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WAGES IN PRACTICE
AND THEORY

WAGES IN PRACTICE AND THEORY

By

J. W. F. ROWE, M.A., M.Sc.

Cassel Lecturer in Commerce in the University of London

Author of Wages in the Coal Industry, etc.

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TO
MY WIFE

PREFACE

THE origins of this book date back to 1920, when, as a research student at the London School of Economics, I first began to give special attention to wage theory and the practical problems of wage determination and regulation. My first intention was to work from the concrete facts towards that revision of wage theory which I then dimly felt must be necessary, in view of the changed conditions of the labour market during the last twenty to thirty years. But the discovery was soon made that the compilation and arrangement of the necessary statistical and other data was in itself a major task and not the mere preliminary which I had anticipated. In the end its accomplishment for the five great industries selected for special study occupied nearly the whole of my time as a research student. The results and conclusions relating to the coal-mining industry seemed sufficiently new and important to justify their publication as a study complete in itself (*Wages in the Coal Industry*, P. S. King, 1923). The remainder of the material, after presentation as a thesis, had to be put aside for some years. I have now worked it up into the form in which it is presented in Parts I and II of this book, and hope that these studies may be of some interest and value in themselves, in addition to forming a background for the theoretical analysis and conclusions of Part III. For I wish to make it clear that Part III is to be regarded as an interim and not a final report on the subject. It will be easy for the critic to point out that, however great my dissatisfaction with existing wage theory, I offer no complete or comprehensive substitute. This is true, but does not alter the probability that the contribution here made, if it is valid as it stands, will

be found to fit a prominent place in the foreground when that revision and restatement of wage theory, which is so urgently required, has been completed. Acceptance of my main thesis, moreover, involves certain changes in the attitude and policy of the community, which are of immediate practical moment, and cannot be justifiably delayed on the ground that only a part and not the whole truth has yet been discovered.

To Professor Bowley and Mr. R. H. Tawney I owe much. They guided my first steps as a research student, and in later years have been ever ready to help a junior colleague in every possible way. My thanks are also specially due to Dr. Hugh Dalton, Mr. D. H. Robertson, and Mr. Lionel Robbins, who all read a large section of the manuscript, as did Mr. Tawney. Their criticisms and suggestions have been of the greatest assistance, more especially since their views were by no means always in accord with mine. I owe numerous smaller but by no means insignificant obligations to other friends and colleagues, and also to my brother, Mr. M. E. Rowe. Finally, I have to thank a host of employers, managers, trade union secretaries and wage-earners, connected with the five industries, without whose kindness, courtesy, and specialised knowledge my studies of wages in practice would have been only a shadow.

*London School of Economics,
May, 1928.*

J. W. F. ROWE.

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PART I

A PRACTICAL STUDY OF WAGES DURING THE FORTY YEARS 1886—1926 IN FIVE GREAT BRITISH INDUSTRIES

*Building, Coal-mining, Cotton Manufacture, Engineering,
and the Railway Service*

CHAPTER I

THE NATURE OF WAGE RATES AND THE GENERAL LEVEL OF WAGES

SECTION I. THE NATURE OF WAGE RATES.

It is customary to find references to rates of wages, as if that term described a precise and uniform phenomena, readily intelligible and devoid of ambiguities. In any one industry, changes in wage rates over long or short periods are too often regarded as exactly measuring changes in the wage-earner's average rate of weekly income, and, therefore, comparable with changes in the cost of living, while comparisons are also glibly drawn between changes in wage rates in different industries, as if like was being compared with like. In reality such practices are apt to be exceedingly inaccurate and fallacious. Few terms contain so many ambiguities and pitfalls; precision and uniformity are altogether lacking. At the risk of fatiguing those who realise the complexities of the subject, it is proposed to start with an inquiry as to the true nature, meaning and implications of wage rates in the five selected industries—namely building, coal-mining, cotton manufacture, engineering and the railway service—for without knowledge of these points it is impossible not only to handle

wage statistics correctly, but even to appreciate their significance.

In the first place, rates of wages in an industry where piece-work predominates, may be only in the form of piece-work price lists, as is the case for the majority of the workers in the coal-mining and cotton industries. Consequently the rate yields no information whatever as to the average sum of money received for a period of labour. In order to express the wage rates in terms of money, it is necessary to ascertain the average earnings of a sufficiently large sample¹ of the workers over a sufficiently long period, at the very least a week and preferably longer: this can then be adjusted to any unit of time worked, the hour, the day, or the week. But it cannot be assumed that the price lists, even if unchanged, will continue to yield the same average earnings for more than a comparatively short period of time. There is not likely to be much variation for a year or two after the date of a census of earnings, but beyond that period many of the innumerable factors which affect earning power may alter to an appreciable extent: the machinery used may be improved, the workers may become more or less skilful, and more or less energetic, while an alteration of hours may cause a variety of adjustments of all kinds, and an alteration in the general level of wage rates by a percentage addition or subtraction applied to the price lists, will not necessarily be accompanied by an exactly corresponding change in the average earnings.² Again in the engineering industry, where payment by results takes the form, not of formal price lists, but of mutuality,³ account must be taken of the facts, first that the proportion of piece-workers to time-workers may alter over a period of years, and secondly

¹ Usually it must be a very large sample, especially in the coal-mining and cotton industries.

² An increase may cause the workers to slacken their efforts or take an occasional holiday, and a decrease may spur them to greater efforts in order to maintain their weekly income: or vice versa for other reasons.

³ i.e. ad hoc bargains for each job. In any works, precedents are of course quickly established especially if there is a special rate-fixing department. See Cole, G. D. H., *The Payment of Wages*.

that the ratio of average piece-work earnings to the corresponding time-rates may alter, either because the employers deliberately adopt a new standard ratio, or because the workers' rate of output changes. Thus in the coal-mining and cotton industries it cannot be assumed that the average rate of earnings fluctuates only or exactly with the formal changes in the level of the price lists, and in the engineering industry a weighted average of the time rates will not be equivalent to the average rate of earnings since a proportion of the workers are paid by results, nor will changes in time-rates afford an accurate measurement of changes in the average rate of earnings of piece workers. In any industry where there is an appreciable amount of piece-work, it is in fact necessary to distinguish nominal wage rates, in the form of price lists or guaranteed time rates, and their fluctuations, from true wage rates, that is, the current average rate of earnings. The adjective "true" is adopted because the adjective "real" has its technical meaning in connection with variations in the value of money. The distinction between nominal and true wage rates is, as will be seen later, no mere refinement of detail, but of very considerable quantitative importance.

In industries where time-work predominates, the rates will be in the form of definite sums of money, but there is no uniformity as regards the unit of time to which these sums refer. Thus rates of wages in the building industry are so much an hour, in the engineering industry and the railway service so much a week, and for time workers in the coal-mining industry so much a shift. If, therefore, hours are shortened in the building industry, weekly full-time earnings will not be maintained unless there is an increase in wage rates, whereas a shortening of hours in the railway service leaves weekly earnings unaltered. A bald comparison of changes in rates may therefore be completely fallacious from the point of view of the worker's income. Again where a proportion of the workers are regularly on night work, as in the railway service, account must be taken of changes in the

wage rates for night shifts as well as for the ordinary day shifts. Payment in kind, such as free or cheap houses in the coal-mining industry, or free uniform in the railway service, must also be considered. In short, there is the same sort of distinction between nominal and true wage rates in industries where time-work predominates as in piece-work industries, though the difference is not likely to be so marked.

Though these considerations are only of the order of statistical cautions, they deserve much more attention than they commonly receive, except from those who have specialized in the art of handling wage statistics. For example, nothing could be more misleading than the "Index numbers of the general course of rates of wages in the United Kingdom 1880-1914," as published in the *Abstracts of Labour Statistics*. Index numbers for the building, coal-mining, engineering, and textile industries, and for agriculture are not only printed side by side in the same table, but they are actually combined into unweighted means. It is true that the data from which the index numbers have been computed are summarised in a note beneath the table, but no word of caution is included, and the ordinary man may well be forgiven if he interprets the table as a plain invitation to use the figures for comparative purposes. What legitimate meaning or use could be ascribed to the means of these index numbers, only the Labour Department of the Board of Trade knew, and they successfully avoided publishing their knowledge!¹ In reality these index numbers are in some cases far from accurate as a measurement of changes in true wage rates, and to compare the different series one with another is a "chalk and cheese" affair. The index for the building industry is based on the unweighted averages of the recognised hourly time rates of wages for carpenters and masons in twenty-eight towns, and for brick-

¹ The Ministry of Labour appears to have inherited the secret, however, and to have spent time in effecting minute revision of the figures; see the 18th *Abstract of Labour Statistics*. The column of "means" was thought worthy of presentation to the "Balfour" Committee on Industry and Trade; see their *Survey of Current Relations*,

layers in eighteen towns. As will be shown later,¹ these trade union standard rates were actually the rates paid to at least a majority of operatives in almost all districts, even in the eighties, and from other evidence it can be ascertained first, that the wages of all grades of labour, including the unskilled, changed more or less at the same time and roughly in the same degree in each district, and secondly that the wage changes in small towns were much the same as those in large towns. Hence the index for this industry can claim a high degree of accuracy as a measurement of changes in hourly rates, and since the normal number of working hours in a week in 1914 was, in fact, much the same as in the eighties, the index is also a fairly reliable guide to changes in weekly rates. Not so the index for the coal-mining industry, which is based on averages of the recognised percentage changes in tonnage or shift rates of wages for the actual coal getters in the principal districts, weighted according to the numbers employed. But as has been pointed out, the true wage rates may alter over a period quite apart from changes in these nominal wage rates, and the result of somewhat detailed investigations² goes to show that while the nominal increase between 1888 and 1914 for the industry as a whole was approximately 54 per cent., the actual increase in the average earnings of coal getters per shift was rather more than 80 per cent. The index takes no account of alterations in the length of the shift, or in the number of shifts normally worked per week, while it is confined to the coal getters' rates, and the wage rates and hours for other grades did not change in exactly similar degree. The index is a fairly accurate guide to the direction in which wages were fluctuating, but as an absolute measurement of changes in wages per hour, per shift, or per week, it is completely erroneous, except over certain selected and relatively short periods. The index for the textile industries is based on weighted averages of the recognised percentage changes

¹ Appendix II A. See also Chapter IV for the explanation of these facts.

² See my *Wages in the Coal Industry*.

in piece rates of wages in cotton spinning and weaving, and in linen and jute manufacture: the influence of the cotton industry is of course overwhelming. It is open to the same sort of qualifications as have just been cited in connection with the index for the coal-mining industry, though the tendency for earnings to outstrip the increase in list rates between 1886 and 1914 was not very pronounced, and therefore since the alteration in hours was small the index does furnish an approximate measurement of changes in true weekly wage rates.¹ The index for the engineering industry, like that for the building industry, is based on the trade union standard time rates for skilled men in a small but sufficient number of towns. It is not, however, so accurate, even though the rates are weekly and not hourly, first, because a much larger number of engineering workers were paid either above or below the trade union rates, especially in the eighties and early nineties; secondly, because piece-work was on the increase in the engineering industry throughout the period, and therefore the average weekly earnings of all employed tended to increase more than the time rates; and thirdly, because the time rates of semi-skilled and unskilled workers did not follow the changes in skilled rates with such precision.

It is therefore clear that the accuracy and utility of these index numbers vary greatly. These explanations also show the absurdity of making comparisons between them. The differences in the unit of time to which the rates refer, or may be supposed most reasonably to refer, alone prohibit any sort of quantitative comparison, let alone the perpetration of such a crime as their combination in any sort of mean. Nevertheless these index numbers may be made to serve a useful purpose, for they do provide a record of the recognised or nominal changes in wage rates as distinct from the changes in true wage rates; in other words, a study of these index numbers will indicate something of the nature of nominal wage changes, even if they supply erroneous information as to the relative

¹ That this happens to have been true of this period, is no proof that the same holds good for the period since 1914, as will be seen later,

changes of true wage rates in different industries, or even as to the changes in any one industry. With this end in view, the four series for the building, coal-mining, cotton¹ and engineering industries, are presented on the accompanying graph. So far as is known no attempt has ever been made to provide an index of wage changes in the railway service, but a detailed study of such information as is available makes it possible to estimate the changes at intervals of a varying number of years, and in view of the absence of any general downward movement at any time before 1914, coupled with the extremely small upward change until 1907, it is not unreasonable to assume an even rate of change during the intervening years when no information is obtainable. The line for railway wages in the graph represents the changes in the average weekly wage rate of all employed; no account is taken of changes in the length of the working week. As no such attempt to trace the movements in the general level of railway wage rates has hitherto been made, a detailed account of the data and methods of computation is given in Appendix I, and while the results cannot pretend to minute accuracy, they may be relied upon for the purposes for which it is intended to use them here. The Board of Trade took the year 1900 as the base (=100) for their index numbers, but as that year was an altogether abnormal period in the coal-mining industry owing to the South African War, and as any single year may be liable to mislead, it seems better to take an average of a number of years as the base, and for convenience a number of years at the beginning of our period. The year 1886 was one of acute depression, while 1891 saw nearly the apex of the subsequent trade boom; this period of six years (1886-91) has therefore been taken as the base (=100), and the Board of Trade index numbers have been adjusted accordingly.²

¹ The index for the textile industries covers cotton, linen and jute manufacture, but as has been said, the influence of the cotton industry is overwhelming, and the index, as it stands, sufficiently represents that industry, at least for the present purpose.

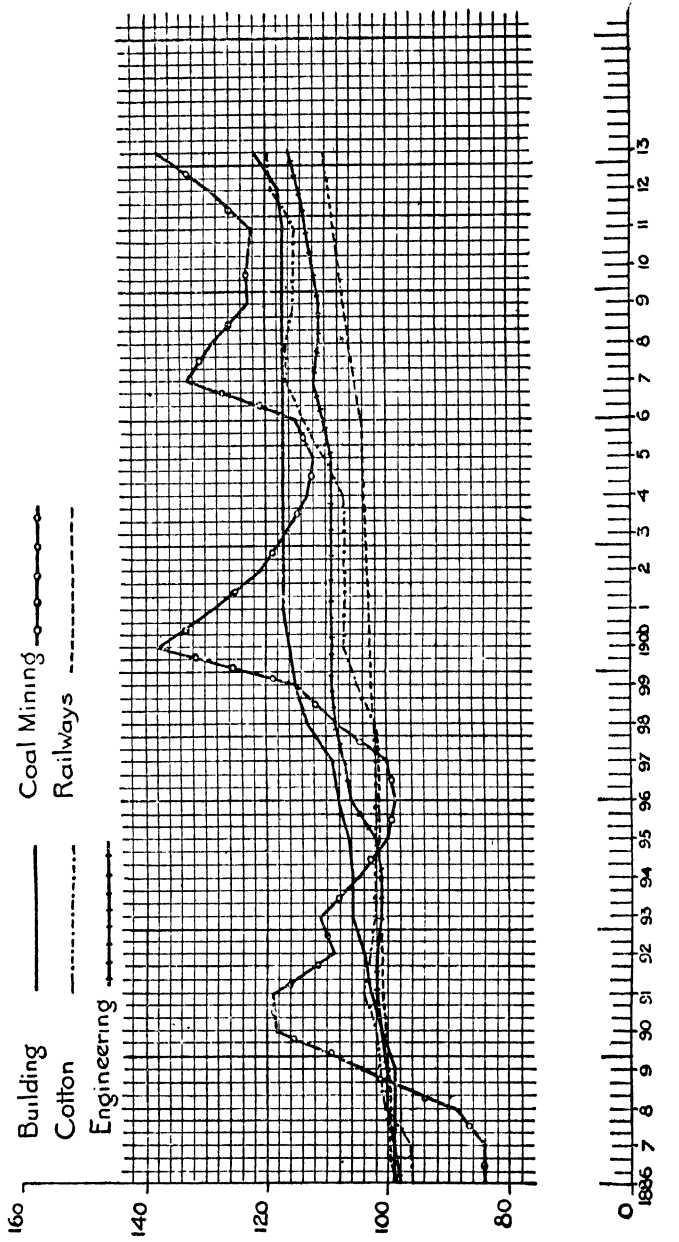
² The index numbers have not been carried back beyond 1886, as it is not proposed to extend the present study beyond that date, for reasons given at the beginning of Chapter II.

This procedure, however, does not alter the fact that the graph must not be used as indicating the relative changes in hourly or weekly wage rates as between the different industries, still less the relative level of wages at any given period : the five series have been brought together for an entirely different purpose, namely to compare the nature and character of nominal wage changes, in other words the direction of the changes and their frequency, not their magnitude.

A brief sketch of trade conditions during the period will be of assistance in studying this graph. The depression of 1886 was perhaps the most severe that this country ever experienced until 1921. In 1887 and 1888 trade revived slowly, and then more rapidly, until the top of the wave was reached in 1891. There was no sudden collapse, and the subsequent downward movement was unusually gradual. The years 1896 and 1897 saw the bottom of the depression, and the subsequent boom in 1900 was hastened, and especially for the coal-mining industry, accentuated by the South African War. In 1901 the tide turned again, and 1904 and 1905 were years of depression. From this point the regularity of the cyclical fluctuations may be said to have been affected by financial disturbances in the United States. The boom of 1907 came rapidly, and went more rapidly : there was acute depression in many industries in 1908 and 1909. Then trade gradually revived, reaching boom intensity in 1913. Thus allowing for the general upward trend, the movement of wage rates in the coal-mining industry is seen to be a very exact barometer of trade conditions, except that it stands too high in 1900 owing to the record prosperity of the export trade as the result of the South African War.

The main object in presenting this graph is to illustrate the nature of wage rates in each of these industries. There is first the extraordinary difference in the degree of fluctuation in the different industries. Wage rates in the coal-mining industry fluctuate most, and in this respect the cotton industry comes a very poor second : the engineering industry makes a better third, but the curves for the building industry and the

COURSE OF RATES OF WAGES, 1886—1913
 (Average 1886-91 = 100)



railway service are remarkably steady. Secondly, there is the interesting point that if allowance is made for the continuous upward trend, wage rates in the coal-mining industry seem to move downwards as readily as they do upwards. But in the cotton industry, and still more in engineering, the curves show a greater tendency to rise than to fall, while those for the building industry and the railway service show no downward movement at all. There is clearly a great variation in the plasticity of these wage rates, and it is far from being the same for movements in either direction.

If trade conditions have been good and then deteriorate, the first result is short time or unemployment, both of which result in a reduction of the average earnings of the industry's normal labour force. As the average earnings fall, so the time draws nearer when labour must accept a reduction in wage rates, in the hope of stimulating the demand for its services by enabling the employer to reduce his costs of production, and therefore his selling price. The individual wage earner appreciates the difficulty of recovering a reduction in wage rates, and his opposition has been consolidated by trade unionism into a definite policy. Thus rates of wages will not normally be affected before earnings have fallen appreciably. Similarly, if there is an improvement in trade, the first result is full-time working and the absorption of the unemployed, until the whole labour force is earning the full weekly rate of wages, and even more if recourse is had to overtime. Then, and not till then, will the actual rates be raised. Thus rates of wages may be likened to a safety valve which only begins to open when a certain degree of pressure has been reached, but that pressure varies enormously in different industries, and according to whether the pressure is upwards or downwards. The factors which determine the rate of pressure in each industry arise mainly from the economic structure of that industry. In the coal-mining industry the peculiar nature of the overhead charges makes recourse to any large amount of short time too expensive, and the large proportion of labour cost to total cost of production necessitates a reduction in

wage rates if prices are to be substantially reduced. Similarly a small rise in selling prices means a very great increase in profits, and the coal-owner can offer no great resistance to the miners' demand for a share. Further, the demand for coal, especially in the export trade, fluctuates largely and rapidly. On the other hand, the demand for railway transport is much more steady, and labour cost is much smaller proportionately to capital cost, while even if the traffic falls off, much the same labour force is required, and very little recourse can be had to short-time working. Hence in the railway service, the normally small fluctuations in demand could be, and actually were, met mainly by capital and not by labour. In the cotton industry, the nature of overhead costs is such as to make possible recourse to short time on a very extensive scale, and the cost of labour is small relatively to the cost of capital, and especially of raw material, with the result that employers would gain little except by reductions of wage rates so great as in most cases to be beyond the reach of practical politics. Similarly in engineering, recourse can be had to short time, and also to overtime (which was not possible during this period in the cotton industry where for most sections hours were limited by the Factory Acts), and while towards the end of the period capital, in the form of specialized machines, was beginning to play a more important part in the engineering industry, and thus limiting the economical recourse to short time, it was also becoming more possible in many sections of the trade to make for stock. The demand for buildings is in normal times very inelastic, and the cost of materials is relatively great, though capital costs are small: and these economic characteristics have aided a powerful trade unionism in preventing reductions in wage rates. Until 1900 the demand for building labour was in excess of the supply, and wage rates rose steadily and rapidly in order to attract more labour. Between 1891 and 1901 every grade without exception shows a large numerical increase.¹ But from 1901-11¹ there was a decrease in every grade, except the painters, not only relatively

¹ Population Census (Occupations).

to the growth of the population, but absolutely. From 1900-09 such figures of unemployment as are available, and these are mainly for carpenters and joiners, show an almost continuous increase. Nevertheless rates of wages did not fall: the only result was that the industry ceased recruiting, as may be seen from the age group census returns of 1901 and 1911, which show that the decrease in numbers occurred almost entirely in the age groups under twenty-five years old. Trade unionism undoubtedly helped to maintain wage rates under these adverse conditions, but it would be wrong to attribute wholly, or even mainly, to trade unionism the tendency for rates to move upwards more easily than downwards in the building industry, in the railway service, and to a lesser extent in the engineering and cotton industries. Trade unionism counted for little on the railways until after 1907, and the semi-skilled and unskilled were little organized in the engineering and cotton industries before the war. The main factors determining the varying nature and characteristics of the movements of wage rates in these industries, lie in the special features of their economic organization, though the organizations of both employers and employed have certainly exerted some influence by their attitude and policies. But these matters will receive more substantial consideration at a later stage. The main objective in presenting this graph will be attained, if it is agreed that the conception embodied in the words "a rate of wages," is in reality too peculiar to be used in the indiscriminate way in which it is often used by economists or business men. Applied to any particular industry, the rate of wages assumes characteristics of its own, which are of major, and not merely of minor, importance.

SECTION II. THE GENERAL LEVEL OF WAGES 1886-1926

The preceding section shows the extremely meagre utility

of a knowledge confined to the recognised changes in nominal wage rates, except by chance or under specially favourable conditions. While it might be possible to modify the index numbers for the building and cotton industries in accordance with the changes in hours, and that for the coal-mining industry in accordance with changes in the number of shifts normally worked per week, and so relate all the series to the common time denominator of the working week, the possible discrepancies in the coal-mining, cotton, and engineering industries, between average weekly rates and average weekly full-time earnings, would still remain to falsify all measurements of any real meaning and value. Statistics of true weekly wage rates are virtually obtainable only by a wage census, of which in the pre-war period there were two, namely in 1886 and 1906. Between these dates the average true weekly wage rate of adults increased approximately in the building industry by 18 per cent., in the cotton industry by 23 per cent. (nominal increase nineteen per cent.), in the engineering industry by 26 per cent. (nominal increase eleven per cent.), and in the railway service by 5 per cent., while between 1888 and 1914 it may be estimated that in coal-mining¹ the increase in the true rate was 80 per cent. as against an increase of fifty-four per cent. in the nominal rate, or on the average of the years 1886-1891 and 1908-1913 the true rate increased very approximately 50 per cent. But during the long periods intervening between these dates,² it is unreasonable to assume that the discrepancies between nominal and true rates developed at a steady constant rate. If this assumption could be made, the index numbers might be adjusted accordingly, and would then be more or less accurate and comparable measurements of the course of true weekly wage rates. But while one may sometimes be driven to make such an assumption over a few years and in special cases, its application to the average wages of all employed in

¹ The coal-mining industry was not included in the 1906 census.

² Certain returns of wages, comparable with those for 1886, were made for 1891, but these are obviously not of great assistance.

these industries over periods of twenty years must not be entertained. For example, it is virtually certain that in the coal-mining industry the Eight Hours Act of 1908 and the Minimum Wage Act of 1912 directly exercised appreciable effects on earning power, while inasmuch as earning power in the cotton industry depends partly on the installation of improved machinery, it would tend to increase not regularly but in waves accompanying each mill-building boom. It is therefore impossible to construct annual index numbers which would accurately measure the level of true weekly rates in the coal-mining or cotton industries, or even in the engineering industry, owing to the probably uneven growth of piece-work. Index numbers based on changes in the nominal weekly rates in these industries afford a general guide to the character of wage fluctuations, the direction of changes at particular dates, and a very rough idea of their relative extent ; but they do not afford any kind of accurate measurements of the relative levels of wages in these industries at any given date, or in the same industry at different dates. In the preceding graph, therefore, only the curves for the building industry¹ and the railway service are either reasonably accurate or comparable as representing true weekly rates, and it may be remarked in passing that even this comparison is seriously incomplete from many points of view, unless account is also taken of the great decrease in the hours of railwaymen during the period, a decrease which it is impossible to measure from year to year owing to the paucity of data.

From 1914 onward statistical information as to true wage rates is slightly more abundant. In his book, *Prices and Wages in the United Kingdom 1914-20*, Professor Bowley gives index numbers of the changes in all our five industries. For the building industry he shows two series, based on weekly time-rates, one for bricklayers as typical of the skilled grades, and the other for labourers. As has been said above, there is no

¹ As was noted above, the normal number of working hours per week in the building industry altered little between 1886 and 1913, and therefore the curve, though based on hourly rates, may also be taken as roughly representing weekly rates.

reason to suppose any great change in the proportions of skilled and unskilled workers in this industry, and as each group is about equal in numbers, the two series may perhaps be combined in a simple average representing changes in the average wages of all employed. Professor Bowley's series for the coal-mining industry represents changes in the average earnings per shift of all underground workers, and therefore also represents true weekly wage rates, since there was no appreciable change in the normal number of shifts in a week. Professor Bowley's series for the railway service, representing the average weekly wage rate of all employed, may also be utilised as it stands. For the cotton and engineering industries, Professor Bowley's series are based on the level of the price lists, and the changes in time rates respectively. From the evidence of the 1924 wage census¹, we now know for certain that the earnings of cotton operatives have increased considerably more than the list rates since 1914, and therefore the series for the cotton industry is not comparable with those for the building and coal-mining industries, and the railway service. In engineering the influence of piece-work was overwhelming during the actual war years, and even with the reversion to normal production, changes in time rates are far from a reliable guide to changes in true weekly rates. Again, in engineering as in most industries, the less skilled grades have gained a greater relative increase in wage rates than the more skilled, and the difficulty of securing an estimate of even the average time rates of all employed cannot be surmounted as in the building industry, because there are numerous semi-skilled grades of engineering workers, the proportions of which cannot be assumed to have remained constant, while our knowledge of the changes in their rates is by no means reliable. The average wage of all employed in 1924 is now available in the census report, but there is no possibility of estimating similar figures for other years.

Professor Bowley's index numbers cease in July, 1920. The upward movement of wages was not however complete until

¹ See *Labour Gazette* issues during 1926 and 1927.

the end of that year. In continuation of his series, it will, therefore, be desirable to give index numbers for December 31st, 1920, and thereafter to continue with the end, rather than the middle, of the succeeding years. The periodical articles in the *Ministry of Labour Gazette*, which give comparisons of the level of wages at various dates,¹ provide the means of continuing Professor Bowley's series for the building, engineering, and cotton industries, though in some cases it is necessary to adapt them to December 31st by means of the ordinary monthly reports on "Changes in Rates of Wages." For the coal-mining industry the average earnings per shift in the last quarter of each year, as published by the Mines Department, replace estimates by actual returns, but owing to the prolonged stoppage of work in 1926, and the great changes involved by the subsequent district settlements, it is not practicable to carry this series beyond 1925. Since 1921, difficulties arise in respect of railway wages, because while for a time the wages of all employed were simultaneously decreased by flat rate reductions under the operation of the cost of living sliding scale, the skilled grades reached their standard or A rates, below which no further reductions were operative, much sooner than the less skilled grades, some of which have not yet arrived. Hence Professor Bowley's method of building on the pre-war average wage by means of the flat-rate changes will no longer serve. The *Labour Gazette* quotes the current maximum increases above 1914, but gives no estimate of the average wage of all employed. It is possible, however, to obtain a reasonable estimate by using the annual returns for this industry of "Numbers Employed and Wages Paid in the Railway Service." These distinguish most of the important grades, and by weighting the current wage rates according to the number of men in each grade, averages can be obtained for a very large sample.² It must be admitted

¹ In the issues of February, 1921 ; March and October, 1922 ; April and October, 1923 ; February and October, 1925.

² The grades selected were carters, checkers, engine cleaners, engine drivers, firemen, guards, permanent-way staff, porters, shunters and signalmen.

however that the series so constructed is not so accurate or reliable as those for the other four industries.

The available information as to changes in wages between 1914 and 1926 is presented in the following table. The first three columns represent true weekly wage rates in the building and coal-mining industries and in the railway service, and are genuinely comparable with one another, and with the Ministry of Labour's cost of living index, which is shown in the fourth column. The series for the cotton industry, and for engineering, represent only nominal weekly wage rates, and are not comparable with each other, or with any of the other series.

