see no reason to think that this change of method makes much difference to the general comparison.

The results are:—

DAILY WAGES IN FRANCE ¹

Years.	1840-5.	1860-5.	1891-3.
Men.....	2·07	2·76	4·00
Women	1·02	1·30	2·20
			}francs.

With this may perhaps be compared averages of 4s. daily for men and lads, and 2s. for women and girls, which are indicated by the English wage census of 1886, when allowance is made for the increase between that date and 1891; but I place very little reliance on this comparison.

Besides these three statical estimates we have some comparative lists; wages in mines, daily and annual, are given annually from 1844 to 1895; there are annual returns by the mayors, of wages current in their districts since 1874, and occasional earlier ones since 1853 for nine classes of artizans; similar returns for the building trades of Paris since 1842; and, lastly, the earnings of dressmakers throughout France are given for various years since 1853. Now the remarkable characteristic of all these figures is that the rates of increase shown are almost identical for the various industries. Thus the general enquiry in 1840-45 shows that the average at that date was 52 per cent. of the average in 1891; the mines report gives 50, and Parisian builders list 54. There are seven different items given for 1853, and the percentages are 51, 52, 52, 52, 52, 51, 49. In the few cases where there is a marked divergence, the numbers given are grouped nearly regularly about their average. In all these

¹ *Salaires et Durée du Travail*, p. 267.

respects this report is just the opposite to that of the United States, where there is no regularity to be observed in rates of increase. The paucity of information in the French report as compared with the American is compensated for by this regularity, and I am inclined to place equal reliance on the results obtained. To obtain figures for France for the years for which the calculation has been made for England and America, I have tabulated all the French information, general and special, and, paying attention to all, have interpolated figures for the intermediate dates. This I consider a fairly safe process, since the progress appears to have been so uniform and similar in different industries, and it is not possible for the average wages of a large and varied community to change suddenly except in times of great currency disturbance. It is to be noticed that French wages, as might be expected, do not show the same characteristics as English and American in the period 1870-7. The relative course of money wages in the three countries is shown in Table III., where it is seen that American and French wages have marched together, except at the time of the Civil War, and after the Franco-Prussian War, and have increased at a greater rate than English.

TABLE III.¹

Average nominal wages in the United Kingdom, France, and the United States, as percentages of those in 1891.

Years.	1840.	1850.	1860.	1866.	1870.	1874.	1877.	1880.	1883.	1886.	1891.
United Kingdom	61	61	73	81	83	97	94	89	92	90	100
France	52	52	65	70	75	80	83	86	91	90	100
United States.....	49	54	59	66	81	87	80	85	95	92	100

Notice in particular that from 1850 to 1874 the rates of increase were :—

United Kingdom60 per cent.
 United States61 ,,
 France54 ,,

¹ Many of the earlier French figures are given in Levasseur, *La Population Française*, Vol. III., pp. 87-89; there also we find the wages of agricultural labourers, which reduce to

Years.	1857.	1862.	1882.
Index No.....	57	75	90

numbers which indicate that, as in England, agricultural wages lag behind, but not sufficiently to greatly affect the general average.

From 1874 to 1891, United Kingdom 3 per cent.
 United States 15 ,,
 France 25 ,,

So that in recent times the United Kingdom appears to have lost ground.

But this view is quite misleading, if we make no correction for the purchasing power of money. This I should prefer to leave to a more competent statistician who has made a special study of this subject; but to prevent the spreading of the erroneous impression given by these figures I have made a rough attempt to use suitable price index-numbers, so far as any exist; but they all depend on wholesale prices, whose relation to retail prices is at present unknown.¹

For comparison with the United States figures I have, as before, adopted the processes and figures given in the report, where weighted index-numbers are constructed from American wholesale prices; with this I have used Sauerbeck's numbers, grouped on a similar principle, for correcting English wages. The result, given in Table IV., shows an almost identical rate of increase in real wages throughout the period, except in 1866 when prices and wages were fluctuating abnormally in the States.

TABLE IV.

Average real wages in the United Kingdom and United States, as percentages of those in 1891.

Years.	1840.	1850.	1860.	1866.	1870.	1874.	1877.	1880.	1883.	1886.	1891.
United Kingdom	43	55	53	57	62	68	72	73	81	94	100
United States	47	57	56	46	64	70	71	77	84	93	100

I have not been able to obtain similar figures for France, and have had to make a very rough approximation from records of French export prices, consumption budgets tabulated in the French report, and general information as to the course of prices. This part of the calculation is tentative, and given partly in the hope that it may lead to further investigation on the subject by some one acquainted with the course of French prices, wholesale and retail.

¹ It is true that the relation between the index-numbers which it is possible to use and the purchasing power of wages is very imperfectly known; but the error in the impression given by faulty index-numbers can hardly be so great as in that given by no index-numbers; and every one is at liberty to make the correction which his particular view of the subject suggests. It would be out of place to enter into a full discussion here.

I have, however, made an attempt to obtain a more general view of the change in the following way:—

For English wages, I have interpolated where necessary, taken the real wage by means of Sauerbeck's numbers, and the average for successive periods of ten years. I have done the same for the American by means of the tables in the United States report. Now the French report gives numbers arising from consumption budgets for three decades; from which I have used numbers that include estimates for food, drink, etc., and for light and fuel, but not for clothes; and I have thought it safest to neglect the estimate for rent, as that is not included in the English or American figures. Taking the figures thus given and applying them to the French wages of Table III., we obtain Table V.

TABLE V.

Average real and nominal wages in the United Kingdom, France, and the United States, as percentages of those in 1891.

Years.	1844-53.	1854-63.	1864-73.	1874-83.	1884-93.	1891.
United Kingdom—Nominal	61	73	82	93	95	100
<i>Real</i>	53	51	59	82	97	100
France—Nominal.....	52	65	73	86	95	100
<i>Real</i>	55	61	67	78	94	100
United States—Nominal.....	53	58	72	86	95	100
<i>Real</i>	54	53	57	76	95	100

Here we find an appearance quite different from that of Table III. Nominal wages fluctuate: real wages steadily increase. Now the rate of increase in recent times is in favour of England; but I hasten to add that the English index-numbers include items not considered in the French, so that such a difference as that shown in 1864 to 1873 is not significant.

Even after allowance has been made for all the errors which may be included, and for the general roughness of the calculation, I submit that the similarity of change shown in the three countries is very striking, and the progressive improvement in all very satisfactory. What are the present relative levels of wages in these countries I will not discuss.

It is to be remembered that we are dealing only with average wages, which may increase owing to the high wages of a minority in spite of a diminution in the wages of a very large class of workmen; or, again, may increase simply by the levelling up of the wages of the worst paid to the former average.