CHANGES IN WEEKLY WAGE RATES, 1914-1926

	TRUE WAGE RATES				NOMINAL WAGE RATES		
	Build- ing	Coal- mining	Rail- ways	Cost of Living	Cotton	Engineering Skilled Unskilled	
1914 July	100	100	100	100	100	100	100
1915 „	102	115	110	125	100	110	—
1916 „	111	129	120	145-150	105	111	—
1917 „	128	136	155	180	110	134	154
1918 „	171	195	195	210	157	173	213
1919 „	204	224	225	215	205 ¹	199	255
1920 „	269	260	280	255	271	231	309
1920 Dec.	285	285	287	265	271	230	310
1921 „	240	195	257	192	205	195	258
1922 „	190	145	225	178	161	145	177
1923 „	190	158	223	177	161	145	176
1924 „	195	163	223	180	161	145	176
1925 „	196	160	227	175	161	145	176
1926 „	196	—	222	175	161	145	176
³ True weekly rates in 1924 (Census returns)	199	— ²	— ²	—	191	187	

¹ For the sake of comparability with the level of list rates, the advance given in May, 1919, is taken as fully compensating for the reduction in hours, which was the broad intention, though in fact it did not quite do so: see Bowley *Wages and Prices*, 1914-1920.

² These industries were not included in the 1924 wage census.

³ Allowance has been made where necessary for the influence of short time on the census figures of earnings.

At the foot of the table, index numbers are given representing the average weekly earnings in the building, cotton, and engineering industries in 1924 according to the wage census ; this provides a reasonably accurate measurement of the level of wages as compared with 1914, and enables a comparison to be made between all the industries at that date. It should however be mentioned that the wages in 1914 have been estimated on the basis of the 1906 census returns and the nominal increase in wage rates between 1906 and 1914. The possible error is small in the case of the building and cotton industries but the increase of 87 per cent. shown for the engineering industry may not be more than 80 per cent.

It is not proposed to comment on these figures in the six years up to 1920, since this has already been accomplished by Professor Bowley. Since 1920 the figures more or less speak for themselves, but it may not be superfluous to stress the great difference between nominal and real weekly wage rates in the cotton and engineering industries, as revealed by the 1924 census. Even with the qualification that the increase of 87 per cent. in the true average wage rate in the engineering industry may be too high, it is clear that engineering wages in the last three years have at least been at a parity with the increased cost of living, while comparison with wages in the building industry, or even the railway service, is not so unfavourable as is commonly assumed. The same applies to true average wage rates in the cotton industry. The sharp contrast commonly drawn between wages in the so-called sheltered and unsheltered industries, is in fact largely the result of failure to distinguish between nominal and true wage rates. Nominal wage rates in the building industry and the railway service are very much higher than in the engineering and cotton industries, but true wage rates are not so markedly different, especially if some consideration is given to the now commonly accepted plea that railwaymen's wages were too low in 1914 relatively to other industries. In the coal-mining industry wages appear exceptionally low, whether in comparison with the cost of living or with wages in the other four industries, but

it must be remembered that miners' wages were at a peak level in 1914. It would in fact have been much more reasonable to take the average of the five pre-war years as the base, rather than the single year 1914. This has not been done, because the same treatment should then be applied to the other industries, and all these calculations would have been subject to considerable error, in addition to other influential considerations. But if it had been done, the result would of course have been to raise the index for the coal-mining industry relatively to the other industries, and there would be little discrepancy between miners' wages and the cost of living. It may therefore be said that any rigid distinction between sheltered and unsheltered wages is quite illusory, so far as these five industries are concerned, though this is not to say that the differences in true wage rates are not considerable and significant.

CHAPTER II

THE WAGE RATES OF REPRESENTATIVE GRADES

SECTION I. STATISTICS OF WEEKLY WAGE RATES IN EACH INDUSTRY

The general movements of wages in these five industries have now been examined, and attention can be concentrated on the more difficult task of ascertaining the actual wages of different grades of workers at different dates. Wage rates can be reduced to two common denominators—the rate of remuneration per working hour, and the rate per week irrespective of the number of hours normally worked in a week. Obviously for certain purposes one form of measurement is appropriate and not the other, but for most purposes they are complementary, since to confine attention to weekly rates is to ignore the fact that to some extent leisure is an alternative form of income, while to confine attention to hourly rates, is to assume that working hours are the same in all occupations. The latter observation also draws attention to a further limitation on the comparative use of hourly rates: namely, that it is not legitimate to argue that because one man's hourly rate is higher than another's, therefore his income will be higher. In other words, a comparison of the hourly rates in different occupations at the same time tells us little or nothing, and the utility of statistics of hourly rates is mainly confined to the measurement of relative changes over a period of time. Again, it is often argued that weekly rates are what matter to the wage-earner, and hourly rates are what matter to the employer; but the length of working time, and therefore his hourly wage rate, is obviously not without importance to the wage-earner, while the weekly rate, as representing the

income of his employee, is not without importance to the employer, because income reacts on efficiency. The argument that changes in hourly rates create similar changes in labour costs, rests, of course, on the unwarrantable assumption that output remains the same irrespective of the size of a man's income, or the number of hours worked in a week. Thus for general purposes it is necessary to study both hourly and weekly rates of wages.

It will be convenient to take weekly rates first, as in most cases the hourly rate has to be deduced from the weekly rates. It is proposed to confine this investigation to three grades of workers in each industry, which may be taken as typical of skilled, semi-skilled, and unskilled. Since skill is at best a relative conception, and since it is really impossible to compare the skill of, say, a coal-miner and a railwayman, this comes to the same thing as selecting grades typical of the best, the medium, and the worst-paid workers; in reality, and under normal conditions, we commonly reckon the degree of skill by the amount of wages, and not vice versa, and it is as well to realise this. In the selection of dates, two factors have to be considered: the availability of statistical information and historical importance. In the pre-war period, there is far more statistical information for 1886 and 1906 than for any other years, because in each of those two years a wage census was taken. The year 1886 was selected as the starting-point of this study, because it also possesses special historical significance¹, but this is not true of 1906. Obviously the year 1913 is on historical grounds far more important and interesting, and while it cannot be denied that accuracy will suffer to some extent, that year has been taken for the first comparison. As is now well recognised, neither the Armistice in November, 1918, nor the Peace Treaty in June, 1919, really terminated the period of war-time conditions,² and the end of 1920, as marking the highest point reached by money wages generally, is more suitable for the

¹ For the historical importance of the year 1886 see Chapter VII below.

² See, for example, Fisher, *Some Problems of Wage Regulation*.

second comparison ; there is also more statistical information available than for 1918. No special significance attaches to the date when the subsequent fall of wages was first arrested, and since the results of the wage census of 1924 can be safely adjusted, it will be of greater interest to bring the study more up-to-date by taking December, 1926, for the last comparison, thus covering in all a period of forty years.

The investigation of the weekly wage rates of typical grades at these four dates, 1886, 1913, 1920, and 1926, is no simple matter. The available statistical data is often sparse, and frequently requires adjustment to these selected dates. Special difficulties arise in connection with piece-work, payment in kind, regular deductions, and so on, and estimate and "educated guess-work" must play some part. The detailed explanation of how the final results are reached, has been relegated to Appendix II, but the summary in the text serves to show the nature of the data used, and the general methods of calculation. It is hoped, however, that the reader will give at least a cursory glance at this Appendix, for its contents throw some useful sidelights on the nature of wages in the concrete, and are not confined merely to the manipulation of figures.

THE BUILDING INDUSTRY

Relatively complete and adequate records of hourly rates of wages, and the normal hours in summer, are available even further back than 1886, but a mere multiplication of the two will not yield accurate true weekly rates. The building industry is almost unique in two respects, namely that wages and the period of engagement are by the hour, and secondly that the number of hours in a normal working week vary in summer and winter. Since contracts are by the hour, both overtime and short time, particularly the latter, even when trade was good, were very common before the war ; after the war, trade unionism drastically curtailed the employer's

resort to overtime, and the abnormal conditions of the building market have virtually caused the disappearance of short time, so that most building operatives, other, perhaps, than painters, have either been working the full normal week, apart from interruptions due to weather, or minor delays, or they have been unemployed. Another result of the hourly contract is that, before the war, probably quite an appreciable number of men worked for more than one employer in the course of any one week. Time spent in looking for jobs constituted a normal and not an exceptional event in the life of the building operative,¹ at least in the pre-war period: since the war, the housing shortage has probably resulted in an extension of the average life of a job, while better organization of the labour market has facilitated "job-hunting." Both these features of the irregularity of employment in the industry would normally be considered as affecting earnings, not rates, but in the building industry they assume so much greater and more regular importance that in making comparisons with wages in other industries, some allowance ought to be made. Unfortunately, sufficient statistical data does not exist, and any such procedure is impossible. These matters should, however, be kept in mind.

The variation between summer and winter hours is an appreciable factor. For example, according to the 1906 census, the week in the winter period was seven hours shorter than in the summer period, and the winter period lasted for rather more than fourteen weeks. Thus at that period, the annual loss of time caused by the reduced winter hours was equivalent to nearly two whole weeks' work. This was a perfectly regular and recognized feature in the pre-war period, and exists on a smaller scale to-day. Allowance on this score should, and can be made.

Probably at least as important for some grades is the loss of working time through bad weather. This varies from year to year, not only according to the amount of wet and frost, but

¹ The various grades would not all be affected in the same degree, but no specific information is available.

also according to the demand. For example, in the rush to make up arrears of painting after the war, painters were employed in weather conditions which would, in ordinary times, have been considered too bad for satisfactory work. Though this loss of income through bad weather is over a period of years a fairly regular phenomenon, so much so that it is now proposed to meet it by an insurance scheme, the requisite information is not sufficient to enable definite allowances to be made.

In addition to the hourly contract and the seasonal variation of working hours, the building industry has certain other characteristics which merit attention. The progress of invention has very little affected the actual work of the building operative. The erection of huge blocks for big shops or offices in large towns is a comparatively new development, which has involved new methods of construction, but generally speaking it may be said that these new methods involve not so much an alteration in the kind of work performed by the different grades, as a redistribution of the relative numbers of each grade employed. For example, the use of steel frameworks, or ferro-concrete, has meant the substitution of other workers in place of a certain number of bricklayers or masons, but the bricklayers who remain are still laying bricks with a trowel in the ordinary way. The number of men engaged on the construction of very large buildings is, however, only a relatively small fraction, and in ordinary house-building, which engages by far the major part of the industry, methods of construction have not altered appreciably during the last fifty years,¹ and the work of the different grades is much the same.

Another characteristic is the large proportion of so-called unskilled workers. Labourers of all kinds form roughly one half of the total numbers employed in the industry. On the other hand there is no large class of semi-skilled workers,

¹ As an exception it may be remarked that the work of the joiner has been generally, and greatly, affected by the introduction of wood-working machinery, but even in this case the result has been rather to lighten manual toil than to lessen the skill required.

Bricklayers, masons, carpenters and joiners, plasterers, plumbers, and slaters constitute the principal grades of skilled craftsmen, and only the painters came definitely between their rates and the labourers' rates in the pre-war period, while since 1920 even that differential has disappeared. Another characteristic of the industry is that these different grades of skilled men have for many decades been rated almost the same. This does not mean that their incomes for a full normal week would be exactly the same, owing to the uneven incidence of the factors noted above, but it does simplify the problem of selecting a typical grade, provided the results are used with a proper sense of their limitations. Carpenters and joiners are numerically the strongest grade of skilled men, but they are not strictly confined to the building industry, and therefore the bricklayers, as the next largest grade, may be selected as more exclusively typical. Painters, as has been said, constitute the only grade of semi-skilled men, and the average of all the various kinds of labourers may be taken as representing the unskilled.

The 1886 census contained a small, and the 1906 census a very large, sample of normal full-time weekly earnings. But for reasons which are set out in detail in Appendix II A, it is more satisfactory to build up the true weekly rates from the data provided by the district standard hourly rates multiplied by the number of hours in the working week averaged throughout the year, and to use the two census reports simply to check the calculations made on this basis. Incidentally it may be remarked that close investigation throws the gravest doubts on the accuracy of the 1886 sample. The first step is, therefore, to select a representative group of towns, combining large and small centres, in proportion to the numbers therein employed taking the country as a whole, and at the same time effecting such a balance between different parts of the kingdom as shall be typical of each. The selected group contains fifty-three towns of all sizes for which information as to the standard wage rates is available at all four dates. The next step is the calculation of the average summer and winter hours

on an annual basis at the different dates. The final step is the multiplication of the average hourly wage rates accordingly. Full details are given in Appendix II A.

The following table shows the results of these calculations.

TRUE WEEKLY WAGE RATES				
	1886	1913	1920	1926
	s. d.	s. d.	s. d.	s. d.
Bricklayers ..	31 1	38 11	97 2	70 10
Painters	28 8	34 7	96 3	70 10
Labourers ...	19 4	25 9	84 4	54 7

It is not proposed at this stage, to present these figures in the various ways which are required to facilitate a study of their different aspects, since this may be more conveniently and usefully performed when similar comparative statistics have been obtained for the other industries. For the present, it is best to concentrate on the ascertainment of the basic facts. We therefore pass on to each of the other industries in turn.

THE COAL-MINING INDUSTRY

The investigation of wages in this industry is both interesting and intricate. There is variation between the different coal-fields in almost every conceivable respect, and a good motto for the investigator would be, "Things are not often what they seem." In particular, there is the difficulty common to most industries in which there is any considerable amount of piece-work, that over a period of years earning power may alter apart from the recognised changes in rates of wages. The present writer has investigated the many problems of wages in the coal-mining industry in considerable detail, and in order to avoid mere repetition, any reader who is specially interested in this industry, is referred to his *Wages*

*in the Coal Industry.*¹ All that will be given here concerns merely the ascertainment and calculation of wage statistics in the form required for present purposes.

In the coal-mining industry the rate of wages for nearly all underground workers is per shift. Before the war, each district was a law unto itself, and while there is a good deal of information as to wage rates in particular districts, it is extremely difficult to combine such data for the country as a whole. The 1886 wage census included the coal-mining industry, but that of 1906 did not. A general inquiry into wages was, however, made in 1919, in order to furnish evidence for the Sankey Commission. Two comparative schedules of earnings per shift were then presented, one by the Coal Controller relating to November 1913 and November 1918, the other by Mr. Finlay Gibson on behalf of the Mining Association of Great Britain, relating to June 1914 and November 1918. For various reasons, the latter is in general to be preferred, and especially in the present instance, because the Coal Controller did not give the numbers of men covered by his returns. In 1923 a similar census of wages was conducted by the Mining Association; this was subsequently submitted in evidence to the Royal Commission of 1926. Thus over the period as a whole there are detailed comprehensive statistics of earnings at four dates, 1886, November 1914, November 1918, and September 1923, while since 1921 there is certain other information of a rather less detailed or less reliable nature.

The 1886 wage census gives separate figures for a very large number of different grades, but the Mining Association's returns for 1914 and 1918 group those employed underground into six classes: I, Piece-work Coal-getters; II, Coal-getters on day wage; III, Putters, Fillers, Hauliers and Trammers; IV, Timbermen, Stonemen, Brushers and Rippers; V, Deputies, Firemen and Examiners; VI, Other Underground Labour. Class I, Piece-work Coal-getters, must obviously be selected as typical of the skilled men. The coal-getters on day wage are in most districts equally as skilled as the

¹ P. S. King, London, 1923.

piece-work coal-getters, and the much lower average wage of this class is simply due to the fact that for some reason or other they are on time work. Class V also average a lower wage than the piece-work coal-getters, but they are mostly coal-getters who have received promotion to this curious post of Government safety inspector - cum - foreman. Class IV should be composed entirely of highly skilled specialists, but from a detailed comparative study of the relative level of the wage figures, it is practically certain that some of their semi-skilled and unskilled assistants are also included. Although the men in Class III are learners, in the sense that they are qualifying to become coal-getters, which is an objection, because very often the prospect of promotion results in depressing wages below the real value of the work, yet on the whole this class provides the most typical, and most suitable, representation of the semi-skilled. Class VI contains a few skilled men, but is mainly composed of unskilled workers of various kinds ; the effect of the few skilled men on the average wage of the class is negligible. The Mining Association's figures for classes I, III and VI have therefore been selected and the more detailed 1886 wage census returns combined accordingly.

The figures for June 1914 can be applied to 1913, for while during the first half of 1914 there were slight reductions in Durham and Scotland, the effect on the average for the whole country would be negligible. In order to apply the November 1918 returns to December 1920, it is necessary to add the two shillings flat rate advance given by the Sankey Commission, the March 1920 increase of twenty per cent. on the wage rates current at the beginning of Government control in 1917, and the further two shillings flat rate advance which resulted from the terms on which the strike in November 1920 was settled.

In July 1919 the Seven Hours' Act was passed, but this does not enter into this calculation, since day rates remained unchanged, and piece rates were adjusted proportionately.

The 1886 census gives average earnings in a full normal week, and those figures can therefore be taken as they stand,

but for 1913 and 1920 the information is in the form of earnings per shift, not per full normal week. The usual practice is to reckon 5.5 shifts per week as the average for the country as a whole, since the immediate pre-war years. The Samuel Commission, in Section A of the Annex to their report, give details of the working time in each district, and while for comparison with wages in other industries they followed the usual practice, and multiplied shift rates by 5.5, they expressly stated that "5.5 shifts a week understates the length of the full week, apart from breakdowns and irregular employment, taking the country as a whole." In Scotland, Northumberland, and most of Durham, the number of shifts is 5.5 (an eleven-day fortnight), while in other districts comprising two-thirds of the total industry, a six-day week is the rule. A weighted average on this basis would be 5.83, but the men on afternoon shifts often work only five shifts, and except in South Wales they are only paid for five. In addition, most districts work a short shift once a week, and this tends to reduce the earning power of the piece-workers. Hence it seems best to compromise by splitting the difference, and to take 5.7 as the multiplier.

In the case of other industries, the statistics for 1926 relate to the end of the year, but for the coal-mining industry an exception must perforce be made, and the level of wages before the seven months' stoppage must be taken, since no reliable data exists, or probably ever will exist, as to average earnings per shift immediately after the resumption of work, and for obvious reasons, even if such statistics were available, they could not be used as applicable to normal conditions. It is possible of course to ascertain the change in nominal rates of wages by comparing the percentage levels above the standards, but, to mention only one factor, the alteration in hours, with its reactions on the rate of output, makes it unlikely that average earnings per shift continued to bear the same relation to the nominal wage rates as before the stoppage. For the coal-mining industry, therefore, the statistics relate to the beginning of the year 1926. The report of the Samuel

Commission furnishes the average shift rates of piece-work coal-getters in September 1925,¹ and this is applicable to 1926. Their figure is estimated from the wage census taken by the Mining Association in September 1923. A similar estimate may be made for the putter class. The Commission stated that it was not possible to make an accurate estimate for labourers, owing to the increase in subsistence wages under the 1924 agreement. The average rate in September 1923 was 9/7 a shift ; between that date and February 1926 the general level of wages declined just over four per cent., but this is partly offset in the case of the labourers by this unknown average increase in subsistence wages ; the rate in 1926 may perhaps be put at 9/4, though this is largely guesswork, as against the substantial accuracy of the estimates for coal-getters and putters.

In comparing the wages of coal-miners with the wages of workers in other industries, account must be taken both of wages in kind, and of regular deductions from wages. The Samuel Commission sums up virtually all the available information of a comprehensive kind on these matters in Annex 8 to their Report, and their conclusions apply equally to the statistics in the following table. "The wages and earnings stated exclude the value of free or cheap houses or coal, amounting in Northumberland and Durham to something like 6/3 a week over all adult workmen there, but to much less, or to little or nothing, in some other districts. On the other hand, no deduction has been made in respect of charges for tools and damage to clothing (for which rebates in respect of Income Tax ranging from 1/4 to 4/8 a week are allowed in some districts by the Income Tax Authorities), nor in respect of explosives, applying mainly to hewers and repairers, for which no estimate can be given." The Commission nevertheless used the statements of wages and earnings for direct comparison with wages in other industries, and the

¹ See page 156. The weekly rates there shown are lower than those in the following table because the Commission reckoned only 5.5 shifts per week.

support of a very high authority can therefore be claimed for adding to the above statement a corollary to the effect that for the industry as a whole the additions and subtractions probably cancel out. In any case, since no accurate allowances can be made, it can only be hoped that this corollary is true.

The final results of these calculations are shown in the following table.

TRUE WEEKLY WAGE RATES¹

End of year	1886	1913	1920	1925
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Piece-work coal-getters	24 6	50 4	135 4	78 10
Putters, fillers, etc.....	20 8	36 10	106 10	57 0
Labourers	18 0	33 0	99 3	53 2

THE COTTON INDUSTRY

The selection of typical grades of workers in this industry is by no means an easy task. Mule spinners are the obvious skilled trade, as they are by common consent the aristocrats of the industry, and even though they form only about five per cent. of all employed, there are so many distinct grades of cotton operatives that, amongst male grades, they are outnumbered only by the male weavers. The difficulty lies in the selection of semi-skilled and unskilled grades. The big piecers would seem to fill the former rôle inasmuch as they are half-qualified spinners, but they are a typical example of the effect of anticipated promotion depressing wages out of all relation to skill.² Despite the fact that few big piecers norm-

¹ The facts that wages in the coal-mining industry fluctuate greatly from year to year, and that 1886 was a year of depression and 1913 of boom, have not been overlooked, but at this stage it is desired to present a picture of particular dates. When direct comparisons with wages in other industries are made, averages over a number of years will be used.

² The big piecers are organised as a lower section of the spinners unions much like the journeymen in the mediaeval guild, and the spinners in their own interests have undoubtedly helped to keep down the piecer's wage.

ally become spinners before they are twenty-five years old or even more, their wages are those of general labourers, and their status must be regarded as that of abnormally prolonged apprenticeship. Male weavers before the war did not earn a wage comparable with that of the semi-skilled men in other industries, nor did any of the female grades. Hence, though small in numbers—rather under one per cent. of all employed—it seems best to select the grinders, i.e. the men in charge of carding machines,¹ as typical of the semi-skilled. There are very few unskilled men in the cotton industry ; most of them work in the preparing department, and their wages are not subject to the operation of the price lists, but tend to approximate to the general rate for unskilled men in the district. Their wages are settled by what more nearly resembles individual than collective bargaining even to-day, and even if the necessary data were available, they could not be termed in any sense a typical grade. It seems best, therefore, to take the skilled woman's wage as typical of the unskilled man's wage, for before the war women weavers earned on the average just about the general rate for male labourers in industrial districts. A more important argument in favour of this course is that by taking women weavers, the weaving side of the industry is represented as well as the spinning, and while it is intended to confine the present study for the most part to male labour, the inclusion of this large grade of female labour in the study of this particular industry is more than justified, as women outnumber the men.

Wages in the cotton industry are determined according to the provisions of a number of price lists agreed upon by the employers and the trade unions. Originally these price lists were confined to piece-work, but the same principles have been applied to time-work, and to-day practically all the operatives, other than the general labourers, are covered. Variations in nominal wage rates are effected by adding a percentage to the actual figures in the lists ; when there is

¹ A carder is the foreman in charge of the carding department.

no percentage addition, the lists are said to be at standard.¹

In the eighties a good many firms had their own price lists, particularly in the case of the less organized grades of operatives, such as those in the preparing department,² but in the main all wages fluctuated according to the changes in the most relevant agreed price list, e.g. wages in the preparing department fluctuated with the changes in the spinning lists for the particular districts. Thus changes in nominal rates can be estimated fairly accurately even in the eighties, either for the industry as a whole, or for any of the main grades of operatives, and with the extension of the lists system, and the establishment of "universal lists" (i.e. one list for each operation throughout the industry) such estimates become more and more accurate as time goes on. Therefore, if data as to average earnings in a full normal week were available for any one year, and if earning power was affected solely by changes in the level of list rates, it would be possible to estimate with reasonable accuracy the weekly wage rates in any other year either earlier or later. The first of these conditions is fulfilled by the detailed results of the wage censuses of 1886, 1906, and 1924, but the assumption involved in the second condition is quite illegitimate. The complicated character of the cotton industry price lists has become a byword. It is due to the varying conditions of production as between one mill and another, or even within the same mill. The machines used vary enormously, and so do the types of goods produced, and every factor, however minute, is allowed for in the lists. Though there is considerable likelihood that a mill will continue to produce much the same type of goods when once it has established a name for them, machinery is constantly being scrapped in favour of new and better, and as more efficient machinery is installed, the operatives earn higher wages. This is, as is well known, one of the basic principles

¹ Most of the lists were drawn up long before the war, and hence there has rarely been a percentage subtraction, making the lists below standard, but it has occasionally occurred.

² i.e. the men in charge of carding engines (grinders) and the women frame tenters.

of the list system in the cotton industry, and one which has done much to help on the progress of the industry as regards mechanical efficiency. For example, an increase in production, made possible by the addition of more spindles to the mule, means greater earnings to the minder, according to the provisions of the list itself, irrespective of any percentage additions; the price per unit is lowered, but the difference is not wholly retained by the employer. As well as mechanical efficiency, there is human efficiency, and an increase in the latter increases normal weekly earnings by the full extent of the increased output, the employer in this case gaining only by the consequent reduction in the cost of standing charges per unit of product. The possible divergence between alterations in earnings, and alterations in list prices, is well illustrated by Mr. Wood's¹ analysis of the rise in wages between 1860 and 1906: "Between 1860 and 1906 the average wage of all employed has advanced from 11/7 to 19/7, or by 69 per cent. Of this advance about 7 per cent. is due to increased rates of pay (i.e. percentage additions to the lists) and about 13 per cent. is due to the employment of relatively more adults and less children. The remaining 49 per cent. is due therefore to increased efficiency of operative and machine."

It is evident therefore that alterations in the level of the price lists cannot be taken *prima facie* as an accurate indication of changes in true rates of wages. A comparison of the wage census of 1886 with that of 1906 supplies reliable information for the first twenty years of the period, though since the year 1906 was one of exceptionally good trade, whereas in 1886 there was a certain amount of short time,

¹ G. H. Wood, *History of Wages in the Cotton Trade*. For a discussion of the general problems connected with the determination and changes of rates of wages in this industry, and for the history of wage movements up to 1910, together with an account of the character of the lists and the percentage advances and reductions, reference should be made to this book. It can safely be assumed that there is little or no room for further research in the matter of wages in this industry up to 1910. Mr. Wood's work first appeared in articles in the *Journal of the Royal Statistical Society*.

the 1906 census report states that an addition of four per cent. should be made to the 1886 wage figures on this account. With this modification we can use the 1886 census results for that year, but in adapting the 1906 census figures to 1913, account must be taken first of the changes in the list prices, and secondly of the tendency of earnings to increase apart from those changes. In his book, Mr. Wood discusses in detail the causes of the extra increase secured up to 1906. All that need be said here is that the discrepancy between earnings and list rates was not increasing nearly as fast in the first years of the twentieth century as it had been in the '70's and '80's. The history of the period up to 1906 therefore raises a presumption against any great additional increase in the seven years from 1906 to 1913, a presumption which can be supported by direct evidence drawn from the samples of employment and earnings which were published every month in the *Labour Gazette*. The 1906 census figures have therefore been used, as they stand for 1913, subject to the 5 per cent. increase which was added to the weaving lists in 1911. Since 1913 the determination of the relative movements of list rates and earnings is a most difficult and somewhat intricate task, involving the reconciliation of the monthly *Labour Gazette* returns with the average earnings of all employed as given in the 1924 census. Full details are given in Appendix II C.

The final results of these calculations are shown in the following table :

TRUE WEEKLY WAGE RATES

	1886		1913		1920		1926	
	s.	d.	s.	d.	s.	d.	s.	d.
Spinners.....	32	6	41	5	129	1	76	8
Grinders.....	21	2	29	5	95	8	56	10
Women Weavers .	18	0	21	11	72	6	43	0

ENGINEERING

Statistics of wages in the engineering industry are relatively abundant, but they are not particularly easy to combine into one homogeneous record. The wage census reports of 1886 and 1906 show, both for time and piece-workers, the earnings in a full normal week. Since 1893 the principal trade unions of skilled men have kept regular and extensive records of their district standard time rates. These were published fairly regularly by the Board of Trade before the war, and, if necessary, the intervening years can be filled in by procuring their rate books from the various unions. But it is very difficult to calculate from these standard rates a reliable average for the country as a whole, since there is no information as to the number of men in each grade in the different districts, while the time rates provide little¹ guide as to the wages of piece-workers, and none at all as to their numerical importance. For the pre-war period therefore, reliance must be placed mainly on the two wage census reports. Since 1914 advances and reductions have taken place almost entirely on a uniform flat-rate basis, and the determination of the average time rate for any grade at subsequent dates is relatively simple and accurate, if we can rely on the 1914 averages. The 1924 census, and certain returns collected by the Engineering Employers' Federation, also supply fairly reasonable data for the calculation of piece-work earnings. But a warning of general application must be given. Owing to the wide variations of products, and of the types of machinery used by different firms, as also the possibly great diversity of skill among men who are graded under the same name, any figures which purport to represent the average time rate of different grades of engineering workers in a large geographical area, still less over the country as a whole, must not be taken too precisely; there are likely to be a very large proportion of men working at rates both higher and lower, and this limita-

¹ It cannot be said that they give no guidance, because the differential between piece earnings and time rates tends to remain approximately constant over short periods.

tion applies even more severely to the wages of piece-workers. The very rapid extension of the engineering industry during the last thirty years would by itself have tended to diversity of wage rates in almost every respect. But while purely economic forces have made for diversity, the growth of trade unionism has made for the standardization of wages in all firms in a district, and, as between one district and another, the principle of an identical minimum wage to all men nominally of the same grade, has also effected a certain curtailment in the range of wages in each grade.

The changing nature of the work of many grades has involved a change in the relative skill required. The skill of the fitter or turner of to-day is not that of the fitter or turner of thirty years ago : whether, and in what way, they are more or less skilled is a problem which will be considered later. Anticipating to some extent the contents of Chapter V, it may be said that there has probably been less change in the moulders' work than in that of any other large grade of skilled men. But the rates for fitters and turners, partly as the result of a deliberate policy on the part of the Amalgamated Society of Engineers, have always been very similar, and together these grades greatly outnumber the moulders. It seems better, therefore, to take the turners as typical of the skilled men. The semi-skilled men, excluding the boiler shop grades, form a large body to whom the vague title "machinemen" is ordinarily applied. In reality there are at least two main groups of machinemen, a more skilled group consisting of planers, slotters, borers, and some milling machine operators, and a less skilled group consisting of drillers and men operating semi-automatic machines. This distinction is valid up to a point, but the one sub-group merges by almost imperceptible degrees into the other, and for the present purpose it seems better to treat them all as one grade, even though the average is one of a wide range of rates. Finally, as representative of the unskilled, there are the general labourers, and they must not be confused with the skilled men's assistants, such as the smith's striker, or the plater's helper, or the rivetter's holder-

up, who pursue definitely specialized jobs, and often earn semi-skilled wages.

The detailed calculations of the true wage rates of these selected grades are given in Appendix II D. The procedure is, first to ascertain the average time rates, and then to combine these figures with the average piece-work earnings in a full normal week according to the proportions of time and piece-workers at each date. The determination of piece-work earnings involves certain estimates and assumptions, but the degree of error is not considerable, except possibly for the year 1920, the figures for which may err on the high side. The following table shows the results :

TRUE WEEKLY WAGE RATES

	1886		1913		1920		1926	
	s.	d.	s.	d.	s.	d.	s.	d.
Turners	29	9	38	2	98	9	61	9
Machinemen	22	3	30	7	88	7	52	3
General Labourers	17	11	21	10	71	6	40	2

RAILWAY SERVICE

The selection of representative grades of railwaymen presents considerable difficulty ; not only are the grades very numerous, but a man's grading is not necessarily permanent (as is usually the case, for instance, in the building or engineering industries), since the higher grades of railwaymen are recruited from the lower, and not direct from juvenile entrants. Thus engine drivers are recruited from firemen, and the firemen from engine cleaners, while signalmen and passenger guards are mainly recruited from the porters, and goods guards from the shunters. If a man has reasonable expectations of rising into a more highly paid grade, the rate of wages in the lower grade is probably depressed below what it would

be if this expectation were absent. According to the 1907¹ wage census, the numbers of engine drivers and firemen are roughly the same, and also those of goods guards and shunters, while signalmen and passenger guards together number only slightly less than the porters. Thus amongst these grades the prospects of promotion are a very definite reality, though admittedly the process takes time. This special feature of railway employment must be borne in mind, as also the prevalence of scales of wages in certain grades, whereby the rate of wages automatically rises according to the length of service in the particular capacity. Such scales are virtually unknown amongst wage earners in other industries, and this second peculiarity of railway employment, and to some extent the first, arises from the fact that it is experience and the ability to discharge responsibilities, rather than pure technical skill, which makes one railwayman worth higher wages than another. The actual driving of a locomotive certainly requires technical skill and knowledge, but though firemen quickly qualify in this respect, time is needed to acquire that experience which is necessary to take charge of an express passenger train on lines crowded with traffic, and in all weather conditions ; and the same sort of thing applies to many other grades. The engine drivers are clearly the most skilled grade, and formed about seven per cent. of the total numbers of railwaymen before the war. The permanent way staff include a very large number of the lowest paid men, but it seems better to select from the traffic grades, which are more typical of railway employment, because their work is less closely paralleled by other occupations. The obvious representatives of the unskilled traffic grades are the passenger porters or the goods porters, and though the latter are somewhat fewer in numbers, five per cent. as against seven per cent. of all employed, they have been selected, owing to the difficulties which the " tipping system " introduces in respect of the former. The signalmen form the largest grade of semi-

¹ The census related to 1907 for the railway service, and not to 1906 as for other industries,

skilled men, but the range of rates in this grade is very great, as would be expected from the varying nature of the work in the different boxes, and therefore it seems better to take the goods guards, who form four per cent. of the numbers employed, or twice as many as the passenger guards. The selection is therefore engine drivers, goods guards, and goods porters.

The 1886 wage census only states the number of men in each grade paid at rates within certain specified limits, mainly within 5/- groups, and a small degree of error is therefore inevitable in the calculation of average rates. Apart from this drawback, the 1886 wage census represents a far larger sample for the railway service than for most other industries: the returns cover no less than ninety per cent. The second official wage census, which relates to 1907 in the case of railways and not 1906 as in other industries, was still more complete, and covered practically all employed.¹ The 1907 census figures can be adapted to 1913 by means of the Board of Trade returns of the average earnings of all employed in one week in each year. These returns show a probable increase in earnings of eight per cent., but it was argued in Appendix I that rates of wages did not increase more than six per cent. There is no means of ascertaining the exact increase secured by the different grades, but as the rise is only small, no great error can be introduced if a uniform increase of six per cent. is assumed for all grades.

A Ministry of Transport return² of the average weekly wage rates of the principal grades in March 1921, may be adapted to December 1920 by the deduction of the increase of one shilling in the cost of living bonus during the first quarter

¹ The Amalgamated Society of Railway Servants conducted in 1906 a most extensive inquiry amongst their members; returns were received from over 259,000 persons, and in default of any other information considerable reliance could be placed on the results. The official census by the Board of Trade in the following year is to be preferred, not in distrust of the Amalgamated Society's inquiry, but because the official returns are even more complete, and are tabulated in a more convenient form for our purpose; in so far as they can be directly compared, the trade union results agree with the official census.

² These are annual returns, published in the *Labour Gazette*,

of 1921. A similar return is available for March 1926, which may be adapted to December 1926 by the deduction of a shilling from the rate for porters, owing to a reduction of the cost of living bonus in July. This reduction did not affect the engine drivers or the guards, as these grades had already reached their standard rates.¹

For all the selected dates, however, account must be taken of certain small additional items of income—bonuses, free uniform, etc. The necessary allowances are considered in detail in Appendix II E.

The final results of these calculations are shown in the following table.

TRUE WEEKLY WAGE RATES

	1886	1913	1920	1926
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Engine Drivers	39 7	42 11	103 0	88 1
Goods Guards	27 6	30 9	84 6	66 5
Goods Porters	20 0	22 1	72 11	49 1

SECTION II. A COMPARATIVE STUDY OF WEEKLY WAGE RATES IN THE FIVE INDUSTRIES

Comment on the wage statistics just presented has been postponed, not because the figures for each industry by itself lack interest, but because that interest is greatly enhanced by a comparative study of the five industries together, and repetition is avoided. The wage statistics in the preceding section will now be brought together, and presented in a series

¹ No account is taken of the suspension of the guaranteed week from May, 1926, as this is obviously of the nature of a temporary disturbance to earnings.

of different forms to facilitate their study from different aspects.

Table I below shows the varying fortunes of men of the same status of skill in the different industries: the wage rates of the typically skilled grades are classified together, then the typically semi-skilled, and then the unskilled. The actual figures are merely repeated from Section I, with the exception of those for the coal-mining industry. As the wages of coal-miners fluctuate so greatly from one year to another, and as

TABLE I

TRUE WEEKLY WAGE RATES OF REPRESENTATIVE GRADES
IN FIVE INDUSTRIES

Industry.	End of							
	1886		1913		1920		1926	
<i>Skilled Grades</i>	s.	d.	s.	d.	s.	d.	s.	d.
(Building) Bricklayers ...	31	1	38	11	97	2	70	10
(Coal-mining) Coal-getters	29	1	46	6	135	4	78	10
(Cotton) Mule-spinners ...	32	6	41	5	129	1	76	8
(Engineering) Turners....	29	9	38	2	98	9	61	9
(Railway Service) Engine Drivers	39	7	42	11	103	0	88	1
<i>Semi-Skilled Grades</i>								
(Building) Painters	28	8	34	7	96	3	70	10
(Coal-mining) Putters and Fillers	24	6	34	0	106	10	57	0
(Cotton) Grinders.....	21	2	29	5	95	8	56	10
(Engineering) Machinemen	22	3	30	7	88	7	52	2
(Railway Service) Guards .	27	6	30	9	84	6	66	5
<i>Unskilled Grades</i>								
(Building) Labourers	19	4	25	9	84	4	54	7
(Coal-mining) Labourers..	21	4	30	6	99	3	53	2
(Cotton) Women Weavers..	18	0	21	11	72	6	43	0
(Engineering) Labourers ..	17	11	21	10	71	6	40	2
(Railway Service) Goods Porters	20	0	22	1	72	11	49	1

the year 1886 was one of depression and 1913 one of boom, it is rather misleading to compare wages in that industry with those in other industries at any particular point of time. A truer comparison will be obtained by averaging miners' wages over a period of, say, 5-8 years. The 1886 and 1913 rates for the three coal-mining industry grades in this and the following tables represent the averages of their wages over the six years 1886-91, and the six years 1908-13, according to the Board of Trade index numbers of fluctuations in the general level of miners' wages during each of those periods. For 1920 and 1926,¹ however, such a course is hardly practicable, and the figures must be left as referring to these particular dates: for obvious reasons there is more justification for this procedure in the post-war than in the pre-war period.

Attention may be specifically drawn to two points in the above table. First, at no date is there any similarity between the wages of skilled, semi-skilled, or even really the unskilled grades, such as would justify the conception of standardisation between the different industries, in the sense of any approach to uniform levels of wages for the three classes of workmen. The disparities which have attracted so much popular attention in the last two or three years are no new phenomena, though they are of course on a greater scale in the post-war period, even relatively to the change in the general level of wages. Secondly, it is clear that these disparities are not constant as between the different industries; now one industry, and now another, shows rates above or below the averages of the five, and the disparities are not therefore due simply to the impossibility of classifying particular grades in different industries as skilled, semi-skilled, or unskilled.² Judging solely by wage rates, it would have been more desirable

¹ It should be remembered that the coal-miners' wage rates refer to the beginning of 1926 and not the end, as do the figures for the other industries.

² With the exception of the painters in the building industry, whose position was much more nearly akin to the skilled than to the unskilled in the pre-war period, and who, since the war, have been rated the same as the skilled men. There is really no grade of semi-skilled workers in this industry.

to be a railway servant in 1886 than to belong to any other of these industries, but to be a coal-miner in the immediate pre-war period, and in 1920, and yet again to return to the railway service in 1926, if a skilled man. Similar variations are found throughout,¹ and it is clear that wages in each industry are greatly influenced by factors peculiar to that industry as well as by factors common to all industries. Divergences from the average or general level are never so extreme as to nullify the homogeneous nature of the three groups, but they sometimes come very near it, and at all times they are strongly in evidence.

The reflections suggested by this table are in a sense legion, and it seems superfluous to dilate on the more relevant, since they are at the same time the more obvious. The next table shows the relative level of wages in 1886, 1920, and 1926 as compared with 1913 (=100).

TABLE II
LEVEL OF TRUE WEEKLY WAGE RATES
RELATIVE TO 1913 (=100)

A. Year 1886

	Building	Coal-mining	Cotton	Engineering	Railways
Skilled	80	63	79	77	93
Semi-Skilled . . .	83	72	72	73	89
Unskilled	75	72	82	82	91
Nominal Level .	81	78	79	85	—

(as per Board of Trade Index Numbers)

¹ It may be pointed out, incidentally, that on the average of the four dates, a skilled man would have fared best as a coal-miner, second best as a cotton-spinner or an engine driver, and worst as a bricklayer or an engineer. Much the same is true of the semi-skilled man (other than the painter) and the unskilled. The averages of these four dates are not however a satisfactory guide to the period as a whole, because they are typical of periods of varying length.

B. Year 1920

	Building	Coal-mining	Cotton	Engineering	Railways
Skilled	250	291	312	256	240
Semi-Skilled ...	278	314	325	290	275
Unskilled	328	325	331	319	330

Cost of living 265.

C. Year 1926.

Skilled	182	170	185	162	205
Semi-Skilled ...	205	168	193	171	215
Unskilled	212	174	196	184	222

Cost of living 175.

This table displays once more the irregularities of the movements in wage rates in different industries, and as between the different classes of workmen. In the pre-war period, skilled men's rates in the building, cotton, and engineering industries rose by much the same amount, but the semi-skilled building operative got a smaller advance than the semi-skilled cotton and engineering workers, while the unskilled building operative got more. In the coal-mining industry rates rose very much more, and in the railway service very much less, than in the other three industries. As a generalisation one might say that semi-skilled rates were tending to advance more than skilled rates, but to this the coal-mining industry is a notable, and the building industry a minor, exception. Again it might be said that unskilled rates were tending to lag behind the rise in skilled rates, but the building industry and the railway service provide exceptions. The figures of the nominal increase in wage rates as shown by the Board of Trade Index Numbers, are inserted in order that their imperfections as a long period measurement, especially in the coal-mining and engineering industries, may be seen. Even in the pre-war or so-called "normal" period, a comparative study of wages appears to yield little but perplexities and contradictions to the student in search of generalisations as a basis for theory.

For the war period, the obvious and well-known generalisation that the lower paid workers got a greater advance than the higher paid, can be repeated once more, and to this may be added the conclusion that the unskilled workers received very similar advances in all the industries. The semi-skilled show greater variety, but all have got advances at least equivalent to the rise in the cost of living, as measured by the official index number. The skilled men show still greater variations, and with the exception of the coal-mining and cotton industries, they never reached parity with the increase in the cost of living. It may be mentioned that while the cotton industry shows the greatest advance, the final instalment was delayed, owing to the duration of an existing wage agreement, until the boom of 1919-20 had almost finished, and consequently owing to the beginning of short time the cotton operatives did not long enjoy the full benefit of these high rates. On the average of 1918-20 their wage rates would not show nearly as great an advance as the coal-miners.

In 1926, the disparities in the amount of increase to skilled and semi-skilled were, if anything, rather less than they had been in 1920, but their incidence is entirely different, while the advances in unskilled wages are less similar. The railway service emerges as an easy victor in the struggles of the post-war depression. Next comes the skilled cotton operative, but owing to the continuance of wage regulation by percentage and not flat-rate changes since 1913, the less skilled cotton operatives have not fared so well as the less-skilled building operatives. Moreover, since 1920 there has been a varying, but always appreciable, amount of short time in the cotton industry, and therefore the building operatives were certainly better off in 1926 than the cotton operatives. Coal-miners and engineering workers show the least advance, particularly the skilled engineer. The skilled workers in both industries were appreciably below parity with the cost of living, though not so much as is often supposed on the basis of comparisons confined to time-rates. Semi-skilled wages in these two industries were also below parity with the in-

creased cost of living, though in other industries well above it; unskilled wages were still more above it except in coal-mining. As has been said, there was a considerable disparity between wage rates in these five industries in 1926, but it was not so vast a gulf, and at least it finds a counterpart at other dates. The whole idea of sheltered and unsheltered wage rates becomes somewhat indefinite, when true, and not merely nominal, wage rates are considered: while if the definition of sheltered and unsheltered industries corresponds with industries which are not, and industries which are, vitally interested in the export trade, the cotton industry presents an awkward exception, unless judgment is extended from the basis of wage rates to average weekly earnings. The fact remains however that wage rates were more uniform in 1886 than in 1913, and in 1913 than in 1926.

Comment has already been made concerning the correspondence between the advance in wage rates and the cost of living since 1913, but it may be useful to present a table showing the changes in real, as distinct from nominal or money, wages. In the pre-war period, there is unfortunately no satisfactory index representing changes in the wage-earners' cost of living, but no attempt will be made here to improve on what has already been achieved¹—it is indeed probable that the last word has been said, since the limitations of the available statistical data are not likely to be extended now. As a practical maxim it may be assumed that food prices oscillate more violently than the remainder of the wage-earner's budget. Food prices were approximately six per cent.² higher in 1913 than in 1886: and it is not unreasonable to conclude that the cost of living was for practical purposes very much the same at both dates. In other words, as between these two dates, the rise in nominal wages roughly represents the rise in real wages, though, if anything, real wages lagged a trifle behind. Since 1914 the Ministry of Labour's *Cost of Living Index* is available, and while open to much

¹ Especially by Professor A. L. Bowley and Mr. G. H. Wood.

² Sauerbeck's Index.

criticism, it has been used in the following table without modification. The year 1913 has been taken as the base (=100).

TABLE III
RELATIVE LEVEL OF REAL WAGES
(Base, 1913=100)

	1886	1913	1920	1926
<i>Skilled Grades</i>				
Bricklayers	80	100	94	104
Coal-Getters	63 ¹	100 ¹	110	97
Mule Spinners	79	100	118	106
Turners	77	100	97	93
Engine Drivers	93	100	91	117
<i>Semi-Skilled Grades</i>				
Painters	83	100	105	117
Putters and Fillers	72 ¹	100 ¹	118	96
Grinders.....	72	100	123	110
Machinemen	73	100	109	98
Guards	89	100	104	123
<i>Unskilled Grades</i>				
Building Labourers	75	100	124	121
Coal-mining Labourers .	72 ¹	100 ¹	123	99
Women Weavers	82	100	125	112
Engineering Labourers .	82	100	120	105
Goods Porters	91	100	125	127

Finally comparison may be made of the level of semi-skilled and unskilled wages to skilled wages in each industry. Table IV shows the rates for the semi-skilled and unskilled grades as a percentage of the skilled man's rate in the same industry at the selected dates.

¹ Taking the average of the periods 1886-91 and 1908-13, as in the previous tables.

TABLE IV

RELATIVE POSITION OF THE DIFFERENT GRADES
(Skilled Rate in all industries=100 at each date)

Semi-Skilled Grades

	Building	Coal-mining	Cotton	Engineering	Railways
1886	92	84	65	75	70
1913	88	73	71	80	72
1920	99	79	74	90	82
1926	100	72	74	84	75

Unskilled Grades

1886	62	73	55	60	51
1913	66	66	53	57	51
1920	87	73	56	72	71
1926	77	67	56	65	56

In the pre-war period, the semi-skilled man was gaining on the skilled except in the coal-mining, and to a smaller extent, in the building industries. These two industries are also exceptional in respect of the unskilled, whose relative position improved in the building industry and declined in the coal-mining industry, while in the other three industries it was unchanged. In 1920 both semi-skilled and unskilled had of course gained on the skilled men, though in greatly varying degrees. By 1926, however, the relative position of the semi-skilled had very nearly returned to the *status quo* of 1913, except in the building industry. This is also true of the unskilled in the coal-mining and cotton industries, but in the other three industries, especially in building, they still retained a decided advantage as compared with their relative position in 1913.

SECTION III STATISTICS OF HOURLY WAGE RATES

It is now proposed to convert the weekly wage rates of the previous section into hourly rates. This involves an inquiry into the number of hours normally worked in a week in each of the five industries, at the four selected dates. The weekly rates in the building industry were built up on the hourly rates, and no further investigation is therefore required for that industry. The weekly rates of coal-miners were similarly built up on the basis of shift rates except for 1886, when the 1886 census returns of weekly wages were utilised. While in certain districts there were alterations between 1886 and 1913 in the customary number of shifts worked per week, the average for the country as a whole would be little affected: and if the weekly rates in 1886 are divided by 5.7 to obtain the shift rates, just as the shift rates at the later dates were multiplied by that factor to obtain the weekly rates, the possible error will not be appreciably greater in the one case than in the other. It remains therefore to investigate the number of hours per shift at each date. In 1890 an exhaustive inquiry¹ was made into this matter. The returns obtained covered over ninety-five per cent. of those employed underground, and the hours of coal-getters and all others underground were separately distinguished. For coal-getters the hours spent at the face were given, as well as the hours "bank to bank," but it is of course the latter which we require. So far as can be ascertained, the correct definition of "Hours Bank to Bank" was observed, i.e. the hours during which coal is raised to the surface plus one winding time, or in other words, the interval between the descent of the first man of the shift, and his subsequent return to the surface. The returns give the number of men whose hours lay within successive periods of fifteen minutes above eight hours up to ten hours, and details are given of those working less than eight and more than ten hours. The average hours of all coal-getters, and of all others underground, can therefore be calculated within small limits of error.

¹ Parliamentary Paper 284 of 1890.

	Hours per shift in 1890.
Coal-getters	8 hours 45 minutes
All others underground	9 hours 12 minutes

In the absence of any evidence of alterations in the length of the shift between 1886 and 1890, these figures may be applied to the former date as they stand. The lack of any subdivision of "All Others Underground" is not serious, for the main grades worked about the same hours; the coal-getters alone had, as it were, a privileged position. In 1913 the Eight Hours Act was in operation. This limited the hours of coal-drawing, but the coal-getters in Northumberland and Durham were already working, and continued to work, less than 8 hours; hence, as the Samuel Commission have pointed out, the average working hours for all employed were not 8 plus one winding time, or approximately $8\frac{1}{2}$ hours, but some 10 minutes less. For the whole country, the average for all grades other than coal-getters was $8\frac{1}{2}$ hours, and while it is not easy to calculate an exact average for the coal-getters, it may perhaps be put at $8\frac{1}{4}$ hours, though this is probably on the high side. The Seven Hours Act in 1919 reduced all grades to a uniform $7\frac{1}{2}$ hours. In the following table the hourly rates are calculated on this basis.

No difficulty arises in regard to the cotton industry, as until 1919 the hours of women were limited by the Factory Acts, and this set the standard for the whole industry. The Factory Act hours in 1886 were $56\frac{1}{2}$; by the Act of 1901 this was reduced to $55\frac{1}{2}$; and by collective agreement in 1919 the hours were reduced to 48.

The engineering industry presents greater difficulties. The 1886 census gives what amounts to round figures of the hours commonly worked in each of the twenty districts into which Great Britain is divided in the returns. In every district, except two, the hours are given as 54 per week, but footnotes state that in the districts comprising North Wales, Salop, Gloucestershire, Herefordshire, and in the South-Eastern counties, the hours "in a few instances" were from 56 to $58\frac{1}{2}$.

Similarly, a footnote states that in a few London works the hours were more than 54. On the other hand, in the Glasgow district, it is stated that six per cent. of the men returned worked only 51 hours, though in Lanarkshire some firms worked 57-60 hours. There were also a few instances of 51 hours in the East Lowland counties. It is clear, therefore, that the average hours in 1886 were something over 54, and may perhaps be put at 54½. In 1913 the unweighted averages of the standard hours in 53 towns,¹ selected as in the building industry to provide a representative sample for the whole industry, was 53 hours 11 minutes. In some towns a few firms worked less than the usual standard hours, and therefore it is safe to assume an average of approximately 53 hours in 1913. In 1919 hours were reduced to a uniform 47 per week.

Before 1919 the hours of railwaymen varied considerably for different grades. In 1892 a Select Committee was appointed to enquire into the hours of railway servants, and this provides data relating to 1890 which is also applicable to 1886. In 1890 there were 8, 10 and 12 hour signal boxes, and there was a similar classification of shunters according to the importance of the different goods yards. The hours of the permanent way staff appear to have been 54 per week in 1913, and the same at least as far back as 1886. Nearly all the other main grades, including our three selected grades, were rated at a 72 hour week in 1890, and according to the 1907 wage census this had, by that date, become in the main a 60 hour week. The 1907 census gives the hours normally worked in great detail: thus, 75 per cent. of the engine drivers, 83 per cent. of the goods guards, and 72 per cent. of the goods porters normally worked between 60 and 62 hours per week, while the average for passenger guards was 61.4 hours, though their hours were more varied, and as many as 19 per cent. were still working 72 hours or over. The Select Committee in 1892 did not obtain any such detailed returns, but there is

¹ As given in the Labour Department's Standard Time Rates of Wages.

no evidence against the broad conclusion that the average hours in 1886 were round about 72 just as in 1907 they were round about or a little over 60. In the years from 1907-13 the number of cases of abnormally long hours was somewhat reduced. In 1919 a uniform 48 hours week was introduced.

It may be of convenience to assemble the conclusions as regards the hours of work at the different dates.

¹ NORMAL WORKING HOURS IN A WEEK

<i>Industry.</i>	1886	1913	1920	1925
Building (Bricklayers) ¹	51.8	51.3	44.0	44.25
Coal-mining ²				
(Coal Getters).....	49.8	47.0	42.7	42.7
Cotton	56.5	55.5	48.0	48.0
Engineering.....	54.25	53.0	47.0	47.0
Railway Service.....	72.0	60.0	48.0	48.0

Applying these results to the table of True Weekly Wage Rates on page 42, a similar table of Hourly Rates can now be given :

TRUE HOURLY WAGE RATES OF REPRESENTATIVE GRADES
IN FIVE INDUSTRIES

<i>Skilled Grades</i>	(Pence per hour)			
	End of			
	1886	1913	1920	1926
Bricklayers	7.2	9.1	26.5	19.2
Coal-getters	7.0 ³	11.9 ³	38.0	22.2
Mule-Spinners	6.9	9.0	32.3	19.2
Turners	6.6	8.6	25.2	15.8
Engine Drivers	6.6	8.5	25.7	22.0

¹ Average of Summer and Winter hours. The hours of other grades were very similar. See Appendix II A.

² Hours per shift multiplied by 5.7 shifts per week. The hours of grades other than coal-getters were 9.21 in 1886, and 8.5 in 1913 per shift, or 52.5 and 48.5 per week ; in 1920 and 1925 they were the same as for the coal-getters.

³ Taking the averages of the periods 1886-91 and 1908-13 as in the Table of Weekly Rates.

Semi-Skilled Grades

Painters	6.5	8.1	26.25	19.2
Putters and Fillers ..	5.6 ¹	8.4 ¹	30.0	16.0
Grinders.....	4.5	6.4	23.9	14.2
Machinemen	4.9	6.9	22.6	13.3
Guards	4.6	6.1	21.1	16.6

Unskilled Grades

Building Labourers ...	4.5	6.0	23.0	14.8
Coal-mining Labourers ..	4.9 ¹	7.5 ¹	27.0	14.9
Women Weavers	3.8	4.7	18.1	10.8
Engineering Labourers	4.0	4.9	17.8	10.3
Goods Porters	3.3	4.4	18.3	12.9

Prima facie one would expect weekly rates to be higher in industries where hours were longest. This holds true for the railway service in the pre-war period--the superiority of the railway grades in the matter of weekly rates disappears when their abnormally long hours are taken into account. It does not hold good of the coal-mining industry, but this might be regarded as a rather special case. It does not, however, hold good universally of any of the other three industries. Hours in the pre-war period were longer in the cotton industry than in the engineering, and longer in the engineering than in building. Skilled wages were higher in cotton than in engineering, but in 1886 they were lower in engineering than in building, and approximately the same in 1913. The relation in the semi-skilled and unskilled grades is even more indistinct. The general result of conversion into hourly rates is clear; excluding the coal-mining industry and also the painters who, as has been said, are not typical semi-skilled workers, hourly rates for each class of workers were more nearly similar than weekly rates in the pre-war period. In the post-war period the building operatives are at some advantage in the matter of hours, and also of course the coal-miners, but in the other

¹ Taking the averages of the periods 1886-91 and 1908-13 as in the Table of Weekly Rates.

three industries the hours are approximately the same : hence conversion into hourly rates does not result in such striking relative changes as in the pre-war period. Comparison between these weekly and hourly rates suggests several other obvious reflections, but it seems unnecessary to dilate upon them. The following table may however assist reflection by showing succinctly a comparison of the increase in weekly and hourly rates in each of the periods 1886-1913 and 1913-1926. The most striking feature is, of course, the generally greater increase of hourly over weekly rates in the post-war period, but this is, of course, well known, though perhaps the implications are not so well realised as they should be.

RELATIVE LEVEL OF TRUE WAGE RATES

	1886-1913 (1886=100)		1913-1926 (1913=100)	
	Weekly Rates	Hourly Rates	Weekly Rates	Hourly Rates
Bricklayers	125	126	182	211
Coal-getters	160	170	170	187
Mule-Spinners	127	130	189	213
Turners	130	130	162	184
Engine Drivers	108	129	205	259
Painters	121	125	205	237
Putters.....	140	150	168	190
Grinders.....	139	142	193	222
Machinemen	137	141	171	193
Guards	112	133	215	272
Building Labourers ..	133	133	212	247
Coal-mining Labourers	140	133	174	199
Women Weavers ...	122	124	196	230
Engineering Labourers	122	122	184	210
Goods Porters	110	133	222	293

CHAPTER III

WAGE RATES AND INCOME

A STUDY of rates of wages is one thing—a study of actual earnings, or incomes, is another. The present study is really confined to rates of wages, but it is perhaps advisable to guard against misconception and misunderstanding by offering a few brief observations about the normal relationship between wage rates and earnings in these industries. To know the true wage rate of any grade or group of workers is to know a good deal about their earning power,¹ but this, of course, tells us nothing about their incomes, unless the opportunities which they have of exercising that earning power are known. If they work the normal number of hours in a particular week, their average income that week will be the same as their true weekly wage rate, but of course they may work less or more than the normal hours, or they may not work at all. The factors determining the amount of time actually worked, may for convenience be subdivided into three classes—those directly under the control of the employer, those directly under the control of the workmen, and those which for practical purposes are under the control of neither. The incidence of the third class may be said to concern the individual workman rather than the grade or group, for example family circumstances, most kinds of sickness, and so on, though of course the average collective incidence is a matter of importance to the employer. The factors directly under the control of the workmen may be summed up in their willingness to work when work is available, and those under the control of the

¹ Not everything, because overtime is usually paid for at a higher rate than ordinary time.

employer in the amount of work which he offers. Collectively, the workmen's will to accept work is a fairly constant factor, since it is largely settled by custom; for example, refusal to work overtime, the summer holiday in the cotton industry, the regular absenteeism of many coal-miners unless the pit is already working short time, or, in pre-war times, the missing of the pre-breakfast shift on Monday mornings by many engineering and other workers. The major variant factors in the short period are those under the employer's control, in the sense that he can discharge men, or order short time, or, subject to the law, overtime.¹ A study of the wage-earner's income would have to extend to all three classes of factors, and it may be remarked that a great deal of research into this question is urgently needed, for the present knowledge of economists is extremely small, and many of the generalities which are commonly made, are probably inaccurate. Here it is only proposed to consider the problems of unemployment, overtime, and short-time, and only then in so far as these factors exercise a more or less regular influence over the relations between rates and earnings. The regular character of this influence arises from their intimate connection with the trade cycle, and for obvious reasons, therefore, the few summary observations which it is desired to offer will be confined to the pre-war period.

The available supply of statistical data in the pre-war period is extremely meagre. For complete unemployment in the building industry, there are the trade union percentages for carpenters and joiners since 1881. How far these figures can be taken as representative of other grades, or of the whole industry, it is difficult to say. As a measure of cyclical unemployment, they may be a rough approximation, but as regards seasonal unemployment, they almost certainly register too low for the industry as a whole, or for particular grades, such as bricklayers or painters, whose work is specially sub-

¹ This sense is, of course, rather artificial since the employer's ability to offer work depends ultimately to a considerable extent on the productivity, etc., of his labour, and many other factors outside his direct control.

ject to interruption during the winter. Even as regards cyclical unemployment, it is virtually impossible to obtain a normal average figure, for throughout the nineties the building industry was as generally prosperous as it was generally depressed in the following decade. The average unemployment amongst carpenters and joiners between 1891 and 1900 was only 2.4 per cent. ; between 1901 and 1910 it was as high as 7.3 per cent. From the bottom of the depression in 1886 to the top of the boom in 1891, the average was 4.6 per cent. ; similarly from 1909 to 1914 the average was 5.7 per cent. There is clearly no possibility of ascertaining a "normal" figure for unemployment, such as could be applied to rates of wages, and so bring them into closer proximity to incomes. Again, overtime, and still more, short time, were common in the building industry, and undoubtedly affected the incomes of the operatives to an appreciable extent. No statistical records of overtime or short time exist, and while the one of course tends to balance the other over a series of years, it is impossible to assume that a balance is in fact reached.¹

In the coal-mining industry, unemployment for a week or longer was a rare experience for the miner, since for well-known reasons a pit only stops working completely in the very last resort. Equally, overtime, in the normal sense of the term, has always been non-existent, though it is true that in the eighties the coal-getters at small pits worked more or less as they pleased ; since 1908 overtime has, of course, been illegal. Short time, however, in the form of less than the normal number of shifts per week, has always been a common experience, for in times of trade depression, or seasonal slackness, a pit may only work two or three days a week. No direct measurement of the number of shifts worked per man exists for the pre-war period, but there is a rough guide in the statistics of the average number of days per week on which the pits were drawing coal. In the previous chapter it was concluded that

¹ It may be observed that, from the point of view of earnings, a smaller number of hours' overtime will balance a given amount of short time, since overtime was usually paid at a higher rate than ordinary time in most industries.

5.7 shifts a week represents average full-time working for the industry as a whole, and if the statistics reach this figure, it would be reasonable to assume unemployment to be non-existent. The average number of days worked by the mines during a year will never be as high as this, however, because of the slackening of domestic demand in the summer months ; this is, in a way, in line with direct statistics of unemployment, which never, of course, fall to zero. As with the building industry, the incidence of successive trade cycles is not the same ; the depression of 1895, when the statistics begin, was more severe than those of 1905 or 1909. Taking the whole period, 1895-1913, the mines were working an average of 5.22 days per week, which, as compared with full time working, might with considerable licence be taken as indicating an average unemployment of eight per cent.¹ The lowest figure recorded is 4.74 in 1895, which would be equivalent to 17 per cent. unemployment, and the highest 5.58 in 1913, or two per cent. unemployment. While this can only be considered as a rough guide, it seems highly probable that the fact that individual miners seldom suffered unemployment as ordinarily understood, has caused many people to overlook the considerable amount of short time which was prevalent in this industry even during the prosperity of pre-war days.

In the cotton industry, the position was somewhat similar. Unemployment was a rare occurrence, and overtime was not possible, since the Factory Acts for practical purposes limited the hours of men as well as women. On the other hand, short time has always been a common practice. In 1895 the then recently created Labour Department of the Board of Trade began to collect voluntary monthly returns of the proportion of workers on short time, but the sample obtained was for many years on the small side, and in any case no measurement

¹ Strictly speaking, these percentages are subject to a deduction on account of the workers engaged in the maintenance of the pits, since they work even when no coal is drawn. But their number is relatively small, and these measurements are round figures to which such a refinement would be inapplicable.

of the amount of short time, but merely the fact that a certain proportion were on short time, was obtained. The earlier returns, therefore, are of little use for the present purpose. In 1905, however, the Department began to publish returns of the total wages paid in one week in each month to a definite number of workpeople. By dividing the latter into the former, the average wage per head may be obtained, and if the wage figure for full-time working can be ascertained, a measurement of the amount of short time, at least in its incidence on wages, becomes possible. Making allowance for the slight tendency of earnings to rise, apart from any increase in list rates, the wage figure for full time working may be very roughly put at 20/-.¹ Over the whole period 1905-1913 average earnings² are approximately five per cent. lower, but it must be remembered that this period contains only one trade depression, as against a boom at the beginning and another at the end. In December 1909, when the depression was about at its worst, earnings were approximately 15 per cent. less than the full time figure. Measurements on this basis can only be of the roughest kind,³ and for many reasons refinements of calculation would be as useless as they would be difficult, but it seems clear that cotton operatives as a body suffered through short time the equivalent of 5—10 per cent. unemployment through the normal action of the trade cycle in the pre-war period, even though unemployment as normally understood was a rarity.

The engineering industry reverts back to the type of the building industry so far as the present problems are concerned. Both overtime and short time were common, but no statistics exist. The trade union records of unemployment for engineering, ironfounding and boilermaking, are separately distinguished from shipbuilding and other metal industries only as far back as 1898. In this year the upward swing of a trade

¹ The average full time earnings of all employed were 19s. 7d. as shown by the 1906 wage census.

² Statistics for March, June, September and December in each year.

³ It is, for example, difficult to make exact allowances for the effect of changes in list rates.

cycle was well under way after the slump of 1893-94, while 1913 was, of course, the peak of a boom: the period as representative, or typical, contains therefore an undue proportion of good years. The average unemployment over the whole period was under five per cent., but in view of what has just been said, this ought to be raised to about six per cent. to be representative. The highest unemployment figure for any year was 11.6 per cent. in 1909; the lowest 1.9 per cent. in 1913. When engineering proper is distinguished from ship-building, the effects of cyclical fluctuations on employment are seen to be less severe than when, as is a common practice, the combined figures for both industries are cited. It must, however, be remembered that trade depression was met to a considerable extent by short time¹ as well as by complete discharge.

In the railway service unemployment was, of course, negligible in the pre-war period. The same is probably true of short time. Some short time was undoubtedly worked, but its effects on the average income of any grade or group can with safety be disregarded, though the income of a few individuals might be considerably affected. From the point of view of income the important factor is overtime. From 1894 onwards, the Board of Trade used to publish at intervals the number of cases of time worked in excess of 12 hours per day at particular dates, but though these are classified in groups of two hours, e.g. 12—14, 14—16 hours, etc., it would be very dangerous to calculate the average amount of overtime for all employed, more especially because a man who worked overtime one day might work short time another day, and his total hours per week might not exceed the normal. Again, though the normal hours for most grades decreased between 1886 and 1906 from 12 to 10 per day, or from 72 to 60 per week, the decrease was gradual, and average normal hours at any intermediate date are not precisely known. Further,

¹ The Labour Department in the nineties collected returns of the numbers of engineering workers on short time, but as with the corresponding statistics for the cotton industry, they cannot readily be utilised for our purposes.

payment for overtime at a higher rate than ordinary time was in the early nineties a rarity, while by 1913 it had become almost the usual practice. The only definite data as to the relation between rates and earnings is that provided by the 1907 wage census. The average rate of wages of all employed was $24/6$; the average earnings $26/8$. Earnings were therefore nine per cent. higher than rates of wages. October 1907 was a period of moderately good industrial activity, for the depression of 1908 had not by then greatly affected the physical volume of production, and therefore the volume of railway traffic was probably about average. In other words, there is nothing to lead one to suppose that this excess of nine per cent was not typical of the pre-war period. It would, however, tend to be smaller for earlier years because, even supposing the amount of overtime to be as great, it was not so generally paid for at a higher rate than ordinary time. The excess in 1907 varied considerably for different grades—for engine drivers it was 14 per cent., for goods guards 11 per cent., and for goods porters five per cent.—but not one grade shows rates in excess of earnings. The earnings, of course include overtime in the form of Sunday duty, and the effects of the mileage bonus in the case of engine drivers, etc., but these factors may be regarded as fairly constant. It may, therefore, be concluded that the incomes of most grades of railwaymen in the years preceding the war were 5—10 per cent. greater than their rates of wages; the excess would vary to some extent, but probably not very much, with the general state of trade, and would be progressively smaller for earlier dates.

As was stated at the outset, the aims of this chapter are extremely limited, but the broad general conclusions which can be drawn from these very brief and somewhat superficial investigations are nevertheless extremely important.

In the first place, true weekly wage rates in the coal-mining and cotton industries virtually represent maximum weekly incomes, since no overtime is worked in these industries. Secondly, general short time in these two industries was

probably equivalent over a trade cycle to 5—10 per cent. of unemployment, though complete unemployment was exceptional. Thirdly, in building and engineering, the true weekly wage rates may not represent maximum weekly incomes, because the effects of short-time may have been more than offset by overtime; the necessary statistics of short time and overtime are non-existent, and therefore the issue cannot be settled, but our general knowledge of the pre-war conditions of employment in these industries make it seem very unlikely, especially in the building industry. Fourthly, unemployment in these two industries averaged 5—10 per cent.; that is much the same as the effect of general short time in the coal-mining and cotton industries. Fifthly, in the railway service the position is entirely different to any of these industries, in that overtime in one form or another regularly resulted in raising average earnings 5—10 per cent. above true weekly wage rates, while unemployment and short time were insignificant. In other words, whereas in the building, coal-mining, cotton, and engineering industries, a man might expect his earnings over a period to fall short by 5—10 per cent. of his true weekly wage rate, taking into account the factors of unemployment, short time and overtime,¹ the railway servant could count on earnings 5—10 per cent. in excess of his rate of wages. How far such an expectation of earnings actually entered into the determination of wage rates, it is impossible to say, but in so far as it did, it would exert a similar influence in the first four industries, and an opposite influence in the railway service. The distinction should therefore be borne in mind, when comparing wage rates in the railway service with those in the other industries.

¹ On the reasonable assumption that overtime did not greatly outweigh short-time in the building and engineering industries.

CHAPTER IV

STANDARDISATION SCHEMES

OF our five industries, two, the building industry and the railway service, have recently adopted standardisation schemes for the determination of wage rates, as well as a national basis for wage regulation. The engineering industry has also conducted its wage negotiations on a national basis since the war, but without a definite standardisation scheme, and innumerable local variations in wage rates persist, owing to the flat-rate nature of the changes since 1914, though the degree of variation is of course much smaller than in the pre-war period. In the coal-mining industry wage regulation between 1921, when Government control ceased, and 1926, was conducted on a district basis in a more or less set form prescribed by national agreement, but as between the different coalfields no standardisation scheme has ever existed, and even within each coalfield, rates of wages, other than the legal minimum rates, have been conspicuous in most cases by their variation as between the different pits. The problem in the coal-mining industry has received much attention and publicity in recent years, and little more need be said about it at present.¹ The cotton industry also, with its almost unique system of piecework price lists unaccompanied by any standard time rates or guaranteed minima of wages, stands rather in a category of its own, and must be studied accordingly. But with the first three industries, it is of considerable interest to compare the development of standardisation schemes, or the lack of their development, the

¹ The present writer considered it as a general problem in his *Wages in the Coal Industry*, while the events of 1921 and 1926 illustrate it under specific conditions.

nature of the two schemes now in operation, and the changes which they introduced. Such a study will throw light on many aspects of the wage structure which are necessarily neglected in a general survey.

THE BUILDING INDUSTRY

In Chapter I attention was drawn to the facts that, even forty years and more ago, in each town or country district the building operatives of each grade were almost invariably paid the trade union standard rates of wages, and that equal changes in wages operated for all the grades more or less simultaneously. The reality of the standard rates is a matter of some surprise, when it is remembered that in the eighties and nineties a relatively small proportion of the skilled men were organised, that the labourers were virtually unorganised, and that since the employers jealously guarded their individual autonomy in all matters affecting labour, the unions had usually to deal with each employer separately. The universal character of wage changes is almost equally surprising in view of the fact that each craft union conducted negotiations on its own, and rarely co-operated with the other unions, except on the non-unionist question. One may therefore well ask, "How could these things have been?"

The answer lies in the somewhat peculiar economic structure of the building industry. In all towns of any size there have always been a number of master builders, since the unit of organisation has remained small in this industry. Secondly, there is the feature of hourly wage contracts, as a result of which a man may work for more than one employer in a week or even in a day, since there is no technical difficulty in his so doing, for all ordinary building operations are much alike.¹

¹ Compare, for example, the relatively greater difficulty of engineering workers in this respect, at any rate in these days of specialisation.

There is therefore a great potential fluidity of labour between different firms in any district. Consequently, if one builder paid even a farthing an hour less than the other builders in the neighbourhood, he found it difficult to get his share of the men if there was a shortage of labour, and in any case he only got the inferior workmen, whom the other firms had replaced by the good men who used to work for him. Therefore, all employers had to pay the same rate, not mainly as the result of trade union organisation, but owing to the peculiar economic conditions of employment in their industry. In other words, the normal forces of competition operated with much less friction than is commonly the case where labour is concerned. The conception of standard rates was so to speak a natural phenomenon in this industry: that which trade unions in other industries had to gain with much trouble and by prolonged effort, was enjoyed as free gift by the building unions, however great their difficulties in other respects.

The reason for the simultaneous and equal advances to all grades lies also in the economic structure of the industry. If one grade succeeded in obtaining an advance, the other grades had an almost overwhelming case for a similar advance, because the grounds for any alteration applied more or less equally to all grades. There was no great change in processes, which the employer could cite as a reason for differentiation. If the reason for the initial advance was that the demand for buildings was in excess of the supply, and therefore the employer could raise his prices, all grades of labour could legitimately demand an equal share. If the reason was an increase in the cost of living, the same was true. If it was the employers who raised the rate because there was a shortage of that particular grade of labour, and because they therefore desired to attract men from other districts, the other unions could claim that what could be done for one grade, could be done for all, and they were able to back such a claim, if necessary, by supporting a certain number of unemployed. On the same lines, if there was

a rise in the labourers' rate due to a rise in the district rate for unskilled labour, the craftsmen retorted that if before the change they had been worth so much an hour more than the labourer, they were equally worth it now. Therefore in practice what happened was that now one grade and now another would obtain the initial advance, and the remainder would then take full advantage of the breach in the employers' defences. Thus the idea of equal and simultaneous changes in the wages of all grades of labour came to be regarded as natural by employers and employed—grudgingly perhaps by the former as an unavoidable necessity, but by the latter as embodying a right and proper ordering of affairs.

In each town or country district, therefore, an unusual degree of standardisation operated. Each town was however a law unto itself, and even amongst towns of the same size in the same county, or group of counties, the variations were appreciable. If the rates in one town are known, it is impossible, in the pre-war period, to guess with any certainty the rates in towns of a similar size, even in the same part of England. Thus in 1893, when the Board of Trade began the publication of the series "Standard Time Rates of Wages, etc.", the bricklayers' rate in Sheffield was 9*d.* per hour, in Leeds and Bradford 8½*d.*, in Hull and York 8*d.* In Lancashire there was the highest degree of standardisation in any county, but even so the rate in Liverpool was ½*d.* lower than in Manchester, and in Wigan it was one farthing lower than in Ashton, Bolton, or Stockport, which were all on a level with Manchester. In the Midlands, the bricklayers' rate was 9*d.* in Birmingham, 8½*d.* in Nottingham, 8*d.* in Derby, Leicester, Coventry, Wolverhampton, the Potteries, and Worcester, 7½*d.* in Lincoln, Gloucester and Oxford, and 7*d.* in Reading. Similarly in the Southern Counties, the rate was 8½*d.* in Bristol, 8*d.* in Chatham, 7½*d.* in Portsmouth, Plymouth, and Dover, 7*d.* in Winchester, and Bath, 6*d.* in Salisbury, and 5¾*d.* in Weymouth. In Scotland the highest rate was in Hamilton, which was 1*d.* more than Glasgow, Paisley, or Dundee, 1½*d.* more than in Edinburgh, and 2*d.* more than in

Perth. The labourers' rate did not exactly correspond with the bricklayers': it was often $\frac{1}{2}d.$ in excess or deficit. Thus whereas the bricklayer in Sheffield got $1d.$ more than in Hull, the labourer in Hull got $\frac{1}{2}d.$ more than in Sheffield; whereas bricklayers in Ashton, Bolton, and Manchester, were rated the same, the labourers received $5\frac{1}{2}d.$, $6\frac{1}{2}d.$ and $6d.$ respectively. Similar variations occurred in other parts of the country. Expressed in pence or fractions of pence per hour, all these variations appear very small, but it must be remembered that $\frac{1}{2}d.$ an hour meant rather more than 2/- a week, which is a substantial amount on an average wage of 25-35 shillings for bricklayers, and of 17-25 shillings for labourers.

To examine the causes of these local variations in wage rates would constitute an intricate and detailed inquiry, such as it is not proposed to attempt here. It is tolerably certain, however, that few generalisations would emerge to which there were not exceptions of such a kind as rudely to disturb the investigator's confidence in their accuracy and sufficiency. Many factors, such as local variations in the cost of living and particularly in rental values, the composition of the general demand for labour in the locality with its results on the earnings of the family unit and the available choice of occupations, the expansion or contraction of the commercial or industrial importance of the town—these factors and many more undoubtedly exercised a very considerable influence, but as a rule they fail to satisfy adequately the practical tests of application to specific cases. There seems often to remain a "margin of indifference," which cannot be adequately accounted for, and the guess may be hazarded that that unsatisfactory agency, custom, must be called in to supplement the analysis. From the investigator's point of view, this may be regarded as a confession of defeat, but it may nevertheless be the truth, however unsatisfactory the often outworn rationality of custom may be to the scientific mind. If this is the truth, it throws light also on the "economics" of wage standardisation schemes.

This high degree of standardisation within the town or country district, and its complete absence as between neighbouring towns of the same magnitude continued with little modification until 1914. During the preceding twenty or more years, there was, however, a growing tendency for the local craft unions to consult together informally, and then present their demands simultaneously, and secondly there was an increasing development of organisation amongst the employers, not primarily in response to the consolidation and growth of trade unionism, but in their own self-interest, in order to avoid undesirable competition for labour amongst themselves. From 1900 to about 1910 the building industry passed through difficult times, but the general upward movement of wages in other industries, combined also with the rising cost of living, and with the ability of the craft unions to support a large proportion of unemployed, prevented any general reduction of wages. The master builders, indeed, became increasingly nervous lest an advance should be conceded in a neighbouring locality, and so effect an awkward breach in their nominally united front. For while the observance of standard rates within each town avoided cut-throat competition for labour between the various employers in that town, it did nothing to displace competition between neighbouring towns. The unions also had similar fears lest a reduction in one town should pave the way for a general reduction. When the tide turned about 1910, and prosperity began to return, the more far-sighted employers realised that without some degree of concerted action, the rise in wages and wage costs, as first one district and then another lead the way, would rapidly choke the welcome revival of the demand for building. If wages were raised in one town, the unions in the neighbouring towns had a very strong case for claiming a similar advance, just as when within each town if one employer raised wages, the rest had to follow suit. Moreover, the unions had grown in numbers and efficiency of organisation, and while the increasing burden of unemployment from 1900 onwards

severely checked their activity, the effect was rapidly revealed when unemployment began to contract in 1910. All through, therefore, from the employers' point of view, it was a case of the strength of a chain depending on the strength of its weakest link. In the years immediately preceding the war, there was a good deal of informal talk amongst the employers as to the desirability of regulating wages by large areas, but though by this time there were several federations of local employers' associations, each extending over groups of several adjoining counties, no definite steps were taken towards such an end.

At the outbreak of the war, therefore, the local variations of wage rates presented a picture hardly more uniform or symmetrical than that of 1893. There were the same sort of variations in neighbouring towns of similar size, and much the same variations in the general level of wages in different parts of the country. The London rates were, of course, the highest, and if representative groups of towns are selected, the level of wages in Scotland and Lancashire was about 10 per cent. lower than in London, in the Northern Counties the Midlands and Wales about 15 per cent. lower, and in the Eastern and Southern Counties about 25 per cent. lower.¹ But the stability of the structure was now to be greatly disturbed by the war and its consequences. With the rising cost of living, and the strong bargaining position of labour, wage increases amounting to several pence were demanded every two or three months, instead of a farthing, or at most a halfpenny, in as many years. From the employers' point of view, the weakness of the old haphazard local determination of wages was now unmistakably demonstrated, while on their side the unions, perhaps for the first time, realised the strong ally which they possessed in the peculiar economic features of their industry when times were good, and the weakness of their position when times were bad. While the idea of definite standardisation schemes really originated

¹ These are the results as shown by the sample of 53 towns used in Chapter II.

from the employers, the unions were not of course averse to the establishment of the first principle of trade unionism, uniform remuneration, and the common difficulties of the rising cost of living reconciled the local branches to the supersession of their independence and authority. The adoption of standardisation schemes in this industry should, therefore, be viewed, not as an artificial creation of war-time conditions, but as a stage of normal evolution, accelerated by such abnormality.

The first standardisation, or "Area Grading," Scheme was adopted by the North-Western region (Lancashire, Cheshire and South Cumberland) in 1917. The towns were graded according to their degree of industrial importance, which meant in practice, according to the relative rates of wages which had been current in 1914. Four main grades of towns were established, and definite rates both for skilled and unskilled were fixed for each grade. In future, wage negotiations were only to be conducted centrally for the region as a whole, and changes in rates were to be uniform. Either party could apply for a re-grading of any particular town either upwards or downwards, but otherwise wage regulation operated so to speak automatically, once the change in the general level of wages had been settled. This experiment was gradually copied by other regions, and by the beginning of 1920 only a comparatively small number of towns stood outside in isolated independence. But this system of regional standardisation schemes could not be final. All that had really happened was that the old competition between neighbouring towns had been transformed into competition of a similar kind between the different regions. If one region obtained an advance, all the other regions could present a similar application on similar grounds. From the employers' point of view the chain had now fewer and bigger links, but it was still a chain, and the weakest link principle still applied. Moreover the unions were by no means unmindful of the possibility that a series of wage reductions might follow the series of wage advances, and they realised that if the balance

of bargaining power was reversed, the existing position would be as much to their disadvantage as it was now to that of the employers. Hence in 1920 the final step was taken, and a national scheme was established on precisely the same lines of town-grading : in essence all that happened was an amalgamation of all the regional schedules. A considerable amount of re-grading has since taken place, and there have been certain temporary defections, but in the main, wages throughout the industry have continued to be regulated on a national basis, and the principle of area grading has undoubtedly come to stay.

The result of the town grading was in general a levelling up rather than a levelling down. During the war years, in most towns rates increased by about the same amount, and in flat-rate form. Thus, if in 1914 there was a difference of a halfpenny between two towns of approximately the same importance and status, that difference was apt to remain, but of course with the doubling and trebling of the rates, it completely lost its former value and significance. The process of grading raised wages by that halfpenny in the town with the lower wage. In a good many cases also, the unions were able to secure the inclusion of towns in a higher grade than the 1914 rates would strictly have justified, though this was often really at the expense of the very largest towns. Thus, whereas the bricklayers' rate in 1914 was 11*d.* in London, 10½*d.* in Liverpool and Manchester, 10*d.* in Newcastle, Leeds, Sheffield, Birmingham, 9½*d.* in Leicester, Nottingham, Bristol and Cardiff, 9*d.* in Carlisle, Durham, Derby, Newport and Swansea, all these towns were now rated the same. Other towns however with a rate of 9*d.* in 1914, such as York, Northampton, Chatham, Portsmouth, had to be content with the next lowest rate. There was in fact a good deal of give and take between the employers and the unions in the matter of town grading.

Mention must also be made of the changes which the standardisation scheme involved in the relative positions of the different grades of workers. As with the rate for any one

grade in neighbouring towns of the same size, so there were also small differences between the rates for the different grades of skilled men. These differences were by no means regular: in one town one grade might get a halfpenny more than another, and in another town the position would be reversed; and on the average of a number of towns there was little difference. During the war years wage advances were similar for all grades, and the differences lost their former value and significance. All were, therefore, swept away by the standardisation scheme, and one rate established for all grades of skilled men. The painter, who before the war nearly always received at least one penny an hour less than the lowest skilled rate, was raised to the ranks of the skilled. The relative position of the labourer was not directly affected by standardisation, though, owing to the flat-rate advances, his wage had risen by a much greater percentage increase than the skilled man's, and the traditional ratio of two-thirds had become one of more than three-quarters.

The standardisation scheme adopted in this industry must in fact be regarded as in the nature of a bargain, and not as a product of the application of definite principles. Undoubtedly the main idea was that the cost of living was greater in the large towns, but in the absence of any actual enquiries on this point, and in view of the precedents of the past, the results necessarily partook of compromise, and a rough and ready justice. Since the average rate for any region depends simply on the proportions of larger and smaller towns, the Eastern and Southern Counties, continue to show lower averages than the Midlands and the North, but the deficiency is now considerably less than it was in 1914, since the war time advances were far more in flat-rate than percentage form. Undoubtedly the events of the war years exerted a considerable influence on the whole structure of the standardisation scheme, but as has already been pointed out, the scheme should not be regarded simply as a product of the war period, nor can it be considered as directly due to the efforts of either employers or trade unions. To be

appreciated at its true significance, the standardisation of wages in this industry should be regarded as a natural and inevitable evolution, arising from the peculiar economic features of the industry, and fostered by both employers and trade unions because it served the interests of both.

THE RAILWAY SERVICE

In the other of our five industries with a standardisation scheme, economic conditions are radically different. Even before the 1921 Act and the amalgamation of the railway companies into four units, the number of companies was small, and each was a very large employer ; while the potential fluidity of most grades of railway workers is small. Hence there were no such reasons as conduced to the standardisation of wage rates over wide districts in the building industry. As a matter of convenience all large employers tend to adopt a definite schedule of rates for all men in the same grade at the same works or depot, and in the case of the railways there was no reason why each station should not have its own schedule ; in fact before the war this was very largely the case. On the other hand, since, of course, the finance of a railway company is centralised, there was also no reason why each company should not have adopted a standardisation scheme of its own, even before the war. But the railway unions did not of course desire standardisation in this form, with all its inevitable anomalies, and as history shows, until 1914 they were not sufficiently strong, nor did they possess a sufficiently well recognised status, to attempt coercion by sectional methods. When standardisation became a really practical proposition, wage negotiations had been conducted on a national basis throughout the four years of the war, and standardisation on any but a national basis was entirely outside the picture. What might have happened if the normal course of events had not been disturbed by the

war, is a matter of pure speculation, but at least it must be regarded as most unlikely that any such scheme as was adopted in 1919 and 1920 would ever have been formulated and instituted en bloc, as it actually was, even though in all probability something like it would have been reached eventually.

The standardisation scheme in the railway service is based on the following principles. All local variations were reduced to two rates—for Industrial Areas, and for Rural Areas—except in the case of the train staff, i.e., drivers, firemen, and guards, for whom one universal rate only was established. For the train staff, whose rates were subject to a scale of increments according to length of service, such scales were preserved, though modified in certain respects in favour of the employees. For many of the other grades, divisions were made into classes according to skill, experience, or the special nature of their work, each class having its two rates, one for industrial, and the other for rural, areas. All rates were of two kinds, "Present Abnormal" or "A" rates, and "Permanent Standard" or "B" rates. The "A" rates were to be the average pre-war rates for each grade, plus the flat-rate war period advances to date, which amounted to 38/-; these "A" rates were to be subjected to a sliding-scale, whereby there should be a reduction or increase of one shilling per week for every fall or rise of a full five points in any quarter in the cost of living index number. The "B" rates were to be double the average pre-war rates for each grade, and if and when these rates were reached as a result of the cost of living sliding-scale, the operation of the scale was to cease.

Different aspects of the scheme may be studied in turn. As regards the elimination of local variations in wages, the establishment of one universal rate for the train staff grades did not involve any great change, because as the 1907 wage census shows, there were no great local variations in their pre-war rates. The main reason was that the bulk of these grades live in medium-sized towns like Swindon, Crewe,

Grantham or Norwich, and those at big centres like London live near the engine sheds and sidings, which are situated, not at the termini, but usually some distance out in the suburbs. A further reason may have been the large area covered by these grades in their daily work; any considerable variation in real wages would have been discovered, and acted upon. Again for all the other grades, the simplification into the two rates for Industrial and Rural Areas, roughly corresponded with the actual pre-war position. The 1907 wage census¹ shows that, taking the country as a whole there was little variation of the average wages in towns with a population of 10,000 or over; these were mainly classed as Industrial Areas, while those under 10,000, where the average was appreciably lower, were classed in the main as Rural Areas. The absence of large differences in the level of wages in towns of varying size is partly explained by the fact, to which the 1907 census report drew attention, that the distribution of high and low paid grades varies with the size of the town. In very large towns the proportion of low paid grades is excessive, and therefore though rates in these large towns were higher, the average wage of all grades does not much exceed the average wage in medium-sized towns, in which the proportion of high paid grades is excessive. On the other hand, in the small towns, not only are the rates lower, but the proportion of low paid workers is excessive, and thus the average is considerably lower. As between different sized towns, therefore, the standardisation scheme on the average of the country as a whole made little difference. But as between different districts it made a considerable difference. In 1907 the Northern Counties showed the highest average rates for all the groups of towns save one, and Wales came a good second. There was no great difference between Yorkshire, Lancashire, and the North and West Midland Counties, which showed average

¹ The census report shows an analysis by towns of five classes: (a) over 100,000 population; (b) 50,000—100,000; (c) 25,000—50,000; (d) 10,000—25,000; (e) under 10,000.

rates 1/- to 1/6 lower than the Northern Counties, while in the smaller towns in the South Midland and Eastern, and the Southern and South Western Counties, wages were at a decidedly lower level than in the corresponding towns further north. Scotland showed the lowest rates for all groups of towns. From 1914 onwards, the differences became, of course, relatively much smaller, as the war period's additions were on a national flat-rate basis. As a result of standardisation, these differences would be further levelled out; the Southern part of England and Scotland would, of course, still show lower averages, but simply because of the greater predominance of rural areas; industrial areas or rural areas in the North now have no advantage over the corresponding areas in other parts of the country. It is impossible to measure these changes with precision, but there can be no doubt that it was in this respect that standardisation produced the great change so far as local variations are concerned. In this respect, standardisation on the railways contrasts with standardisation in the building industry, which, with its three main grades of towns and eight sub-divisions, is very much more elastic. On the other hand, the pre-war degree of local variation was, of course, much greater in the building industry, and the establishment of only two grades of towns would have meant far more revolutionary changes than were caused in the railway service.

But the elimination of local variations in wages was not really the main proposition in the railway standardisation scheme, as it was in the building industry's scheme. The railway scheme was far more concerned with the establishment of standard rates for each grade of workers. Both "A" and "B" rates, as has been said, are based on the average pre-war wages of the different grades. The railway companies supplied the necessary information from their wage books, but the utmost secrecy was observed, and the results have never been published. A great deal of negotiation took place between the companies and the unions as regards the final settlement of the Permanent or "B" rates, and

it is impossible to assume without investigation that the unions obtained no concessions, and that the exact pre-war averages were in fact used as the basis. This can, however, be fairly satisfactorily checked. A report of the National Wages Board in the summer of 1920, gives a table showing the percentage increase of the then existing A rates, as determined with reference to a cost of living index number of 130, over the pre-war average rates for the principal grades. The 1907 census report gives the average rates in that year, and we have estimated that all grades obtained an increase of about 6 per cent. between 1907 and 1914.¹ The percentage increase shown by adding 39/-, which is the flat-rate increase corresponding to a cost of living index number of 130, to these estimated pre-war rates, would then represent the increase in wages which would have taken place, apart from the standardisation scheme, and if this is compared with the actual increase as shown by the National Wages Board report, the results of standardisation will be revealed. Such a comparison is shown for some of the principal grades in the following table :

	Col. I Actual per cent. Increase 1914-20 (Nat. Wages Board Report)	Col. II Calculated per cent. Increase (1914 aver- age rates + 39/-)
Engine Drivers	. 122	90
Firemen	. 156	152
Goods Guards	. 126	127
Passenger Guards	. 126	131
Goods Porters	. 177	177
Passenger Porters	. 197	193

With the exception of the engine drivers, there is close correspondence between the two sets of figures, and therefore standardisation did not result in a general levelling up within each grade. The weak spot in the calculations for column II is whether it is correct to assume that rates of wages rose by six per cent. between 1907-1914. If less than

¹ See Appendix I.

six per cent. be added to the 1907 wage census statistics, then the figures in column II would all be greater, and therefore in excess of column I which would mean that standardisation had involved a general levelling-down—a conclusion which is on general grounds practically inadmissible. On the other hand, since it is fairly certain that rates of wages did not rise more than earnings during this period, and that earnings did not rise more than about eight per cent., it may be concluded that the figures in column II should not be appreciably lower.¹ In the building industry, the process of standardisation resulted in a definite levelling-up, but this was not so on the railways. All the classification of stations and the grading of areas, etc., with all the prolonged bargaining which ensued, resulted on balance in no incidental increase in the average rates of the different grades. The National Wages Board Report, referred to above, stated that “the inevitable consequence of standardisation was that the men who in their particular grade were worse off, gained more than those who were better off.” This statement appears to be quite correct, apart from the case of the engine drivers, though the consequence is “inevitable” only if the principles agreed upon were strictly observed, and all give-and-take bargaining excluded, in a way which it certainly was not in the building industry. The engine drivers appear, however, to have received exceptional treatment, and in their case there has been a marked levelling-up. They may, of course, have secured rather more than the general advance of six per cent. between 1907 and 1914, but this would not account for more than a small part of the 32 points discrepancy. Probably they did receive exceptional treatment, because as being by far the most highly paid grade in 1914, the flat-rate war advances meant a relatively smaller percentage increase to them, and even this extra increase resulting from standardisation did not bring their wages up to a parity with the cost of living.

¹ The doubtful point in Appendix I was whether rates had risen as much as earnings: this comparison helps to substantiate the negative conclusion there expressed.

It is almost impossible to assess the changes resulting from the adoption of the pre-war averages as the basis for the new standard rates, because there is no information as to the proportions of men receiving industrial area and rural area rates, nor as to the proportions of the different classes, if any, within each grade. The 1907 census gives some idea as to the range of the rates of different grades, since the quartiles are given as well as the average and median in each case. The differences between the quartiles range from about three to five shillings, and therefore if one standard rate based on the average had been established, the gains by the lower paid, and the losses of the higher paid men in each grade, would have been substantial even at the value of money in 1920. But two rates were in fact established, and it must be remembered that in the case of the train staff there are the increment scales according to length of service, and most of the other grades are sub-divided into at least two classes each with its two rates. These factors considerably modify the changes resulting from the standardisation scheme, and while nearly every man's rate was altered, the changes in all probability did not exceed, say, two shillings or half-a-crown gain or loss, except in a relatively small number of cases. It is the number of minor changes rather than their degree, which most distinguishes this aspect of the railway standardisation scheme. Whereas the building industry's scheme left the wages of a very large proportion of the operatives unchanged, because it was in the main a standardisation of the existing status quo, the railway scheme directly affected almost every employee, even though the net effect of the changes on the average rates was less, because in the building industry there was a certain amount of levelling up. The railway scheme may be said to have been constructed on *de novo* principles; the companies and the unions sat down as men devising a new model scheme for the determination and regulation of wages. The building employers and unions were in a sense far less enterprising in their schemes; they had their eyes primarily on the aboli-

tion of the old haphazard system of local wage determination, with its common drawbacks and disadvantages, and for this, mere consolidation was sufficient; a certain amount of simplification was effected, but it was so to speak incidental. At the same time, the fact that the railway companies are few and their finance centralised, made a wholesale redistribution of the wage bill much easier, and much less objectionable, than it would have been to the innumerable independent employers in the building industry. Again, the railway scheme provides for the ultimate restoration of the relative positions of the different grades, and though perhaps no one supposes that the cost of living is likely to fall sufficiently to reduce the lowest paid grades to their "Permanent," or B rates, for a considerable number of years, the idea of ultimate restoration contrasts with the proviso in the building industry agreements that the labourer's wage shall never fall below three-quarters of the craftsman's rate, whereas it had averaged only two-thirds in the pre-war period. Many other points of comparison and contrast might be made between the two schemes, but the main interest from the economic point of view lies in the more artificial character of the railway scheme, and its possible reactions on the supply of labour, and the level of wages and the whole wage structure in other industries. The building industry scheme is evolutionary only; the railway scheme is much more definitely the artificial creation of a trade unionism, guiding, rather than guided by, what are often termed economic forces, though admittedly careful and moderate in these its first steps.

In passing, attention must be called to the results of the standardisation of hours effected by the Act of 1919 while the railways were still under Government Control. Whereas by 1914 the variations in the normal hours of work in the building industry as between different towns were relatively small, and in each town the hours were practically the same for all grades of operatives, there was no such degree of similarity in the railway service. According to the 1907

census, the permanent way staff averaged approximately 54 hours per week, and most of the other grades 60 hours. For the former, the range of deviations was not considerable, but this does not hold good for many of the other grades. Thus 13 per cent. of the signalmen normally worked 72 hours or over, and 33 per cent. between 48 and 50 hours; one quarter of the engine drivers and firemen worked either less or more than 60-62 hours, and more than one quarter of the goods porters and checkers. The hours of passenger guards were specially varied—14 per cent. below 56 hours, 12 per cent. between 56 and 60 hours, 39 per cent. between 60 and 62 hours, and as much as 19 per cent. 72 hours or over. Probably there was some levelling-up of the longer hours between 1907 and 1914, but variations on this sort of scale at any rate, were still in existence in 1919. Hence the establishment of the universal 48 hour week was not merely a shortening of hours, but a most far-reaching measure of standardisation.

THE ENGINEERING INDUSTRY

Until the war period wages in this industry were determined on a local basis in much the same way as in the building industry, but the wage structure was by no means so homogeneous. Within each shop, varying degrees of skill were required from men of the same grade to a far greater extent than in the building industry: consequently there were usually an appreciable number of men rated above, and often below, the trade union standard rates, though the range, in 1914 was considerably smaller than in the eighties and nineties, when individual was almost as important as collective bargaining. A town or locality usually specialises on one particular branch of the industry, but where there are two important lines of specialisation, there may be two distinct sets of rates, one lower than the other by a uniform amount. Thus in

many Lancashire towns there was one level of rates for firms making textile machinery, and a higher level for general engineering, and in shipbuilding centres a difference between marine engineering firms and others. The localisation of different sections of the industry is, however, far from complete, and in a very mixed centre some firms paid a little above or a little below the standard rates. There was not therefore that degree of standardisation which characterised the building industry, and such standardisation as did exist, was the result primarily of trade union action. The variations in wages between different localities were in many respects similar to those which existed in the building industry, but in the engineering industry they had a more definite basis, both in the different rates of profit made from time to time by different sections of the industry, and in the varying degrees of skill required from the workmen in those different sections. Whereas the building industry is localised roughly in accordance with the distribution of the population, engineering tends to be concentrated in certain centres. These may be very large towns such as Glasgow, Manchester, Birmingham or London, but even so, the works and the homes of the employees tend to be on the outskirts or in the suburbs, and not in the highly rented centres of the towns. Hence in the pre-war period the cost of living, while varying as between north and south, was probably much the same for large proportions of the engineering workers within these broad geographical limits, and therefore was a far less potent factor in local wage variations than in the building industry. Nevertheless it is a factor not to be ignored.

The standard rates of turners and fitters are usually the same, and together these grades form a substantial proportion of the skilled men. In 1914 their rates in the 53 largest centres of engineering in Great Britain ranged from 30/- to 40/6. In only nine towns was the rate at, or below, 35/-, and six of these were Yorkshire towns where textile machinery making predominates: the other three were Worcester, a small centre, and the railway shops of Crewe and Swindon, where

security of employment presumably enters into the explanation. In only eight towns was the rate above 38/- : London, Erith, Enfield, Liverpool, Southampton, Portsmouth, Cardiff, Hartlepool. The degree of local variation in wages was not therefore very great, for while in very small towns rates would be considerably lower, the fifty-three towns between them probably account for three-quarters, or more, of all employed in the industry.

Wages continued to be settled on a local basis until April, 1917, when the increases obtained since 1914 were levelled up to a universal minimum of seven shillings, and this minimum, or any greater advance which had actually been made, was embodied in the permanent time rates. Thereafter wages were regulated on a national basis by the Committee on Production and its successors. Since 1919 national wage regulation has continued, and there is at present little sign that it will be abandoned.¹ But no proposals have ever been made for any sort of standardisation scheme, despite the fact that the regularisation of the small local variations would be a far simpler and less disturbing affair than in the building industry. The result of the war years was to diminish only slightly the actual range of local variations, but of course the rise in wages greatly reduced their significance. In 1919 and 1920 however the employers were too busy in transforming their works from war-time back again to normal peace-time production, to devote more attention than was absolutely necessary to wages questions. In the building industry the regional standardisation schemes came first, and paved the way for wage regulation on a national basis: in the engineering industry the war years had established the latter, which was the more important item. The continued existence of small local variations in the engineering industry hurt no one very

¹ In 1926 the unions failing to get satisfaction from national negotiations, resorted to district applications; the employers thereupon issued a statement that any local strike action would be countered by a national lock-out. The employers are therefore determined to preserve national negotiations, and so really are the unions, for the local applications when made were all similar, and merely a repetition of the national claim.

much : they were too small to influence the distribution of labour, and with wage regulation on a national basis, and ample supplies of labour owing to the war time expansion of the industry, the employers had no fear lest the unions should play off one district against another, and so generate a succession of advances. Equally in 1919 and 1920 the unions were too busy securing the restoration of pre-war working conditions, and with the problems arising from the change-over to peace-time production, while when the slump came, it was obviously to their advantage to maintain a nominally united national front to the attack on wages.

There are in fact so many other wage problems with which employers and employed are faced in this industry, that the problem of local variations is not likely to be tackled except as a relatively unimportant and incidental part of an intensely complicated whole. There is, first, the difficulty that the apparently permanent shrinkage of certain sections of the industry and the expansion of others, combined with the tendency towards localisation by the different sections, renders it highly questionable whether the range of local variations ought not to be increased rather than reduced by any uniform standardisation. In 1926 it is probable that certain localities, specialising on the motor trade or electrical engineering, could have afforded to pay wages at a considerably higher level than localities where most of the firms are engaged in general engineering. This of course would cut across the trade union principle of uniform remuneration, but in maintaining this ideal, the unions are allowing profits to retain what might have gone to wages. The engineering unions to-day are faced in this respect with the same sort of problem as the Miners' Federation, though, of course, in a greatly modified form. Secondly, the problem of local variations is complicated by the influence of piece-work, and its resulting higher earnings. In some sections of the industry, and therefore to some extent in some localities, a greater proportion of the workers can be, and are, employed on piece-work than in others : a standardisation of time rates would not, therefore,

mean a standardisation of incomes. Thirdly, there is the whole problem of the relative remuneration to different grades, which again is complicated by the uneven proportion of piece-workers in different grades. Fourthly, there is the whole problem of the proper principles for the regulation of the general level of wages. In truth the whole wage structure of the engineering industry is chaotic, and though both the employers and the unions recognise the existing disparities, anomalies and crudities, neither party knows where, or how, to begin to set things right. It is small wonder, therefore, that the problem of local variation of wages excites relatively small interest in comparison with other and far more important issues, and that standardisation in any form has not been attempted.

CHAPTER V

WAGES AND SKILL

IN the light of war and post-war developments, and the existing disparities in the remuneration of different grades of labour, many people have turned an ear towards economists only to find to their surprise that wage theorists have little or nothing to say about the influence of skill as a differential factor in wage determination. The explanation of this apparently curious omission lies, of course, in the fact that no quantitative measurement of the skill required of different grades of labour can be made ; it is impossible to measure the skill of the bricklayer relatively to his labourer, or relatively to that of the carpenter or the railway engine driver. The only possible quantitative measurement is by reference to the relative conditions of the supply and demand for different kinds of skill. If there is a demand for a certain kind of skill, and if not all men are able to supply that skill, then the wages offered must rise above the unskilled rate sufficiently to call out the requisite supply. In other words, economic theory maintains that bricklayers' wages are higher than labourers because not all labourers are able to acquire the bricklayers' skill. This lack of ability arises from many different causes ; it is the sum total of natural incapacity, economic incapacity to finance the cost of training, artificial restrictions by trade unions or the legislature, personal considerations, and so forth. Similarly, if there is the same relative scarcity of men capable of driving railway engines as of men capable of bricklaying, the differential between these skilled grades and their respective unskilled grades, will be the same. Moreover, since in theory the marginal net products of labour should in the long run

be the same for all industries, the wages of bricklayers and engine drivers should be the same, allowance being made for differences in the conditions of their work, and if they are not the same, then the relative scarcity of the grades cannot be equal, or in other words one must be more skilled than the other. It is only in such a roundabout fashion that the economist can deal with the factor of skill. Now while it is necessary to admit that accurate quantitative measurements of different kinds of skill cannot be made, it may be possible to generalise as to relative changes, and to ascertain whether such changes correspond with observed changes in wage differentials, and if not, to obtain some clue as to the cause of divergence. To achieve these ends, detailed investigations in a large number of industries would be required, and this is beyond the scope of individual investigators, except conceivably as a life's work. But even one such detailed investigation might yield results of considerable interest, though the basis might be too slight for comprehensive conclusions. Such an investigation has been attempted by the author in respect of the engineering industry. This is at the same time the most obvious, and perhaps the most interesting, field in which to study the effects of relative changes in skill on wage rates. For while almost revolutionary changes in the methods of production have certainly caused significant changes in the skill required of certain craftsmen, the work of other grades has remained virtually unchanged. In addition there has been a tremendous increase in the proportion of semi-skilled men. The tendencies and developments in the engineering industry may be justly regarded as typical of what has taken place in many less important industries, and this widens the general validity of conclusions resting only on the slender basis of a single industry, however large. But it must not be thought that even this single study can be simple or short. In order to assess, even in the most general terms, the changes which have taken place in the skill required of a particular grade, it is impossible to avoid a semi-technical study of changes in processes and machines. The non-

technical man's path to such an objective is plentifully besprinkled with deep pit-falls, but it is hoped that the engineers who have so kindly befriended the author,¹ have successfully guided his steps round at least the deepest of them. In the nature of things, the results can only rest on personal estimates, which are peculiarly liable to error because of the wide variety between different firms, both as regards the actual product, and the method of production. In Section I below it is sought to establish conclusions as to the actual changes in the relative skill required of different grades, since the revolutionary changes in technique first began to make their influence felt on a large scale in the late eighties: and in Section II these conclusions are compared as far as possible with the actual changes in relative wage rates.

SECTION I. CHANGES IN SKILL

THE GENERAL NATURE OF THE REVOLUTION

Before attempting a detailed examination of the relative changes in the skill of different grades, it will be advisable to offer certain broad explanations as to the general nature of the "revolution" which has fundamentally altered both many of the technical methods of engineering production, and also the general organisation of the industry as a whole. Under the present industrial system, all progress has as its motive power the desire to lessen costs of production, and this, beyond question, is the case with the changes in the engineering industry during the last forty years. It was

¹ They are too numerous to mention individually, but I must acknowledge my special indebtedness to Mr. Milward of the English Electric Company, who was so kind as to read a draft of this chapter, and supplied me with invaluable criticism upon it.

evident that the means to lessen costs lay in the substitution of machines for hand work. But the difficulty was that machines meant a large outlay of capital, and were not a paying proposition unless they could be kept running almost continuously. This was not feasible as long as all engineering works were virtually "general" shops, making for the most part only to order. Once a big and steady demand for a certain article could be assured, it was not likely that the machine designer would fail the business man. Hence the fundamental characteristic of the "revolution" is not one or more striking inventions, but nothing less than a general re-organisation of industrial methods, a process which was followed, step by step, by improvements and inventions in machines and tools, serving in their turn to facilitate further organisation. Firms began to specialise in one or two main "lines," and became equipped with the particular types of machines most suitable to their work. This allowed of the subdivision of processes, which made possible the introduction of more and more specialised machines, for the product of which there was a large and steady demand. Such is the origin of mass production, to which the American ideas of inter-changeable parts were an obvious corollary.

This revolutionary process began some thirty or forty years ago. It may be roughly dated by the introduction of the modern type of "safety" bicycle during the period 1885-90, for it was with reference primarily to the bicycle, that there came from the United States the first ideas of mass production and inter-changeability of parts. In the eighties almost all revolving work was done on the lathe by men who had by long experience acquired a very high degree of manual dexterity. The necessity for skilled work was then, as it is now, largely due to the inherent difficulties arising when the work has to be revolved.¹ Hence one of the primary objects

¹ It should however be added that the necessity for skilled work was also due to the absence of specially designed chucks and jigs for holding the work, and also the undeveloped state of science in regard to cutting tools and speeds and feeds.

of machine designing has been to avoid the revolving process. The first big landmark is the introduction of the milling machine in its various forms during the early nineties. The essential feature is that the result depends primarily on the accuracy and variety of the tools employed, and only very secondarily on the skill of the operative¹. Then about 1900 came further stimulus from two distinct sources. One was the introduction of the grinding machine, and the other the appearance of a huge new market for the petrol engine, which had been so far improved that its possibilities were manifest. The latter provided new scope for organisation and specialisation, while the former was as nearly a revolutionary an invention as the period can show. The introduction of fine grinding, however, conforms with the general principles of the revolution as they are stated above. The carborundum wheel was known long before this date, but its use had not been developed, simply because there was little demand for very fine and accurate work. What little grinding was required,² the turner did on his lathe by fitting to his slide-rest an attachment containing the grinding wheel, sometimes a carborundum, more often an ordinary emery stone. Once the demand for fine work was permanently established, the designer quickly supplied the need for more efficient and convenient machines, and because an emery wheel quickly becomes worn, and more so in certain places than in others, it was discarded in favour of carborundum and other harder substances. This change was accompanied, though not primarily caused, by the increased use of harder qualities of steel. The result has been that accurate lathe work has to some extent been put at a discount. Even if we suppose that the modern turner

¹ The milling machine is of course a substitute for the lathe only to a limited extent. Another sphere of its utility was as a substitute for hard filing, chipping, etc.

² It was mainly confined to the finishing of hardened steel parts, which, although machined beforehand, lose their original shape to some extent in the hardening process, after which of course the ordinary steel cutting tools cannot be used.

with all his improved tools and machines could not produce such accurate work as his predecessors, it would not greatly matter, for in many cases the work is passed on to the grinder. The effects of this change extend beyond the machine shop. When an article is received by the fitter correct to thousandths of an inch, it is hardly conceivable that he will aid matters with his file. As will be noted later on, the fitter of thirty years ago hardly exists to-day, a disappearance due more perhaps than anything else to the introduction of the grinding machine. Similarly, in its turn, it has stimulated invention, for the gaugemaker has had to keep pace, and to-day his shop is the "holy of holies" in a modernised mass production works. A more recent though typical development is the enormously increased use of "jigs," which turn highly skilled work into almost fool-proof unskilled labour. When there is a sufficiently large and steady demand for an article, the resulting gain is of course enormous. But it requires the greatest skill to make these "jigs," and so a small special class of very high grade labour has emerged, balancing to some extent the disappearance of large numbers of men of average skill.

In the following section a more detailed account of the alteration in the general technique of the various stages of production will be attempted. Sufficient indication has, I hope, been given of the general trend of the "revolution," and in order to understand the effects which it has produced, it is essential to bear in mind that fundamental changes in business organisation revolutionised machinery, not machinery business organisation. At the same time, the development of new kinds of machinery has brought about a change in the nature of the materials used, which in turn has stimulated invention both in machine tools and cutting tools. For example, in aeroplanes and aeroplane engines it is necessary to have the maximum possible strength and reliability, and this has brought about the introduction of special steels, etc., which in turn called for the invention of new methods of manufacture; the increased speed at which some machinery is now driven has

had similar effects. Fundamentally, however, it has been a revolution of business organisation.

2 THE EXTENT TO WHICH THE "REVOLUTION" HAS AFFECTED THE VARIOUS DEPARTMENTS OF AN ORDINARY ENGINEERING WORKS

a The Pattern Shop

Forty years ago the only machines to be seen in a pattern shop were the circular saw and the ordinary wood working lathe. To-day there are also machines for planing, grinding, drilling, etc., as well as the band saw in various forms. But while these machines have relieved the patternmaker of much heavy manual work, it is difficult to believe that their use has lowered his high standard of skill and craftsmanship. Machinery has not yet been designed to perform the finer part of the work. This has still to be done entirely by hand. What machinery has done, is enormously to increase the rate of production. A man used to be exhausted in half a day by the great expenditure of muscle needed in the early stages of producing a big pattern. To-day this is done quickly and without effort on machines, and it is a thing almost unknown for a pattern maker to sweat! There is indeed good reason to suppose that the standard of skill required to-day is higher than ever. Generally speaking, machinery is much more complicated than it used to be, and so patterns are more complicated, and the pattern maker must also work a very great deal more accurately to the measurements given. Again, the growth of machine moulding has in many cases necessitated patterns and core boxes often of a very complicated and intricate nature. It may be regarded as certain that the "revolution" has had no adverse effect on the skill of the pattern maker, and there is a strong presumption that the standard required has been considerably raised.

b Foundry Work

As the ordinary engineering works does not make its own steel castings, that branch of foundry work has not been considered. With regard to brass moulding the only grades of workmen concerned are the actual moulders and their assistant labourers. With the Pit Type furnace and hand crucibles, which are still very largely employed, the process is precisely the same as it has been for hundreds of years. Prints of the 18th century brass foundry show exactly the same kind of furnace, and the same shaped crucibles, as may be seen anywhere to-day. There is however an increasing use of the Tilting Furnace with various methods of heating. Plate and machine moulding have been introduced during the period, and are now applied pretty extensively to brass moulding, as a good deal of the work is, and has been for some time, of a repetitive nature. While this reduces the skill required very greatly, the brass moulder proper has not been appreciably affected by the revolution.

With regard to iron moulding there are six distinct grades of men concerned: loam moulders, ordinary box or floor sand moulders, plate and machine moulders, coremakers, fettlers, and foundry labourers. In a great many foundries there has been little change in the work performed by fettlers and foundry labourers. But in many up-to-date foundries, pneumatic hammers and the sand blasting process are employed for dressing castings, whilst pneumatic riddles, conveyors and other forms of sand handling plant, together with the introduction of quick acting electric cranes, have considerably reduced the arduousness of the foundry labourer's work. But such changes do not mean that either more or less skill is required by either of these two classes. Plate and machine moulding is a comparatively recent development, and is at present practically confined to the production of light castings required in large quantities (e.g. various builders' castings, petrol engine cylinders, etc.). Machine moulders are gradually becoming a distinct grade of semi-skilled men, and as the process did not exist forty years ago, comparison

is naturally impossible. The loam and sand moulder proper is still working in exactly the same way, and with the same tools as before, but there is no doubt that certain opposing tendencies have been in operation. On the one hand, patterns have become more complicated, and greater use is made of cores: on the other hand, much more work is put into the preparation of patterns, and especially of cores, with a view to making the actual moulding easier. This last point does not apply universally in the case of loam moulders, as throughout the North, at any rate, the loam moulder makes his own cores. Again, while the increased use of cores has resulted in the moulding of articles which would not have been cast in a complete form thirty years ago, the increased efficiency of the machine shop has enabled time to be saved by cutting certain things from the solid, instead of moulding them. It is difficult to estimate the combined result of these tendencies on the work of the moulder: none of them are very marked, but, if anything, the balance probably lies in favour of more and not less skilled work, particularly in the case of the loam moulder. Finally, there is no doubt that core making needs much greater skill than formerly. There are of course wide variations in this work; the making of simple cores is quite unskilled work, but in many cases very great skill is now required.

To sum up, the average moulder is certainly not less skilled either absolutely, or relatively to the fettler or labourer; on the contrary, he is slightly more so, and in particular, core-making frequently demands ever increasing skill.

c The Boiler Shop

Here again it may be said that, as regards the skill of the workmen employed, there has been little or no change. The grades concerned are Angle Smiths, Platers, Rivetters, Holders-up, and Labourers. Rivetting is the only process where change might be considered likely; but the hydraulic rivetter for large work was in use more than thirty years ago in much the same form as it is to-day—in some works even

identically the same machines—and its sphere has not been greatly extended. The pneumatic rivetter was also in use, though it has been greatly improved, and to-day demands more skill on the part of the operative than did the first and rather primitive types. But the pneumatic rivetter has by no means displaced hand rivetting. The inherent advantages do not seem so great as the non-technical man is apt to imagine. Of three boiler shops in a big town in the North, one was making steam rollers and traction engines, and the manager stated that they did nearly all their rivetting by hand, as the pneumatic took time to fix up, and was only a saving where a "long run" was possible; he added, however, that in his opinion caulking could be done not only quicker, but better, by the pneumatic than by hand. The other two firms were both making railway locomotives. Firm A hardly ever used a pneumatic in their boiler shop, though they did so considerably in their erecting shop; firm B's practice was vice versa. In short, even as regards rivetting, the "revolution" has hardly altered the nature of the work in a boiler shop. Various labour saving devices have been introduced, thereby increasing productive efficiency. Perhaps the greatest of such influences during the period has been the development of electric cranes, which has enormously simplified the moving of big weights from one part of the shop to another. But as regards skill, there has really been no appreciable change.

d The Smithy¹

Here again the changes are so slight as to be disregarded. The smith is asked to make the same type of articles to-day as forty years ago, and he is using almost exactly the same tools as his predecessors have used for centuries. It is true that now he has a steam, and also a pneumatic, hammer, but the former is only a development of the power hammer which existed long ago, and as regards the latter, the common

¹ This refers to the ordinary small smithy attached to most engineering works, and would need some modification if applied to forges proper.

opinion seems to be that it does not possess the same "feel" as the steam hammer, and this can hardly be attributed entirely to mere conservatism. The saving of running expenses by the introduction of the pneumatic in place of the steam hammer, would of course be great, but this beginning does not seem a good omen for future developments in the application of machinery to the very skilled work of the smith.

e The Machine Shop

So far the statement that changes amounting almost to a "revolution" have passed over this industry during the last forty years, hardly seems correct. In all these preparatory processes, the craftsman appears to have much the same skill to-day relatively to the semi-skilled and un-skilled man in the same shop, and to the craftsman in other shops, as he has had for a very long time. But the machine shop presents a very different picture. Much as one would wish to avoid doing so, it is virtually impossible to form any proper conception of the changes in the degree of skill required by the different grades of machine workers, without first describing the changes in the machines which they operate, so far as this can be done in a non-technical way. This alone can show the essence of any revolutionary changes, and only on the basis of such facts can the specific problem of changes in skill be adequately discussed. Some readers may, however, be familiar with the changes in the equipment of the ordinary machine shop, and more may be interested only in the conclusions as to changes in skill, and prepared to take the evidence as read. The evidence has therefore been relegated to Appendix III, and here we proceed direct to a short summary, and the general conclusions.

Broadly speaking, the men in a machine shop to-day can be graded into seven classes in order of skill and craftsmanship.¹

¹ It may be noted here that no special consideration is given in this section to the use of jigs, since the degree to which they make skilled work unnecessary varies enormously in different cases.

- 1 Fully qualified turners (including under this head men working universal and certain other grinding machines, certain boring machines, and universal milling machines).
- 2 Men on semi-automatic turret and capstan lathes, who do their own setting up.
- 3 Planers, Slotters, Borers, Millers.
- 4 Drillers on radial machines with an arm over 5ft., and shapers.
- 5 Other drillers.
- 6 Pressers and stampers, and automatic machine minders.
- 7 Labourers.

The whole of classes 2 and 4 and the greater part of 6 were not in existence forty years ago, and grinders and millers would have been very few in number. The obvious question arises as to how the operations now done by these men were effected in days gone by. The answer is twofold: first, that a great deal of it was not done at all, as it was not required, e.g. fine grinding, and secondly, that the greater part of that which was done, was done on the ordinary lathe by the turner, though a good deal of the miller's work used to be done by the planer. Hence the province of the turner proper has been lessened more and more by the combined progress of business organisation and machine design. The natural result is that he has ceased to be the all-round workman that he used to be, and this change has been hastened by the direct influence of the revolution on the work that remains to him. For where machines have not yet been invented which make it possible to dispense altogether with a skilled operative, there has been an increasing tendency towards a diminution in the part played by individual craftsmanship, as is well illustrated by the conversion of the problems of "feed and speed" into a rule-of-thumb calculation. Whereas the old turner used to do his own marking out, this is now done by a specialist; and the constant inspection which now takes place after every operation relieves the

turner, equally with all other machinists, of much responsibility which the individual workman formerly carried. In addition, even where real mass production is not yet in force, the tendency is towards a greater individual specialisation, for not only are orders for any one article larger in quantity, but it pays the management to avoid the extra time taken by a man in setting up an entirely new kind of job to which he is not accustomed.

These are the general lines of thought which lead older men, looking back on their early years, to assert that the turner of to-day is in the same category as the machineman of thirty or forty years ago, and that craftsmanship is gone beyond recall. Against this, however, must be set certain other propositions. First, all men consider the rising generation degenerate, in the light of the imagination of their memories. On this score the opinions of men who are now foremen in charge of the modern workman must be to some extent discounted, as also for the reason that they are probably foremen now, largely because they had a skill above the average. Secondly, the turner of to-day has to work to more complicated designs than did his predecessors. "Blue prints" are more difficult to read, and so he must be better educated, and more intelligent. Similarly, modern machines are very much more complicated, and though the additional skill needed for setting up may be discounted to some extent, a higher standard of intelligence is certainly needed to grasp a more intricate series of movements. The same sort of considerations apply to the modern use of gauges. Yet, when comparing the modern turner with other grades, it must be remembered that any higher standard of average intelligence can only be due to the advance in education during the period, and is therefore a property common to the whole of the present generation, and not peculiar to a particular grade of workmen. The modern turner's skill lies in the stages preparatory to the actual operation of cutting. He must think out the quickest and simplest order in which the various operations can be done; he must or-

ganise his work as the management must do theirs, and even this simple organisation demands a longer view, and a more trained mind, than were required forty years ago. He must fix his work in the light of these reflections, and here there is great scope for individual skill. Finally he must possess a knowledge of his machine, which often means the acquisition of a formidable mass of facts.

The skill of the modern turner, therefore, has changed both qualitatively and quantitatively, the former in that brain work, knowledge and experience, are required, rather than manual dexterity, the latter in that he has become a specialist, and is no longer the all-round man that he was. On the whole, there cannot be much doubt that as compared with grades whose work has not altered appreciably, the turner of to-day shows retrogression in regard to his craftsmanship, even in the broadest sense of that term. On the other hand, though there have been great alterations in the way in which work is distributed among the various classes of machinists, the planer to-day probably needs neither more nor less craftsmanship (again using this term in its broadest sense) than he did forty years ago, and the same is generally true of borers, slotters, shapers, drillers, pressers, and stampers. In regard to milling, the actual machines to-day are much the same as when they were first introduced—improvement has been confined mainly to the tool itself. Generally speaking, the evidence seems to be against the idea that there has been any substantial alteration in the relative skill of the different grades in the machine shop, except in the case of those grades which to-day rank as fully skilled turners. Hence, if skill and craftsmanship exercise any effect on wage rates, one might expect to find that during the last forty years the rates for semi-skilled machinists and labourers have advanced relatively to the rate for fully skilled turners.

There is perhaps one special exception to these broad general conclusions. Thirty years ago, the turner for the most part himself made any special tools which he required, but the part now played by cutting tools is of enormously

greater importance as compared with the other factors in production. As a result the making of cutting tools has become a very fine art. The methods of mass production can only encroach here to a very limited extent, and there is no sphere in the tool room for the mere automaton. The turner in the modern tool room may be said to resemble fairly closely the turner of thirty years ago. Though the tool room turner of to-day is of course working on better machines, and with the scientific advantages now at the disposal of all modern machinists, yet he cannot become a specialist, for his work is infinitely varied, and the standard of accuracy required is certainly higher than ever. Hence one might expect to find that the rates for skilled men in the tool rooms have risen more than the rates for the corresponding grades in the machine shop proper, and that the skilled man in the tool room has not lost ground relatively to the semi-skilled or unskilled man, as in the case of the ordinary turner.

f The Fitting and Erecting Shop

The last forty years have seen changes in the fitting and erecting shop at least equally as great as the changes which have taken place in the machine shop, and perhaps more far reaching in their effects on skill. Accurate machining has to a great extent eliminated the need for that nice adjustment by the fitter with his scrapers, files and chisels, which was a supremely important function in the past. Many parts now go to the fitter in such a condition that he has nothing to do but fit them together with the aid of a spanner and a hammer. The old fitter in erecting a machine had to do a considerable amount of "fitting"; the modern fitter merely "erects." Some parts, however, still need real "fitting." Along with the higher quality of machining generally, there has grown the need for closer accuracy in the fit of the component parts of the product, which still demands, in the more accurate classes of work, the delicate touch here and there with the scraper, and the nice adjustment, which only a skilled man can give. In the main, however, this is confined

to parts of the finished product, and is done by a man working at a bench, who passes on his work to another man who simply bolts the piece into place. Yet both these men are graded as fitters. As compared with thirty years ago, therefore, a much more distinct line can be drawn between those men who may be termed bench fitters, and those who are simply and solely erectors. The bench fitter is certainly more akin as regards the nature of his work to the old general fitter, but of course his sphere of operations is far more narrowly confined, and his skill, experience, and knowledge have gradually become more and more specialised. The erector has become more specialised still. Many a bench fitter to-day spends his apprenticeship performing a very limited series of operations, and when he qualifies as a skilled man, that is all he can do. The modern erector's knowledge is likely to be confined to a particular class of machine; he may know the structure of a petrol engine through and through, but that is not going to help him if he seeks employment with a firm producing locomotives, since it is knowledge, and not manual skill, that is required. It is true that the modern fitter and erector use micrometer gauges, callipers, and many other instruments which thirty years ago were seldom seen outside the Physics Laboratory, but this again is a question of general education and intelligence far more than of what may be termed skill. There is still a certain amount of really good class fitting work, demanding perhaps even higher qualities of the fitter than was the case forty years ago. From this, there is every class of work in descending grades. The work of the fitter to-day is far less homogeneous, and the vast bulk of the fitters of thirty years ago have become specialist erectors, requiring knowledge and experience, but not the manual skill and all round ingenuity of the past. There is really no one grade of workmen who can be called fitters, in the same way as there is a grade who can be called pattern-makers or moulders. The title fitter covers a multitude of sub-divisions, and applies properly to no one of them. Trade Union pressure, and that alone,

has maintained a standard rate for fitters as such, and these can be compared at different dates during the period, but it is impossible to draw any deductions as to changes in the skill of fitters relative to other grades of labour, and hence statistical comparisons from this point of view are meaningless. It is hardly an exaggeration to say that there is often as much difference to-day between two fitters working in two shops in the same town, or even in the same shop, as between a labourer and a pattern maker. Forty years ago there was some basis for a standard rate for all fitters; to-day there is absolutely none.

3 General Conclusions

From this general examination of the different departments of an engineering works, it would appear that the term "revolution" cannot be applied to all sections equally—on the contrary, it is only in connection with the machine and erecting shops that it can fairly be used at all. With the exception of the turner and the fitter, the last forty years has not therefore seen such vital changes in the skill required of engineering workers as is commonly supposed. But the change in the case of these two grades is considerable. Thirty years ago one could speak of a large and fairly homogeneous group of skilled men as fitters, but this grade has now become spread out into a large number of grades of specialists, with marked differences in degrees of skill and craftsmanship. On the average if one can be struck, the modern fitter is undoubtedly far less skilled than his predecessors. The turner also is probably less skilled, and one might expect to find the rate for turners, and the rate, or rates, for fitters falling away during the last thirty years from the rates for pattern makers, moulders, platers, and other grades of skilled men, as compared with whom the semi-skilled and unskilled workers should have remained in the same relative status. Part II attempts to show what changes in rates have actually taken place as compared with these forecasts.

SECTION II CHANGES IN WAGE DIFFERENTIALS

It is obvious that in studying the actual movement of wages in relation to the changes which have taken place in the skill of the different grades of workmen, it will be of little or no use to consider the period since 1914, because the greater part of the wage advances up to 1920 were in the form of flat-rate additions, and as a natural consequence the lower paid grades obtained a much more than proportionate increase. To some extent there was a genuine foundation for the relative advance of the semi-skilled grades, owing to the great increase of mass production methods during the war, and the consequent diminution of skilled work. But with the change back to the more varied production of peacetime, the demand for real skill re-asserted itself, though undoubtedly the experience of munition making gave a big impetus towards the adoption of mass production methods over a much larger sphere than in pre-war days. From 1920-26 wage reductions were also in flat-rate form, and so the pre-war wage differentials were being gradually restored though it is extremely doubtful whether they will ever be completely re-established. Since, however, it is desired to elucidate the position as it was developing under normal conditions, the abnormal period since 1914 may virtually be neglected.

The available wage data relating to the engineering industry in the pre-war period has already been summarised. Broadly speaking, there are the results of the two wage censuses in 1886 and 1906, and the records of trade union standard rates, which are reasonably extensive and continuous since 1893. For the present purpose, it is only necessary to contrast the position at the beginning and end of the period, and a study of the wage censuses will cover twenty out of the twenty-seven years between 1886 and 1913. It was concluded in the previous section, that while the work of several grades, and therefore the skill required of them, had altered little since the eighties, the smith had been least affected by the changes in technique and methods of pro-

duction. In the first two columns of the following table, the average time rate for smiths throughout the United Kingdom is taken as 100 at each date, and the average time rates of the other grades are expressed as ratios to this base. In an industry where piece-work has always been regarded by the unions as an intrusion rather than as a recognised method of payment, it would be justifiable to assume that wage differentials would be regarded in terms of time-rates, and that therefore a study of time rates alone would be sufficient for the present purpose. But in view of the growth of piece-work, and the great variations in the proportions of piece-workers in different grades at different periods, as also in the average excess of full time piece-work earnings over time-rates, columns III and IV have been added to show the relative positions of the different grades if piece-work earnings, as well as time rates, are taken into account. These combined average earnings are reached for 1886 by a direct weighted average, but in the 1906 census men who worked less or more than normal time are shown as well as those who worked normal time, and as a more than proportionate number of piece-workers fall into the former division, it has been assumed that all piece-workers, if they had worked the normal time, would have averaged the same earnings as those piece-workers who actually did work normal time, and the same with the time-workers.

RELATIVE POSITIONS OF DIFFERENT GRADES.

	According to time rates.		According to full time Earnings.	
	1886	1906	1886	1906
Smiths	100	100	100	100
Pattern Makers ..	107	110	102	99
Moulders	107	109	104	101
Turners	103	100	99	97
Fitters	101	102	98	96
Machinemen	76	80	74	78
Labourers	62	60	60	56

These statistics must be regarded as approximate only, for the 1886 wage census returns afford only a small sample in some cases. Again, some districts show considerable variations which cancel out in these averages for the whole industry. But taking the industry as a whole, it is quite clear that judged either by time-rates or full-time earnings, the relative positions of the different grades remained virtually unaltered during this period of twenty years, despite the relative changes in skill which had certainly developed to a most marked extent, even by 1906. From 1906 to 1913, an examination of the changes in the trade union standard rates shows that during the considerable and general increase of wages which took place from 1911-13, all grades of skilled men secured almost exactly the same percentage advance ; their relative positions, therefore, still remained virtually unaltered. Even in the years immediately preceding 1914, standardisation of rates for the various grades of machinemen had only been developed to a limited extent, but an examination of such evidence as is available, suggests the conclusion that the semi-skilled obtained roughly the same percentage increase as the skilled, though if anything slightly more, as in the previous twenty years. Similarly the labourers obtained, if anything, a slightly smaller percentage increase. On the whole it may be concluded that from 1886 to 1913 there was no appreciable change in the wage differentials between the various grades of workers.

This general conclusion, however, requires to be supplemented in respect of certain details. In the first place, it may be observed that in 1913, loam-moulders in all districts were rated two shillings higher than the ordinary sand moulders. Similarly turners and fitters in tool rooms almost always received two shillings more than the ordinary standard rate. Loam moulders received this two shillings extra at least as far back as 1886, but two shillings, of course, meant a relatively smaller difference in 1913 than in 1886, owing to the general advance in wages. Extra payment to tool-room workers was probably not so universal in 1886, for as has been

explained above, the tool room was not then a distinct department, but there is evidence that in many shops where extra payment was made in the early years of the period, it was the same two shillings extra as in 1913. While these extra payments are a clear recognition of superior skill, it is nevertheless obvious that they are of a very arbitrary and artificial character, a conclusion which is further strengthened by the fact that the same differential of two shillings has continued since 1914, despite the great fluctuations in current wage rates.

Secondly, it should be realised that the title, "machinemen," is applied to a large number of grades of workers, requiring vastly different degrees of skill. It includes planers and millers, whose skill must be reckoned nearly as great as that of many turners, as well as semi-automatic machine-minders, and drillers on the simplest kind of work. In this case, an average may be somewhat misleading, in the sense that opposing or different tendencies peculiar to some of these sub-grades may be neutralised. It would therefore be more satisfactory if this group could be sub-divided. This is not possible directly, for the 1906 census does not distinguish the different sub-grades, and as has been said, the records of standard rates afford insufficient data. In the above table, comparison was effected by combining the different grades of machinemen in the 1886 census: it is now proposed to reverse this procedure, and to try and split up the all-embracing machinemen group in the 1906 census. The attempt must be confined to time-workers, as the 1906 census does not give sufficient detail to apply the following procedure to time-workers and piece-workers combined. Broadly speaking, there are three main grades of semi-skilled machinists: (a) planers, borers (other than qualified turners), slotters, and millers (other than on universal machines); (b) drillers, shapers, and men working semi-automatic machines, who do their own setting up; and (c) the minders of fully automatic machines, and the lowest class of machinists such as pressers and stampers. This last group can hardly be reckoned in any reasonable sense as even semi-skilled, but they form a

fairly large proportion of those under the general heading "Machinemen." It would not be unreasonable on general grounds to suppose that in the 1906 census the upper quartile of this whole group is somewhere near the average for grade (a), planers, etc., and that the median is somewhere near the average for grade (b), drillers, etc. This is admittedly an arbitrary method of procedure, but the results can be roughly checked by averaging all the rates for planers in the A.S.E. standard rate book for 1906, omitting those which are not distinctly lower than the turners' rate on the ground that such equality represents an aspiration rather than a fact, even though it was doubtless true of a number of shops. If the planers' rates are then averaged according to the 1906 census districts, no great discrepancy with the upper quartiles of the machinemen group is observed, except in the Tyne, Tees, and Wear district.¹ This check is admittedly very slight, but such as it is, it supports the proposed procedure. There are unfortunately so few standard rates quoted for drillers that it is impossible to check the accuracy of the median as representing grade (b), but if anything, it would appear that some division rather lower than this would be more truly representative of this grade. If then the upper quartile and the median of the 1906 census are compared with the 1886 rates for planers and drillers respectively, it is seen that during the period the planers obtained an increase of 25 per cent., and the drillers of 31 per cent., as compared with an average increase of 24 per cent. for all machinemen. The differences are not particularly great, and too much reliance cannot be placed on this method of treating the 1906 wage census, but it would seem that grade (b), representing the middle tier of the semi-skilled, improved their position as compared with the average of all machinemen, and therefore as compared with the various grades of skilled men, while the lowest grade of semi-skilled, who must have received considerably less than a 20 per cent. increase since the average of all is only 24 per cent., lost ground some-

¹ No explanation of this discrepancy can be offered.

what as compared with the skilled men, just as their cousins, the ordinary labourers, tended to do.

Finally it may be mentioned that the relative positions of the boiler-shop grades also remained more or less the same, though the semi-skilled grade of rivetters may have slightly improved their position relatively to the platers, who, however, continued to hold the same position relatively to the other grades of skilled men.

The results of this study may be summarised as follows. If wages had moved in accordance with changes in skill, there should have been little appreciable change in the differentials between patternmakers, moulders, smiths, machinemen, labourers, and the boiler-shop grades, though, if anything, the patternmakers and moulders should have slightly improved their relative positions; on the other hand, the turners should have lost ground considerably, and the once more or less homogeneous grade of fitters should have become disintegrated into a series of groups, at rates varying from a little above the labourer's rate up to, and even beyond, the smith's rate. Actually a definite rate for fitters has been preserved, and is still approximately on a par with the smith's rate, and the range of fitter's rates in 1913 was little greater than the range of the rates of other skilled grades.¹ The average rate for turners does, if anything, show a tendency to drop back relatively to the smith just as the time-rates for pattern-makers, moulders and machinemen show a tendency to advance, but with patternmakers and moulders this is reversed when account is taken of piece-work earnings, and in any case all these movements are too small to have any real significance. For practical purposes, it may be said that there was no disturbance in the structure of differential rates during this period of nearly thirty years.

Undoubtedly trade union policy had a bearing on this maintenance of the status quo. The turners and the fitters formed the backbone of the Amalgamated Society of Engineers,

¹ e.g. as judged by the quartiles in the 1906 census as well as by standard rates.

and it was not to the interest of the turners that the fitters should disintegrate into a series of groups with varying wage rates, for the example would strike too near home, quite apart from the probable loss of organised bargaining power. Equally it was not to the interest of the fitters that the turners should abandon their equality of status with the other skilled grades, for that would have completely compromised the fitters' position, which was in reality even less tenable than that of the turners. Numerically these two grades far outweighed the smiths and other craftsmen who were also mainly organised in the A.S.E. The patternmakers belonged partly to the A.S.E., and partly to other unions: the moulders and boilershop grades had their own craft unions. But the A.S.E. really dominated the industry from the trade union point of view, and the other craft unions could not obtain the support of the A.S.E. for demands which would in any way compromise the claim of the turners and fitters to rank equally with other fully-skilled grades. Again, in addition to the growing weakness of their own position, the turners and fitters had also to face the growing numerical strength of the machinemen. As apprenticeship regulations became more and more difficult to enforce, the A.S.E. was driven to compromise, and in 1901 a new class of members was instituted, which could be joined by any man who had been working not less than two years on one type of machine, and who was receiving not less than 70 per cent. of the standard rate for turners; these were the universal minimum conditions, but it was left to the option of the branches whether they would take members at this minimum or only at a higher, an option which was not often exercised. In the years immediately before the war, there was a rapidly growing discontent with their inferior position among these better class machinemen. The turners and fitters, however, not only dominated the counsels of the A.S.E., but the machinemen would have had small bargaining power if they had formed a union of their own. Thus the turners and fitters were able to rally the whole influence of trade unionism,

and to maintain at least a nominally united front in favour of that maintenance of the status quo, which was, from their point of view, so eminently desirable.

But it would probably be a mistake to seek an explanation solely in terms of trade union policy and organisation. A cursory examination of the problem of wage differentials in other industries strongly emphasizes the far-reaching effects of sheer custom, and its domination over men's minds. The fact that all the so-called skilled grades in an industry usually get approximately the same wage rates, is at least *prima facie* evidence of a certain artificial element in the wage structure. It is extremely unlikely that the economic factors of supply and demand would automatically produce this exact similarity of wage rates. Further, it cannot be supposed that the increase of education, the increase in the financial resources of even the ordinary wage earner, changes in social habits and so on, have not altered the economic equilibrium between the skilled and unskilled grades in, for example, the building industry, even though there has probably been little change in technique or methods of production ; and yet the labourer has received two-thirds of the craftsmen's rates for at least a century, and possibly for several centuries. One cannot help being struck by a sense of the artificiality of the wage structure within any one industry, if not throughout industry as a whole, and in respect of the engineering industry, it is difficult to suppose that the influence of consciously directed trade union policy would have been at all considerable if it had not been reinforced by the domination of custom, not only in the minds of the wage-earners, but also to some extent in the mental attitude of their employers. We do not realise the little changes in everyday life which sap the logical foundations of our ideas, and custom has time to consolidate the structure before those foundations have completely crumbled. And so the structure remains, resting on the surface of the ground, to outward appearance as solid as ever, until there comes a hurricane. So it has been with wage structures, until the hurricane of the war, and the deluge of paper money.

CHAPTER VI

CORRELATIONS AS A GUIDE TO WAGE THEORY

THE correlation of changes in wages with changes in the other measurable factors in the life of an industry, should provide valuable assistance in discovering the immediate causes of those wage changes, and so in the formulation or verification of any general theory of wages. It is not to be supposed that any theory of wages, which was merely deduced from such correlations, would be adequate, for there are many factors, such as custom, trade union organisation and policy, and so on, which though not statistically measurable, exercise an influence on wage determination. But within fairly obvious limits, one would naturally expect to discover from such correlations at least some broad hints as to the immediate causes which affect wages in particular industries under normal conditions, and this would be useful to the realist who wishes to work from the particular to the general, and equally to his *vis-a-vis*, who should verify his generalisations by applying them to particular cases, though perhaps he is apt to shirk the task. Unfortunately, this line of investigation is at present for the most part abortive, mainly because the necessary statistical data is not available, or not available for a sufficiently long and suitably normal period. A good deal more of the requisite information has become available in the last few years, but conditions have been so abnormal that any conclusions which might emerge, would, as likely as not, be extremely misleading. In the pre-war period, when monetary and other disturbances were of less significance, there is an extreme paucity of information. For only one of our five industries is there any information as to profits, and the coal-mining industry, as the exception, is so peculiar, owing to the consistently wide variations between the various firms and the different coalfields, and owing to the abnormally

great degree of fluctuation from time to time, that the information would be difficult to use, even if its utility was not displaced for most purposes by the simpler series of fluctuations in the price of coal. For the railway service, statistics of net as well as gross receipts are available, but the former are of little use without corresponding statistics of the true volume of capital employed. For the building, cotton, and engineering industries, there is no direct information as to profits, though as regards cotton spinning there is an indirect source of information, to which reference will be made shortly. There is also no adequate information for any of these industries, except the cotton industry, as to the price of raw materials. For the coal-mining industry and the railway service, there are annual returns of the numbers employed, but for the building, engineering and cotton industries, only the decennial occupational census, though for the last-named this may be supplemented by certain periodical returns of numbers employed in textile factories. As regards unemployment, trade union returns supply reasonably adequate information for the building and engineering industries, and for the coal-mining industry there is the series of days worked by the mines, which is some guide; but there is no sufficient record of short time or unemployment in the cotton industry; in the pre-war period unemployment was, of course, a rare occurrence in the railway service. The output of coal is available, but for the cotton and engineering industries, information as to output is limited to the statistics of exports, which are not a very safe guide; while for the building industry there is no information at all. Hence, a careful study for each industry of the relevant statistics which are reasonably complete for the period 1886-1913, yielded little or nothing of real interest, save perhaps in the case of the cotton industry. These studies did of course reveal such obvious and well-known facts as the close correlation between the wage rates of coal-miners and the price of coal, and in all the industries the results added further confirmation, if it was required, to such propositions as the lack of correspondence between changes in wages and

changes in the cost of living, or of any close connection between changes in wages and numbers employed. Further illustration was provided of the varying relationship between wage rates and unemployment in different industries, which was discussed in Chapter III, but with the exception of the cotton industry, the results in general do not appear to warrant greater attention, or to deserve the space needed for their publication. In the case of the cotton industry, however, a few interesting conclusions emerged, and a brief summary is here given.

For the cotton industry, statistics even in the pre-war period are much more plentiful than for any of the other industries. An examination was first made of the following series: the annual quantity of raw cotton imported, its annual value, and the average price per pound, the annual quantity of yarn exported, its value, and the price per pound, the "margin" between the price of raw cotton and the price of yarn, the annual volume of piece goods exported and their value. These series were compared with the Board of Trade index numbers of changes in nominal wage rates, but since this combines both the spinning and the weaving sides of the industry,¹ comparison was also made with the Oldham Spinning List, and the Uniform Weaving List. The results revealed little or no connection between changes in wage rates and any of these other factors, except the "margins" and the quantity of raw cotton imported on the spinning side, and the quantity of piece goods exported on the weaving side. The following table shows these relevant series from 1886 to 1913 as index numbers based on the figures for 1886 (= 100): column 1 is the quantity of raw cotton imported, column 2 the "margins" between the price of raw cotton (obtained by dividing the quantity imported by its value) and the price of yarn (obtained by dividing the quantity exported by its value),² column 3

¹ The index also includes the linen and jute manufacturing industries, though of course owing to the great numerical preponderance of employment in the cotton industry, the effect is almost negligible.

² This is a somewhat rough and ready method of calculating the "margin," and is open to various objections, but it seems adequate for the present purpose.

the level of the Oldham Spinning List, column 4 the quantity of piece-goods exported, and column 5 the level of the Uniform Weaving List.

INDEX NUMBERS 1886-1913

	Raw Cotton Imports quantity	Spinning Margin	Spinning List	Piece-goods Exported quantity	Weaving List
	(1886=100)				
1886	100	100	100	100	100
87	104	100	100	101	100
88	101	98	106	104	100
89	113	98	106	103	100
1890	105	105	106	106	100
91	116	98	112	101	100
92	104	89	112	100	100
93	83	96	108	96	101
94	104	91	108	110	101
95	102	84	108	104	101
96	102	91	108	108	101
97	101	91	108	99	101
98	124	89	108	108	101
99	95	91	112	112	103
1900	103	111	118	104	103
01	106	104	118	111	103
02	106	96	118	110	103
03	105	105	118	106	103
04	114	116	118	115	103
05	128	116	118	128	111
06	117	129	124	129	111
07	139	149	129	130	111
08	120	144	129	114	111
09	128	120	124	118	111
1910	115	114	124	124	111
11	128	166	124	137	117
12	164	167	124	145	117
13	127	169	124	146	117

Considering in the first place the first three columns, a careful study reveals some evidence in favour of a theory that movements in nominal wage rates are partly a resultant of the fluctuations in the quantity of raw cotton imported and in the size of the margin. From 1886 to 1887 imports increased, while the margin and wage rates remained steady : in the next year wage rates advanced, though both the other series declined. From 1888 to 1889 wage rates remained steady, imports jumped and then fell off, the margin was steady but then rose sharply. Consequently in 1890-91, when imports again increased, wage rates immediately advanced, owing to the earlier increase in the margin, though it was then contracting again. In 1892 to 1893 when imports declined greatly, wage rates also declined, but not so much as might have been expected because the margin was rising. Similarly the fall in the margin in 1894 was, so to speak, balanced by an increase in imports, and wage rates remained unaltered. In this way it is possible to trace a connection year by year. When imports and the margin move together, wage rates follow, though with a certain amount of time lag ; when imports and the margin move in different directions, rates are likely to remain steady, unless one moves very much more than the other. The quantity of imports is not, of course, any guide to the profitable character of the trade, but it is indirectly an index of employment. Similarly the margin is no guide to the state of employment, but it does indicate fluctuations in profits. The interaction of these two factors is certainly one of the most important influences which govern the movement of rates. The employers in determining whether rates can be raised or must be lowered, will naturally have their attention fixed primarily on the margin—they will only consider the volume of cotton likely to pass through their mills, as it affects the proportion of the total margin which will be taken by their standing charges. But to the operatives, the volume of work likely to be available is a most important factor, perhaps the most important : hence when the margin rises, it does not follow that they will demand an increase in rates, since they may be afraid lest

it should adversely affect the amount of employment. Only when both imports and the margin are increasing together, are the operatives in a really strong position to demand an increase in wage rates, but they may be able to resist the employer's demand for a reduction in rates consequent on a contraction of the margin, if the volume of cotton to be dealt with is large, and therefore employment good. On the whole, imports seem to be the more dominant of the two factors, for, at least as regards wage rates, there are conspicuous cases where the margin has moved violently and imports very slightly, but wage rates have remained the same: this is particularly true when the margin contracts, for as in other industries during this period, the rate tends to rise more steadily than to fall, though the difference is very much less marked. This last remark applies even more clearly to wage rates on the weaving side, which are obviously regulated by very different factors to those which govern the spinning rates. Throughout the period the series in column 5 shows no fall, and until 1904 the amount of the rise is extraordinarily small, compared either with spinning rates, or with wage rates in other industries.¹ In so far as the quantity exported is a reasonably accurate guide to fluctuations in total production (and during this period it is probably not far wrong, except that it somewhat exaggerates the changes), it is clear that fluctuations in trade activity are not met by corresponding adjustments of wage rates. Unfortunately there is no available index of the profitability of the weaving side of the industry: for various reasons, which it is unnecessary to detail, the margin between the price of yarn and the price of piece goods exported is not so adequate or reliable a guide, as the corresponding margin on the spinning side. While advances in the weaving list have usually taken place about the same time as advances in the spinning list, there are some notable exceptions, and it is difficult to accept any such proposition as that weaving rates merely move in sympathy with the spinning rates, though in a less degree since the former are

¹ Except the Railway Service, in which, however, there was a far greater reduction of hours.

never reduced. Clearly in their nature weaving rates resemble wage rates in the building industry or the railway service, and we must probably look to causes beyond the realm of statistics, or at least of the available statistics immediately concerning the industry.

Some further light is thrown on these matters by an examination of earnings as distinct from nominal wage rates. Unfortunately no record of the former reaches back beyond 1905, in which year the Board of Trade instituted its voluntary returns as to numbers employed and wages paid in one week in each month. Though on a voluntary basis, these returns afford a reasonably large sample. In the following Table A, index numbers have been recalculated on the basis of 1905 for the quantity of raw cotton imported (column 1), and the spinning margin (column 2): column 3 shows averages of the earnings per head in the spinning department in the monthly returns for March, June, September, and December of each year, while column 4 shows the changes in nominal spinning wage rates. Table B shows in column 1 the quantity of piece goods exported, in column 2 the average earnings in the weaving department, calculated in the same manner as for the spinning department, and in column 3 the changes in nominal weaving wage rates.

TABLE A
INDEX NUMBERS 1905-13 FOR SPINNING SECTION.

	Raw Cotton Imports quantities	Spinning Margin	Earnings	Spinning Rates
	(1905 = 100)			
1905	100	100	100	100
06	91	111	101	105
07	109	128	105	110
08	94	123	96	110
09	100	103	93	105
1910	90	123	92	105
11	100	142	104	105
12	128	144	105	105
13	99	145	105	105

TABLE B

INDEX NUMBERS 1905-13 FOR WEAVING SECTION.

	Piece Goods Exported quantity	Earnings	Weaving Rates
	(1905=100)		
1905	100	100	100
06	101	102	100
07	102	100	100
08	89	93	100
09	92	97	100
1910	97	95	100
11	107	105	105
12	113	112	105
13	115	112	105

This period for which the figures of earnings are available, is all too short, but it covers a complete cycle of trade, for it opens during the initial stages of a boom, contains the whole of the subsequent depression, and shows the gradual recovery to a generally active and prosperous condition of trade. The figures more or less speak for themselves, and detailed comment is unnecessary. Probably much of the apparent discrepancy between spinners' earnings and the volume of raw cotton imported, would disappear if the quantity of cotton actually consumed could be substituted for the latter, i.e. if correction could be made for changes in stocks. As it is, Table A in general supports the previous analysis, though it seems somewhat surprising that nominal wage rates were not increased in 1912-13. Similarly Table B shows the irregularity of earnings as distinct from the steadiness of nominal wage rates, though again the correspondence between earnings and volume of production is less exact than it probably would be if a more accurate measure of production were available. These two tables, however, do demonstrate very clearly the varying relationship between nominal wage rates and earnings, which was discussed in Chapter I, and the safety valve function of the former.

PART II

A STUDY OF COLLECTIVE BARGAINING DURING THE LAST FORTY YEARS

CHAPTER VII

THE GROWTH OF COLLECTIVE BARGAINING

SECTION I. INTRODUCTORY

ACCORDING to the classical definition, a trade union is "a continuous association of wage-earners for the purpose of maintaining or improving the conditions of their working lives."¹ Broadly speaking, the efforts of trade unionism have been aimed at securing such improvements either at the hands of the State, or at the hands of the employers of labour in each industry. Until recent years the State has virtually confined its sphere to the maintenance and improvement of health and safety. All improvements in wages, hours, and working conditions have had to be obtained direct from the employers concerned, and the basic method by which trade unionism has sought to obtain these improvements, has been the establishment of universal collective bargaining. The collective as opposed to the individual bargain between employers and employed, is the root idea of trade unionism, and from one extremely important aspect, the history of trade unionism may be characterised as the history of the development of collective bargaining. Trade unionism, by introducing the collective bargain, forced employers to adopt trade union organisation amongst themselves, and though some employers' associations have gradu-

¹ S. and B. Webb, *History of Trade Unionism*, p. 1.

ally learnt to appreciate the advantages of collective bargaining perhaps even more keenly than some trade unions, and have in consequence influenced and stimulated its development, especially in recent years, yet the collective bargain remains essentially the offspring of trade unionism, and indeed embodies the major part of its activities during the last century.

The neglect of this aspect of trade union history is somewhat extraordinary. Mr. and Mrs. Webb in their "History of Trade Unionism," were viewing their subject as a new social movement, and in their "Industrial Democracy" they demonstrated its inner significance and its vast potentialities. In neither volume is there any adequate account of the growth of collective bargaining, or any appraisal of its effects in terms of wages or hours or any analysis of the methods of their determination and regulation. From these books the contemporary influence of trade unionism can only be judged by the more spectacular achievements which constitute turning-points in the development of trade unionism as a social movement. From Mr. and Mrs. Webb's standpoint, and in view of the enormously wide range of their study, this was inevitable and right, but it is most regrettable that other economic historians should have so faithfully followed in the footsteps of these great pioneers, and without similar justification ignored the existence of other, though admittedly less important, standpoints. How far was the trade union standard rate of wages actually operative in different industries and in different localities, or in other words what proportion of men were paid below these rates? How far were the standard rates maxima as well as minima? To what extent were they embodied in written agreements between the employers, individually or as organised bodies, and the trade unions? What was the area to which the standard rates applied—a town, a district, or the whole country? What form did negotiations, if any, take? When did machinery for negotiations become permanent? If negotiating machinery existed, how much

real bargaining normally took place, or was it merely a channel through which employers announced their decisions? What new methods of determining or regulating wages were introduced as the result of collective bargaining, and were the new methods an improvement? These and other such questions must be answered in some detail before we can appraise the contemporary influence of trade unionism as expressed in the development of collective bargaining.

If there is not yet any adequate account of these aspects of trade union development, the position in respect of the growth of employers' associations is even worse, for no account exists at all. The reader will probably complain that the following pages exhibit the course of events mainly from the trade union end, and his complaint would be legitimate. But much research of an exceedingly difficult kind would have been required to produce a properly balanced account, and for shirking the task a reasonably sound excuse is available to one whose main interests are those of the economist rather than the economic historian. In the pre-war period, at any rate, it was the degree of organisation on the side of labour which largely set the pace in the development of collective bargaining. Organisation on the employers' side proceeded mainly in the manner and degree required to maintain an equality of bargaining power with trade unionism, and no more. It is not therefore very wide of the mark to think of the growth of employers' associations in terms of the development of trade unionism. Since 1914 this is a less reasonable proceeding, for the special conditions of the war period, such as the operation of various "controls," and the necessity for collective commercial contracts with the Government, stimulated organisation in general amongst employers, quite apart from the necessity of keeping pace with the unprecedentedly rapid growth of trade unionism both in numbers and activity. It is not, however, proposed to offer more than the merest sketch of these latter-day developments with which most readers will be personally familiar.

It is to be hoped, therefore, that the economic historians

will supply at the earliest possible moment the separate volume, or volumes, which the development of collective bargaining really merits. But since it forms an essential part of the background to a study of wages in practice and theory during the last forty years, some attempt must here be made to fill in the broad outlines, at least for the five industries which are the subject of the present study. It should, however, be clearly understood that what follows in this chapter is almost entirely a summary of what is already known, and does not claim to be a serious contribution to knowledge, much less an exhaustive account of even this small section of the field, while the development of collective bargaining in these five industries must not be regarded as typical of its development throughout industry in general.

SECTION II. THE POSITION IN EACH INDUSTRY IN 1886

Before attempting to sketch the state of collective bargaining in each of the five selected industries during the last forty years, it will be as well to recall briefly the general trade union environment of the middle-eighties. The "New Model"¹ unionism, introduced to the world by the engineering workers in 1851, had reached the zenith of its powers and utility some twelve to fourteen years before 1886. After the parliamentary victories of the Junta there seemed to be few worlds left to conquer, and trade unionism was enjoying the peaceful existence, so coveted by later middle-age. The

¹ The third quarter of the last century really saw the evolution of two "new models," that of the engineers, with the dominant characteristic of a centralised constitution but local bargaining, and that of the cotton operatives, with the dominant characteristic of a localised constitution but central bargaining. Mr. and Mrs. Webb rightly realised that the former was the more generally important, and gave it the exclusive use of the title.

serious trade depression in the latter half of the seventies had halved the power as well as the numerical strength of the movement, and had caused the disappearance of innumerable unions which had sprung up in the hour of victory, but simultaneously these disasters seemed to show that the existing best methods of organisation were the "ultimum bonum." The survivors, the great trade friendly societies in the engineering and building industries, and the essentially trade organisations of the cotton operatives and the Northumberland and Durham miners, could alike rejoice in a sea-worthiness which comparatively appeared so perfect that for other industries imitation seemed the only and sufficient requisite for success. Converted to laissez-faire and middle-class liberalism, the leaders interpreted the aims of trade unionism in more and more narrow terms, and were content with more and more limited objectives, both for the movement as a whole and in the daily conduct of the affairs of each individual union. Inter-union quarrels were, of course, to be regretted, but that seemed the price which must be paid for that efficiency and strength which sectionalism alone could provide. As regards organisation and policy alike, trade unionism had got into a rut. To most of the acknowledged leaders it seemed the right rut and a thoroughly good rut, but not so to those who were preparing to succeed them. If the advent of modern socialism be dated from 1881, it was soon an extremely forward child, for in 1886 it was shouting its first battle cries and preparing for the fray. In that year Mr. Tom Mann published "What a Compulsory Eight Hours Working Day means to the Workers," while Mr. John Burns published "The Man with the Red Flag," and was also imprisoned for sedition. In the General Election of that year, candidates for Parliament found themselves for the first time "heckled" as to their willingness to insist on Fair Wages,¹ while in another sphere

¹ S. and B. Webb, *History of Trade Unionism*. This work, and its companion volume *Industrial Democracy*, have provided the basis for these studies, and as specific references would be numerous, this general reference is considered sufficient.

Charles Booth began his momentous enquiry. The year 1886 was in fact the parting of the ways. But the new developments had not actually begun to take effect, and we can still catch the old unionism before it is swallowed up in the cataclysm of 1889.

THE BUILDING INDUSTRY¹

In 1886 the building industry was well organised compared with most other industries. Each of the principal grades of skilled men had its own national craft union, but with the exception of the masons and plumbers, there were also smaller rival unions, which between them might account for one quarter of the trade unionists in any grade. The painters were organised in innumerable small local unions with loose federation in some districts. The labourers, however, as is true in nearly all industries at this date, were completely unorganised, and in the building industry they form nearly one-half of the total employed. While, therefore, the percentage of trade unionists in the industry as a whole appears small—probably not more than 7-8 per cent.²—it is doubled if only the skilled men are considered. The employers were organised in local district associations, sometimes federated direct with the National Association of Master Builders, sometimes indirectly through regional federations. But though there was organisation on a national basis both amongst employers and employed, negotiations on wages and conditions were conducted by the local employers' association and the local branches of the trade unions: the national organisations were for practical purposes outside and above the sphere of collective bargaining. On the

¹ For the internal history of trade unionism in the building industry reference may be made to Postgate, *The Builders' History*.

² It is impossible to give an exact figure, since the total numbers employed in the industry are not accurately known.

employers' side the national organisation may be described as a general "trade defence" society, while the unions were so organised simply in order to operate the friendly benefit side of their activities. But although it was purely on a local basis, and although the local branches of the unions very rarely consented to sacrifice their independence in common negotiations, collective bargaining was a genuine reality in this industry as early as 1886. In the country districts there was still much individual bargaining, but in all the towns of quite moderate size, a very large majority of the men were paid at the standard rate for their grade. There was great variation both in wage rates and hours between different towns and different parts of the country, but within its sphere local collective bargaining was extremely effective. Of this there is fairly ample proof, some of which is cited in Appendix II A, and the causes of this phenomenon, almost unique in 1886, have been discussed in Chapter IV. Here it is only necessary to summarize the facts. Within each locality there was also an almost equal standardisation of the labourers' rates, not because they were the subject of collective bargaining, for as has been said, the labourers were completely unorganised, but because of the general tendency towards a common level of unskilled wage rates in all industries throughout a district, supplemented by certain economic characteristics of this industry which partly account for the local standardisation of skilled wages. For all grades wage rates and the period of engagement were by the hour, and once agreed a rate continued to operate until revised—there were no formal agreements binding both parties for a given period of time. Nor was there any recognised system of wage regulation: alterations were demanded by either side as and when the state of the labour market, and the state of trade in the locality, appeared to provide an opportunity.

THE COAL-MINING INDUSTRY¹

The coal-mining industry had been hit particularly hard by the trade depression at the end of the seventies. The immediate result was the almost complete disappearance of trade unionism except in Northumberland and Durham. A later result was to cause a great revival of trade unionism. At this time wages were automatically regulated by the price of coal according to sliding scales, and consequently as prices fell lower and lower, wages fell, and the miners began to feel that at all costs this system of regulating wages must be altered. Opposition to the sliding scale system thus gave the stimulus to reorganisation. In 1881 the Yorkshire miners united, and terminated their scale: Lancashire followed suit, and in 1885 the Midland Federation. In other districts a beginning of reorganisation was made. But it is easy to over-estimate the effective influence of trade unionism in 1886. Though in Northumberland and Durham the unions were indeed conducting negotiations on a highly organised basis with the employers, and had an effective voice in the general conduct of industrial relations, in Yorkshire, Lancashire, and the Midlands the new organisations were numerically weak, and except on the general question whether wages were to be regulated automatically by sliding scales or by ordinary negotiations, carried little weight. The comparative readiness with which the employers gave up the sliding scales was due in the main to the realisation on their part that the regulation of wages was in any case effectively under their sole control. West Scotland was virtually unorganised, and in South Wales there were only a few small local unions, each pursuing an independent course without much effect. In the smaller coalfields there was little or no permanent organisation. Generally speaking, except in Northumberland and

¹ In this and the subsequent sections on the coal-mining industry reference may be made to the present author's *Wages in the Coal Industry* where further references are also cited. For Northumberland and Durham reference may also be made to E. Welbourne *The Miners' Unions of Northumberland and Durham*, and to S. Webb *The Story of the Durham Miners*.

Durham, nothing was being done to establish standard minimum rates for the district, and the number of agreed price lists was very small. With the same exceptions such organisation as existed was confined to the skilled coal-getters. The unions had little effect on the day-to-day conduct of the industry at the pits, and they were only able to exert a very small influence on the general problems of wage regulation. At a vast number of pits, no formal price lists were ever published, much less formally agreed on by representatives of even the men employed at the pits. In most pits a customary day rate for coal-getters was recognised, but this provided only the roughest of standards. In their own interests, the employers operated uniform district changes in the level of the skilled men's rates, since competition for labour was frequently keen owing to the rapid expansion of the industry. Similarly the available supply of labour was the dominant factor in the fixing of unskilled rates. Only in Northumberland and Durham was there collective bargaining worth the name, and there it was so remarkably well organised and effective as to afford the most striking contrast to conditions everywhere else.

THE COTTON INDUSTRY

In the cotton industry, trade unionism in 1886 was on the threshold of big developments. The mule-spinners were strongly organised in district associations, and for some years wage negotiations had been conducted for the industry as a whole, though the Amalgamated Association of Operative Cotton Spinners had not yet reached the zenith of its development or power. Amongst the weavers the local organisations had just united to form the Northern Counties Amalgamated Association of Weavers, but the numerical supremacy of the women operatives made trade union organisation much more difficult than among the male mule-spinners. For the same reason, trade unionism had not yet taken firm root among the card- and blowing-room operatives, but the establishment

of that Amalgamated Association was just taking place. Amongst the numerically smaller grades there were some old-established craft unions, but most were on a purely local basis and not very effective. The employers were organised locally, and in four important associations—two concerned mainly with spinners and two with manufacturers—and each pair was becoming accustomed to unite in common negotiations on wages and conditions. Both sides were, therefore, relatively well organised, and collective bargaining had already become an established feature of the industry, especially in that continuous every-day form which the price list system both demands and develops. Price lists in a crude form had been in operation almost since the beginning of the century, and by the middle of the century the majority of firms had private lists of their own for all the principle operations. Then came the transformation of these lists into consolidated agreements, negotiated on an organised basis.¹ The process consisted in the application of one chosen list over an ever wider sphere. In the sixties the majority of firms in one district after another adopted the same price lists for the operations of spinning and weaving. This was followed by the same development among the districts. By 1886 it had proceeded furthest on the spinning side, where only two lists of importance were in operation. On the weaving side, there were at least a dozen or more, but the Blackburn List held a very great supremacy for plain goods. Apart from these two main operations, private lists, or lists accepted by a small number of adjacent firms, still held the field in 1886: neither for the card-room males, nor the women frame-tenters, nor the ring-spinners, nor the operatives engaged in the numerous processes preparatory to weaving, were there any collective agreements, for trade union organisation was insufficient. Broadly speaking, the wages of these grades fluctuated with the changes in the level of the spinning lists or the weaving lists, according to whichever side of the industry the particu-

¹ Much of the information on this question was drawn explicitly or by inference from G. H. Wood, *History of Wages in the Cotton Trade*.

lar grade belonged, and trade union organisation was sufficiently strong among the spinners, and to a less extent among the weavers, to ensure more or less uniform changes in the level of all the main lists at the same time. Wages were, of course, adjusted separately for the two main divisions of the industry. The existence of many separate lists, and the still wide kingdom of the private lists, meant, however, considerable variation, not only in the actual rate of remuneration at any given time, but also as regards changes in the general level of wages. In 1886 the cotton industry was immeasurably ahead of the coal-mining industry as regards standardisation and organised collective bargaining, but it was very far from reaching the standard of perfection which has since been attained.

THE ENGINEERING INDUSTRY

Conditions in the engineering industry were very similar to those in the building industry, but the special economic factors which led to an almost natural standardisation of wage rates in the building industry were absent, and the great variety of engineering production caused considerable variation in the rates paid by different firms, even in the same town. For the same reason, engineering employers were little organised for industrial purposes: in most districts there were employers' associations, but they were mainly of the character of technical societies. Hence wages were negotiated by the local branches of the unions with each employer separately. Doubtless, mutual consultation took place amongst employers on labour questions, but it was purely informal and unorganised. By 1886, however, the unions had been successful in gaining from the majority of firms in most districts a recognition of their standard rates, and changes in the general level of wages were as a rule uniform. In all districts, however, there were some firms who still successfully resisted any real

trade union activity, and the recognition of the trade union standard rate did not imply any strict obligation to pay that as a minimum. Even in shops where a majority of the skilled men were organised, quite a number of men would be paid both above and below the local standard rates. It must also be realised that the semi-skilled as well as the unskilled, were more or less completely unorganised, and the former were recruited from the latter by purely individual arrangement between the employer and the man concerned. Thus collective bargaining in the engineering industry in 1886 was a very limited affair, and the strength of the trade unions as friendly benefit societies far outweighed their influence in industrial matters.

THE RAILWAY SERVICE¹

Collective bargaining in the railway service was non-existent in 1886, for genuine trade unionism had not yet appeared. The Amalgamated Society of Railway Servants, unique perhaps in the fact of its formation by a large shareholder in the industry, had not been transformed into a militant organisation, and was still a trade friendly society of the old type with its list of upper class patrons and philanthropic president. In 1882 the membership had fallen to one-third of what it had been ten years earlier—a mere 6,000 out of a total of a quarter of a million potential members—but from that date the membership began a steady increase. The Associated Society of Locomotive Engineers and Firemen was also in existence as a craft union, opposed to the all-embracing character of the Amalgamated Society, but it was weak and ineffective on its industrial side. There was also a signalmen's union, but again purely of the friendly benefit type. As large employers

¹ In this and subsequent sections on the railway service, reference may be made in particular to Cole and Page Arnot, *Trade Unionism on the Railways*.

of labour, the railway companies naturally standardised rates of wages and conditions to some extent at each of the large centres, but this did not, of course, apply to the country stations where the wages of new recruits reflected solely the contemporary state of the local labour market. In the skilled and semi-skilled grades, uniformity of a kind existed in the increments given on the basis of years of service, but these were applied to widely different basis rates. Occasionally the men of one grade at a centre would organise a deputation to the management, but the subject was usually a grievance in working conditions and rarely concerned with wages. In view of the fact that the deputation's case had to be presented to their immediate responsible official, and if unsettled, to filter its way as a report from him to headquarters, there was seldom much result, and such attempts at collective action did not inspire much faith in the promises of trade unionism.

SECTION III. THE POSITION IN EACH INDUSTRY IN 1913.

The period 1886-1913 saw great changes in the conduct of industrial relations. For the trade union movement as a whole, it may be divided into three acts, each of several scenes—the rather spectacular birth and baptism of the “new unionism” in 1889-94, its comparatively uneventful adolescence from 1894 to 1906, and its rather turbulent emergence to manhood after the passage of the Trade Disputes Act. But this general background is well known to all students of industry, and we can pass at once to consider the impact of these broad developments on our five selected industries. For this purpose they can be divided into two groups—three industries which were comparatively little affected, and two which were very greatly affected. The building,

cotton and engineering industries compose the former group, and the coal-mining industry and the railway service the latter. It will be convenient to consider the groups in this order. In all three industries in the first group, the methods and general character of collective bargaining were much the same in 1913 as they had been in 1886: the principal difference was an increased comprehensiveness and efficiency. In the building industry, there was a great growth in the numerical strength of trade unionism, but it was still virtually confined to the skilled and semi-skilled. Some proportion of the labourers were members of the new general labour unions, but these were not yet effective instruments for collective bargaining. The skilled unions made no attempt to depart from their exclusively craft basis, rather the reverse. Organisation on the employers' side had made good the handicap of a late start; the local associations comprised the vast majority of the firms of any importance, and were federated in large regions as well as nationally. Moreover, their main functions were purely industrial. But despite this general growth of organisation, negotiations on wages and conditions were still carried on locally and while it was becoming less unusual for the various unions to join together in common negotiations, jealousy and inter-union rivalry prevented any such general development. Individual bargaining had however sunk very much into the background by 1913. The scope of collective bargaining had become enlarged to deal more effectively with conditions, and was no longer confined mainly to wages and hours. Written agreements had become usual instead of unusual, and apart from trade union pressure, the employers' association enforced them with a fairly rigorous discipline, in order to prevent any undesirable competition for labour. By contrast, internal discipline was not a feature of the trade unions. A militant minority had developed, who were wholly dissatisfied with the unchanging traditional policy of their unions, and during 1913 a series of unofficial lightning strikes in the London area against the employment of non-

unionists, was leading up to the London area lock-out in 1914, and the threat of a national lock-out.

In the cotton industry, especially during the twelve years peace under the famous Brooklands Agreement of 1893, there was ample opportunity for the steady development of organisation among employers, and still more among operatives. Of the three big amalgamations, the mule-spinners soon reached, and have since maintained, practically 100 per cent. membership. The Card and Blowing Room Amalgamation extended its membership to the female ring-spinners, and by 1913 could speak effectually for most of the remainder of the spinning side of the industry. Similarly the membership of the Weavers Amalgamation more than doubled, while by means of federation and of working arrangements with their big neighbours, the small craft unions succeeded in making their influence more uniform and more effective. By 1913 negotiations were completely centralised for each side of the industry. The effect on the list system was simply a continuation of the process of consolidation which has already been described. The Oldham and Bolton spinning lists had been so widely adopted that other spinning lists though still in existence were of quite minor importance. In 1892 the three principal plain weaving lists were consolidated into the Uniform List; for coloured goods there was no single list, but the three or four important local lists were closely modelled on the Uniform List. A Universal List for carding engines was established in 1903, for frame tenters in 1907, and for ring-spinners in 1912. All three lists were subject to the same percentage variations as the spinning lists, variations of which, even before the beginning of the century, had been co-ordinated, as the result of centralised negotiations on that side of the industry. The same is true of the Uniform and Coloured weaving lists on the manufacturing side. By 1913 organised collective bargaining had completely superseded the individual employer's bargain, both for daily details at the mill, and for matters of wages and conditions affecting the whole industry.

Of the engineering industry much the same may be said as of the building industry. Organisation amongst the employers for industrial purposes made rapid strides during the period, especially after the foundation of the Engineering Employers Federation in 1898, and while wage negotiations were still conducted on a purely local basis, working conditions which were common to the industry as a whole, were dealt with on a national basis. This applied especially to such questions as the "manning of machines,"¹ and other matters arising from the general changes in the technique of engineering production, and the growth of a large class of semi-skilled labour. The old craft unions had reacted to the "new unionism" so far as to adopt an increasingly militant policy, with the consequent subordination of the importance and interest of their friendly benefit side, but they had responded little to the ideas of unionism on an industrial basis. The Amalgamated Society of Engineers had made some rather ineffective efforts to gather the higher grades of semi-skilled men within its fold, but the project was not vigorously pursued, and while the skilled unions were able to exert considerable indirect influence on an employer's arrangements with his semi-skilled workers, through his fear of retaliatory action on their part, this cannot be termed collective bargaining. Similarly there was little or no organisation amongst the unskilled workers. But within its sphere the local bargaining of 1913 was a very different affair to what it had been in 1886. The local branches of the trade unions now negotiated with the local employers' association, and the results were almost always embodied in written agreements. The district standard rate was no longer a partly achieved aspiration towards some degree of uniformity; it was the precise rate at which the bulk of the men concerned were paid, for it had become a maximum as well as a minimum. Where there were two distinct branches of the industry in the same centre, there might be two sets of standard rates, for example in marine engineer-

¹ e.g. in the National Strike of 1897.

ing and general engineering shops at shipbuilding centres, and in most shops there were a few men paid more than the standard, just as there were a few shops which paid on a higher scale altogether, but in the main the wage system was highly organised on its local basis, and the collective had successfully ousted the individual bargain. In 1913 what may be called the higher stages of the development of collective bargaining had not yet begun, but so far as it went the system was both complete and effective.

As compared with these three industries, developments in the coal-mining industry, and especially in the railway service, may be described as revolutionary. Two years after 1886, the Miners Federation of Great Britain was founded, and was sufficiently powerful by 1893 to organise an almost complete stoppage of work in the Midlands in resistance to a demand for a 25 per cent. reduction in wages. The strike was reasonably successful for the terms of the settlement reduced the reduction to 10 per cent. There were also contemporary strikes in South Wales and in Scotland, which though less successful, resulted in the formation of the Scottish Miners Federation, and so greatly stimulated trade unionism in South Wales that in 1898 the South Wales Federation was successfully launched. Both these federations joined the national federation which by 1900 could speak directly for not far short of half the total numbers employed in the industry. But the Northumberland and Durham unions stood aloof. The Miners Federation had been formed with two main objects—to abolish the sliding scale system and to obtain an eight hours day. With the former objective Northumberland and Durham were in agreement, and had terminated their sliding scales before 1890, but they were bitterly opposed to the eight hour day, because in those counties the coal getters worked two short shifts of approximately seven hours, while the underground transport workers worked one long shift of approximately twelve hours and the former feared that the supply of boy labour would not be adequate to provide the two shifts of

the latter which an eight hours day would entail. Gradually, however, the belief spread that after all it was not impossible to rearrange the traditional methods of working, and as the two counties became divided in their opinion, the hands of the Miners Federation were correspondingly strengthened, and eventually in 1908 the Eight Hours Act was passed. This removed the stumbling block to complete unity, and Northumberland and Durham forthwith joined the Miners Federation. After a brief interval the Federation was preparing to launch a new programme, when it was drawn suddenly and without premeditation into the minimum wage struggle, which started as a local affair in South Wales. In this struggle the Federation could negotiate and act as representing the entire body of organised miners, and for the first time there was completely centralised collective bargaining, though admittedly the bargaining was more with the State than with their employers.

But while national developments did not take place until late on in the period, and while they were even then confined to State action on hours and a minimum wage, great changes were in progress throughout the whole of the period in the general conduct of industrial relations. Wages were still determined on a district basis as in 1886, for even the 1912 Minimum Wage Act only provided for a district minimum, but collective bargaining steadily became more and more of a reality, and in 1913 there were nowhere the one-sided intimations of earlier years. Though sliding scales appeared for a few years at intervals in some districts, they were not the old "bottomless" scales of the eighties; provision was made for a minimum, and in fairness therefore for a maximum. But the typical district negotiating machinery was a conciliation board, consisting of representatives of the employers and the trade union, together with an independent chairman, who had a casting vote but no powers of arbitration. The importance of this distinction cannot be over-estimated. The coal trade conciliation board system constituted a real innovation in wage fixing machinery, which, with minor

adaptations might well have been more widely copied by other industries. For since the chairman had only a casting vote, both sides knew that it was useless to submit extravagant proposals, useless to ask for double in the hope of getting half, since the chairman had no power to split the difference. If one side made obviously excessive demands, the other side would take care to give them no excuse for revision, so that the chairman would have to refuse them his vote, even though he objected only to the size of the demand. Accordingly negotiations started on a reasonable basis, and there was little or no room for bluff. Each side would present its arguments, and the whole affair was usually completed in a day, if not within an afternoon. The coal trade conciliation boards are often quoted by the modern advocates of "arbitration for all and everything," but the essential feature of that system is conveniently forgotten; arbitration which involves a splitting of differences often large, bears little resemblance to the coal trade conciliation boards.

Even more important than the district collective bargaining on the general level of wages, was the collective bargaining at the individual collieries. Realising what their predecessors had neglected except in Northumberland and Durham, the main energy of the miners' leaders was concentrated in building from the bottom upwards. No district association can do much unless the pit branches or "lodges," of which it is composed, are vigorous and healthy centres. From 1886 onwards collective bargaining began to exercise an increasingly intimate influence on the daily working of each colliery. Price lists were no longer posted by the management, but were fixed by joint negotiation between the manager and the trade union officials. In most districts the unions successfully enforced the principle that the only admissible argument for the alteration of an existing price list is a change in the physical conditions underground, and though the average of the piece-workers' normal earnings still varied greatly from one colliery to another in the same district, the unions had been able at least to promote a tendency towards uniformity by co-ordina-

tion of all negotiations within the district. At many pits too, "make-up rates" for the hewers in specially difficult working places had been formally established long before the 1912 Minimum Wage Act. Gradually some sort of standard rates for the different grades of time-workers were established, but the extraordinary variation in the prosperity of the different pits prevented the miners' unions from establishing any standardisation of wages even remotely comparable with the pre-war conditions in most other organised industries. But if standardisation was lacking between pits and even more between districts, collective bargaining, which had been virtually non-existent in 1886 except in Northumberland and Durham, was, in 1913, in its own peculiar way, more highly developed than in any other great industry.

Turning finally to the railway service, the first definite indication of trade unionism was the establishment in 1889 of the General Railway Workers' Union to organise the grades not eligible for membership of the Amalgamated Society of Railway Servants, particularly the unskilled men in the railway shops. It was a typical product of the new unionism of that year as is shown by a declaration "that this union shall remain a fighting one, and shall not be encumbered with any sick or accident fund". Two years later the first workingman president of the Amalgamated Society was elected, and in 1896, when the Society numbered about 85,000 members, the first "All Grades" programme was launched, with results which, measured by the concrete advantages secured, did not amount to much. The passing of the first all-grades movement was followed by a second period of declining membership, with the exception of a brief spurt upwards in 1906-07, and the figure of 85,000 in 1896 was not again reached until the years immediately before the war. But despite the relapse after 1907, it is the second "All Grades" movement of that year which marks the completion of the evolution of railway trade unionism from the old friendly society type to the modern conception of a militant industrial organisation. In 1906 the Amalgamated Society formulated a programme

as to hours and wages, which was coupled with a demand for recognition of the unions by the companies. The companies refused to meet the union officials, and it was this question of recognition more than any claim as to wages and hours, which led to the threat of a national strike. As the result of government intervention, a settlement was reached, providing for the establishment of a scheme of conciliation and arbitration boards on all the principal lines. No clearer sign can be given of the real weakness of the unions at this time than the fact that they accepted such a scheme. Not only did they forgo the right to strike, but demands had still to be made by petitions and deputations "in the ordinary course through the officers of the department concerned", and the members of the conciliation boards had to be employees of the company concerned, i.e. union officials were excluded; recognition was still denied. Moreover the agreement was binding for six years. But it is probable that from their point of view the unions acted rightly in accepting this settlement for when the elections to the boards took place, the union nominees carried all before them, and the movement as a whole gained enormously.

Viewed in the light of all the evidence available today, there can be little doubt that the Companies by their dilatory tactics did not intend to supply the spirit which alone could have made the 1907 scheme workable. But it must also be said that the unions did not intend to rest quietly so long as the right of recognition was withheld. Consequently the year 1911 saw what was virtually a repetition of the 1907 crisis, with the exception that this time a national strike did actually take place. As a result the Companies under pressure from the Government did at last meet the union officials, and a settlement was signed, providing that work should be resumed forthwith, with no victimisation, and that the 1907 scheme should be amended in accordance with the report of a Royal Commission to be appointed for the purpose. There was further friction as a result of the Commission's report, but eventually an amended scheme was agreed upon, which aimed at speeding up the

machinery by transferring the element of arbitration from the central board for each line to the sectional boards. The jurisdiction of the boards was enlarged to include conditions of employment as well as wages and hours, but the vital change from the men's point of view was the admission of union officials to the boards, if elected in the ordinary way. Recognition was secured in all but name, though the increased sectional character of the amended scheme was wholly objectionable to the all-grades policy of the Amalgamated Society.

Since the initiation of the movement in 1906, the four principal unions had acted together in harmony, at least to outward appearances. As the result of negotiations during 1912, the Amalgamated Society, the Signalmen's Union, and the General Railway Workers' Union united to form the National Union of Railwaymen. Only the Associated Society of Locomotive Engineers and Firemen stood out, and continued to pursue a policy of craft unionism, diametrically opposed to the N.U.R., though bitter rivalry and hard words have not prevented co-operation on certain occasions to secure definite objects.

The earliest date at which notice could be given to terminate the 1907 agreement was November, 1913. The N.U.R. sent such notice, but the A.S.L.E. and F. merely outlined certain amendments which they wished to introduce. The companies offered to meet the two unions and discuss matters, and while nothing came of this owing to the inability of the two unions to formulate an agreed programme, it is important as conceding the right of the unions to negotiate with the companies as a whole on a national basis. By 1913, therefore, organisation among the railwaymen had proceeded so far as to bring genuine collective bargaining definitely into being. On the employers' side, little organisation was needed in view of the structure of the industry, and of the close inter-connection between the companies which the nature of the business entailed. Trade unionism among the railwaymen developed on quite different lines compared with the other four industries, in all of which organisation and collective

bargaining began locally amongst the skilled grades, and gradually developed to a district and a national basis. In the railway service collective bargaining virtually started on a national basis. The difference is due to a variety of causes. In the first place, the Amalgamated Society was organised as a friendly society pure and simple: financial considerations necessitated a centralised organisation of national extent, and without industrial functions the branches became mere banking agencies. When this organisation became permeated with the new unionism in the early nineties, local action by the branches was virtually impossible, because between the men and their employers was a whole hierarchy of officials, such as is not found in factory or mine where the responsible manager is more or less on the spot. Small beginnings were also rendered far more difficult owing to the somewhat unique position of railway employment. In no other industry are the employees termed "servants", and the railways themselves, accepting more discipline by the State than any other industry, in turn exercised a more exacting form of service from their employees. The idea that collective bargaining was inimical to that discipline which the public safety demanded, took much killing, and proved a serious obstacle to trade unionism which was not found elsewhere. These considerations explain why, in spite of the many years spent in organisation, trade unionism on the railways produced so little effect until like some underground river it suddenly appeared as a mighty torrent. Even when collective bargaining was within their grasp, the trade union leaders could learn little from other industries, for in 1913 no other large industry¹ practised collective bargaining on a national basis, though many had become expert in local negotiations. This was an additional reason for the conciliation board era on the railways producing so little tangible results in respect of the standardisation of wages, hours, or working conditions. The exceptionally low wages and long hours of numerous individuals and

¹ Except the cotton industry, which is peculiar in its almost complete and very intense localisation.

small groups were improved, and various local grievances were ventilated, sometimes with the desired result, but it is not wide of the mark to say that despite the development of organisation, it had up to 1913 born little fruit in the form of regular or comprehensive collective bargaining. The actual determination of wages and conditions was really conducted in 1913 little differently from what it had been in 1886.

SECTION IV. THE PRESENT POSITION

For obvious reasons, the period since 1914 may receive even more summary treatment than that which has been meted out to the preceding epochs. In part, it has been adequately covered by recent literature, but in any case there is little choice except between a bare summary, such as will revive our own memories, and a detailed history, which lies altogether outside the scope of the present work. Despite the apparently radical changes in the conduct of industrial relations, it is essential to realise that in this sphere, as in so many others, the disturbance of the war merely quickened the normal process of evolution: it did not in the main cause innovations of a revolutionary character. In most industries collective bargaining starts between the individual employer, who is himself "a perfectly firm combination of employing power", and his employees, and is then developed successively to the spheres of the town, the district, and the whole country. The establishment of collective bargaining on a national basis must be viewed as a more or less inevitable process of evolution. The labour market tends to conform to the same development as the markets for any other commodity, and though not all commodity markets have yet achieved the organised and perfected centralisation of, say, the wheat or cotton markets, the tendency is common to all and unmistakable. In 1913 it was certain that collective bargaining in the building industry would not long continue

on a local basis: proposals were already being mooted in Lancashire and elsewhere for centralised negotiations and the standardisation of wages and conditions within large regions, in much the same form as was later adopted: and from a regional basis the development to a national basis is a step as short as it is inevitable. In 1913 it was certain that sooner or later the Miners Federation would attempt to introduce a national standardisation of wages, just as they had already achieved national uniformity of hours; whatever the success of their demands for the nationalisation of the industry, the nationalisation of negotiations in whole or in part was assured. In the cotton industry collective bargaining was already on a national basis before the war, and in the railway service also it had been potentially if not actually achieved. In the engineering industry, prophecy in 1913 could not be so certain, and the increasingly sectional character of engineering production, combined with the other and different sectionalism of trade union organisation, made the precise form of the ultimate evolution as uncertain before the war as it is to-day, though it is certain that the trend is the same as in all other industries. The war in fact warped the normal evolutionary process to a surprisingly small extent: what it did do, was to quicken it. This acceleration was due to many causes, but chief perhaps was the great and rapid changes in the value of money, which put such a strain on the existing system of wage regulation as to reveal its imperfections and uneven operation so clearly that none could fail to see. A system which was working none too smoothly in the pre-war years, which was barely adequately modernised even then, had suddenly to adapt itself to meet difficulties of a new and treacherous character, and while the war and post-war psychological atmosphere in many respects intensified the strain, it also undoubtedly created that radical disposition which allowed the forces of evolution to proceed, when the conservatism of normal times, in terrified amazement at the pace, might have jerked at the reins and precipitated disaster.

Against this background the developments in each industry

may be rapidly sketched. In the building industry,¹ with the exception of a universal national advance to operatives engaged in connection with munition works, which was quickly applied universally, no overt change took place in the methods of collective bargaining until 1917. Wages continued to be settled by local collective bargaining, but instead of farthing changes every few years, additions of several pence took place every few months. The unions were able to play off one town against another, until the employers began to realise, as they had never realised before, that the strength of a chain is the strength of its weakest link. Consequently, in 1917, on the initiative of the employers, with the unions naturally not averse to the establishment of a cardinal principle of their creed, the first of the area grading schemes was established in the North-Western Region. All the towns within the region were roughly graded according to their industrial importance, and with some reference to probable differences in the cost of living. In the first grade came Liverpool and Manchester, and in the fourth grade the completely rural areas. A uniform rate of wages for each grade of operatives was fixed for each grade of towns, and it was agreed that all negotiations in future should be centralised, and that all subsequent changes in wages should be uniform throughout the region. In 1919 similar schemes were put into operation in other regions. But it very soon became obvious that the old evil had not been conquered. Competition between a group of towns had merely been replaced by competition between the various regions, and since the only real basis for any advance was the common factor of the rising cost of living, it was exceedingly difficult for the other employers to defend the position when one region had virtually given it away. Consequently at a meeting of the National Federation of Building Trade Employers in the late autumn of 1919 a resolution was passed calling for the regulation of wages on a national basis. A

¹ This repetition of what has already been considered in detail in ch. iv seemed advisable for the sake of completeness, and pardonable on the same account. This applies also to the succeeding paragraphs on the engineering industry and the railway service.

committee was appointed to negotiate with the unions, and during 1920 a national area grading scheme was established on exactly the same lines as the regional schemes: in fact, all that happened was the amalgamation of all the regional schedules, and their further simplification, where this had not already been done, by the establishment of one rate for all grades of craftsmen, including the painters, who had previously been regarded as semi-skilled, and one rate for labourers. Some slight modifications in the scheme have since been made, and the regrading of towns goes on continually, but at the present time there are three grades of towns, A B and C; A and B have each three sub-divisions and C two. Very few towns remain outside the national scheme. All negotiations on wages and conditions are conducted on a national basis, and local collective bargaining is strictly confined to local matters. Thus the machinery for collective bargaining in this industry has reached a stage of evolution quite comparable with that of the organised commodity markets; the contracts take place not with reference to particular groups of labourers but in terms of standardised grades, and there is one and only one price.

In the coal-mining industry district negotiations were continued until the industry passed into the control of the State in 1917. Decontrol took place in 1921, but until the end of 1926 all wage negotiations were conducted on a national basis though this did not prohibit some special district agreements on matters of minor importance, such as the provision of subsistence wages, non-union agreements and the like. No attempt was made to standardise wages on a national basis, nor within each district, though in some districts the range of day rates at the different collieries had been substantially narrowed when new "standards" were adopted at varying dates during the war period. The machinery of local bargaining at the pits over price lists, etc., was continued unaltered, but the function of the district conciliation boards were centralised in the hands of the executive committees of the Mining Association and the Miners Federation. The import-

ance of their achievement in formulating and establishing the 1921 agreement, with its novel principles of both general and special application, demands fuller discussion than can be attempted here. The whole operation of collective bargaining in this industry since 1913 has been explained and discussed by various writers¹ and two Royal Commissions, and any further descriptive account would be superfluous.

Little or nothing need be said of the cotton industry since collective bargaining of the most comprehensive and detailed description had already been fully developed on a national basis before the war. Since the beginning of 1918, however, wage negotiations have been conducted in common for both the spinning and the manufacturing sides of the industry, whereas previously separate negotiations were the general rule. This is really the only new development in the conduct of industrial relations, and as the fluctuations in the cost of living cease to be a common dominating factor in the determination of the general wage level, it seems unlikely that the practice will continue, for the two sides of the industry form distinct economic units.

Local wage negotiations continued in the engineering industry until April, 1917, when the increases obtained since 1914 were levelled up to a universal minimum of seven shillings, this minimum, or more, being embodied in the permanent time rates. This initiated the era during which wages in the industry were regulated by the Committee on Production, acting as an arbitrator before whom employers and employed submitted their case. Thus all negotiations on wages and other important issues were centralised, and collective bargaining on a national basis was continued when the industry was left to itself after the war. No attempt at standardisation has however been made, and negotiations on a national basis have really been confined to the removal of the uniform advances of the war period, if we except certain national agreements on important working conditions, and

¹ See Redmayne, *The British Coal-mining Industry*; Cole, *Labour in Coal-mining*; and my *Wages in the Coal Industry*.

particularly the manning of machines question, which was dealt with on a national basis in the 1922 dispute just as it had been in 1897. From the point of view of wages, the engineering industry was unified under the influence of the common factor of the fluctuations in the cost of living. This has been superseded as an argument by considerations based on the state of trade, and so the increasingly sectional character of the various branches into which the industry is divided from the point of view of product, has come more and more to the fore. One section of the industry may be flourishing while another is depressed, and the engineering trade unions have recently found themselves faced with the same sort of difficulty in a different guise as that which faces the Miners Federation in the varying prosperity of the different coalfields. The ultimate evolution of collective bargaining machinery in this industry is therefore difficult to foresee.

Finally, we have the railway service, which exemplifies the most highly developed form of collective bargaining yet reached in any industry. At the outbreak of the war, the railways passed into government control, which automatically resulted in negotiations on a national basis. But by agreement the status quo was to remain unaltered during the war, and negotiations were confined to the subject of war wage additions, which as usual were given in flat rate form. At the end of the war both the N.U.R. and the A.S.L.E. and F. submitted comprehensive programmes involving radical changes of almost every kind. After long negotiations the latter union reached a settlement in August, 1919, but it was not till after the general strike in the autumn and prolonged subsequent discussions that a settlement was reached with the N.U.R. These settlements were finally revised and consolidated in June, 1920. A comprehensive standardisation of wages and conditions was instituted, even more rigid perhaps than the building industry scheme, and certainly involving far more radical changes in the existing status quo. But the railway service is notable not so much for its standardisation scheme, as for

the establishment, in the Central and National Wages Boards, of permanent machinery for collective bargaining of a quite unique type. Time alone will prove its ultimate worth, but after the stress and storm of the last six years, it has gone far to justify the optimistic expectations with which its advent was acclaimed.

CHAPTER VIII

THE ATTITUDES AND POLICIES OF TRADE UNIONS

IN Part I the concrete results of collective bargaining in terms of wage rates and hours were investigated and discussed; in the last chapter the development of the movement has been sketched out. The next task is to estimate the direct influence of collective bargaining on the determination of wages; that is, to enquire how far the attitude of employers and employed, and their respective aims and policies, as opposed to purely economic forces, contributed to those results. For it is reasonable to suppose, until the contrary is proved, that different ideas as to the principles on which wages should be determined will produce different results. To take an extreme example, if Marshall and Marx had been trade union leaders, their policies, aims, and objects would have been radically different, and if they had been called upon in turn to support the same claim at a conference with employers about wages, their arguments would also have been different, and those differences would have been reflected in the terms of their respective bargains. Similarly if a body of trade unionists in one industry hold widely different views on wage policy from those held by trade unionists in other industries, or from those which they themselves held in the past, there will most probably be some difference in the terms of their specific wage bargains. Exactly the same must hold true of employers and their organisations, but since, in general, trade unionism has been the attacking force, employers have tended to adapt their policy to the tactics of trade unionism. It is particularly on the wage-earner's side that one finds that different trades have had different ideas as to wage policy, and that those ideas have

altered with the passage of time. Employers' organisations seem to have pursued an opportunist policy, and to have selected their arguments according to the special circumstances of each occasion, rather than to have adhered to particular principles of wage determination as embodied in a definite policy. On the other hand trade unions, and indeed the whole trade union movement, to-day as in the past, tend to have a fairly definite programme at any particular time, and in so far as they pursue an opportunist policy, it is merely as a means to an end, not an end in itself. The attitude of employers to the wage problem as a whole, does of course change, but it changes comparatively slowly, and the variations which may exist between the employers' attitude in different industries at any one time, are usually of degree only, whereas with trade unions they are often also of kind. On the whole, therefore, a study of trade union policy provides the more favourable field for observing the influence of psychological factors on the general character and trend of wage settlements during the past forty years.

The first step must be to ascertain the test, or tests, by which the wage-earners of the eighties decided whether their wages were, or were not "fair". I use the word "fair" here not in any ethical sense, nor in the sense defined by Marshall,¹ but as meaning so reasonable under the existing circumstances that the wage-earner is not prepared to take any considerable risk in trying to obtain an increase, nor conversely to submit to a reduction without a big struggle. Under this definition, wages are fair if they are not worth striking about.

There are five main tests which the wage-earner may use to determine the fairness of his wages. He may judge their fairness in relation to the amount of unemployment and under-employment, in relation to profits, in relation to changes in the value of money and particularly the cost of living, in

¹ In his Introduction to L. C. Price's *Industrial Peace*. Professor Pigou's discussion of fair and unfair wages in Part II. of his *Economics of Welfare* is, of course, based on this definition.

relation to his current conception of the right of a man to a certain conventional standard of living, or finally in relation to the wages current in other industries for work which he considers similar to his own. The test of unemployment has never been regarded by the wage-earner as adequate, because he regards unemployment, not as a sign that wages are out of adjustment with the derived demand for labour, but as a pestilence outside his control. By long experience trade unionists have found that once wage rates are lowered, it is very difficult to raise them again, and consequently the theoretical argument that, as a body, the wage-earners in an industry would be better off if they consented to a reduction in wage rates, because trade would be stimulated by the resulting ability of employers to lower prices, has never carried conviction. Further, they have often found that in practice a moderate wage reduction, such as they might conceivably entertain, does not result in an appreciably increased demand and less unemployment. The explanation is that demand can be extremely inelastic in times of severe trade depression—a fact which was insufficiently recognised by the economists of an earlier generation. The trade unionist of the eighties may have looked upon large numbers of unemployed as a supply of potential blacklegs, and therefore as a test of his chance of success in a strike, but even within my definition this constitutes an indirect rather than a direct criterion of fair wages. Judging by the reports of negotiations and other general evidence of the methods used in collective bargaining, trade unions do not, either in the past or in the present, appear to advance the fact of little unemployment as a direct argument for claiming an advance, presumably because it offers the employers an equally powerful argument in the converse case, which the trade unionist is not prepared to accept.

If the trade unionist of the eighties used profits as his criterion, it follows that he must have been able to ascertain what profits were actually being made, or have had some handy and reliable index for his industry. But even to-day accurate and reasonably comprehensive statistics of profits

in different industries are virtually non-existent, with the possible exception of the coal-mining industry, and while to-day a trade union leader may be able to gather indirect information by analysing balance-sheets, or by studying the prices of shares, or the movements of commodity prices, a great deal of this information was not available thirty or forty years ago, and the ordinary trade union leader of that period did not know how to use what was available. In a few industries there are, however, what may be termed natural barometers, which are of a very simple kind and sufficiently accurate over short periods: for example, changes in the price of the product in the coal-mining and iron and steel industries, and in the "margin" in the cotton spinning industry between the prices of raw cotton and standard counts of yarn. In the two former industries the trade unions did to some extent use profits as their main criterion, and so adopted the principle of sliding scales, especially in view of the necessity in these industries for large and frequent adjustments of wages; and in the cotton industry the "margin" has often been brought forward as an argument in more recent times, though whether as early as the eighties cannot be definitely ascertained. But in the vast majority of industries, trade unionists could not have used profits as a criterion of any accuracy, even if it had occurred to them to do so.

Similarly in the eighties there was no accurate means of measuring changes in the value of money, still less in the cost of living. Significant changes in the latter at any rate, took effect so slowly that the possible divergence between nominal and real earnings was little appreciated. Equally the doctrine of the right of a man to a certain conventional standard of living, was essentially foreign to the minds of the still dominant leaders of the old school of trade unions, and of the rank and file, though the idea was being sedulously propagated by some of the younger men.

There remains the test of comparison with other men's earnings, and there can be little doubt that this was the test

normally employed, both by trade union leaders and the vast bulk of the wage-earners. This is most clearly seen in the relation of skilled to unskilled wages. Skilled and unskilled were accustomed to a certain differential between their wage rates, and provided this differential was maintained, both were satisfied. Any infringement led to immediate action, particularly, of course, by the skilled man in defence of his own interests. But the skilled man was nearly always ready to join forces with the unskilled, because if the differential was increased owing to a reduction in the unskilled rate, the skilled man feared he would have to meet an argument that seemed to him perfectly valid, namely, that if he had in the past been worth only so much more than the unskilled, he was still only worth that much more, and that therefore his wages also should be reduced. If the increased differential was due to a rise in his own rate, the skilled man, reversing the same argument, was usually prepared to see justice done to his less fortunate labourer. The differentials were fixed almost rigidly by custom, and their origin is in some cases lost in the mists of antiquity. Professor Bowley has shown that the building labourer's rate in London was two-thirds of the bricklayer's rate throughout the nineteenth century,¹ and probably away back into the Middle Ages. For many years before 1914, threepence had become the customary differential in all large centres, and this continued up to 1914, and even throughout the war and immediate post-war period, despite the doubling and trebling of the actual money rates. Before the war in many districts a plumber always got a half-penny or a penny more than the bricklayers and carpenters. Our study of the engineering industry in Part II also points to the almost overwhelming influence of custom in determining the differentials between the different grades of labour. The same is true of almost all old-established industries, and the constancy of the relation between skilled and unskilled

¹ Bowley, *Prices and Wages in the United Kingdom, 1914-20*, p. 112. See also the same author's *Wages in the XIXth Century*. London was certainly no exceptional case.

wages can only be explained by the supposition of customary standards. But the test of comparison was also applied by both skilled and unskilled to the actual level of their wage rates. They reckoned their wages as fair by comparison, not only with each other's rates, but with the wages of similar grades in other industries. An increase in wages in one industry was a sign for a wage increase in any other industries in the same locality, or in any sort of direct connection. The extraordinary similarity in the amount by which wages increased in many industries from 1886-1913¹ can hardly be explained without the assumption of some such close bond between them. All industries tended to expand with the growth of the country's population, and in this period improved technical efficiency caused a general rise in wages, but the rate of expansion of individual industries varied greatly, and so did the growth of technical efficiency. Such an even rise in wages as between different industries can, of course, be explained by the supposition of a perfectly balanced equilibrium maintained throughout by a minutely perfect response of the supply of labour to the changes in the "normal" demand: in other words, that the smallest rise in wages in one industry evoked an exactly sufficient increase in its personnel. But this frictionless adjustment of theory is not realised in the world of practice: the supposition is too good to be true even for the pre-war period when the mobility of labour was enhanced by the rapid growth of the population,² and no special difficulties existed, such as a housing shortage. It would be a more satisfactory explanation to suppose that

¹ It may be remarked that of the five industries selected for special study in Part I above, the coal-mining industry and the railway service are exceptional in that wages rose far more in the former, and far less in the latter, than the average rise of the other three industries, in which wages rose by much the same amount (see Chapter I Section II above). That the other three industries were not exceptional in their similarity may be easily proved by a study of the wage census reports on other industries in 1886 and 1906.

² When population is growing fast, equality of marginal net products, and therefore of wages, can be secured by diversions of the supply of new recruits to industry, which of course involves less friction than the actual transfers of adults, which are likely to be required when population is stationary, or only increasing slowly.

custom arbitrarily preserved the differentials between the wages in different industries, and that the supply of labour was adjusted without reference to changes in wage rates, and merely according to the opportunities of engagement, especially in view of the well-recognised custom for children to follow their parent's occupation, or at least to gain employment in the same industry. This would, of course, be going too far in the other direction ; but the influence of custom must not be minimised, let alone neglected altogether. Comparison with the wages of other grades in the same and other industries, according to customary standards, not only tended to create a sort of equilibrium, but also to preserve the structure intact, whether the general level of wages fluctuated up or down.

Looking at the matter from another aspect, the influence of custom may be said to have constituted the real basis of the trade union standard rate. The standard rate was not an original conception of trade unionism : it was essentially the means whereby principles which custom stamped as right and proper, were solidified into a system, which it was the function of trade unionism to maintain as rigidly as possible. At the end of the nineteenth century, as throughout its course, the mediæval conception of the just wage still lingered in the minds of the wage-earners in the guise of a reverence and trust in custom as affording a criterion which was desirable in itself, and which also afforded practical guidance in steering amidst the reefs and shoals of their negotiations with the capitalist.

Custom, therefore, largely accounted for the apparent symmetry of the wage structure in the eighties. Unfortunately Marshall and other economists of his period, failed to realise that the existence of such phenomena of their times as an unchanging and symmetrical structure of rates for different kinds of labour, might be of a temporary nature, because due to psychological as well as economic factors. Marshall, for example, built up a theory of wages in terms of purely economic factors, which was a serviceable explanation and analysis, and which continued to fit the facts reasonably well, just so

long as the influence of custom continued unaltered. But the influence of custom, I suggest, was steadily diminishing throughout the period up to 1914, and has received its death-blow in the economic convulsions of the last ten years. Hence one important reason for the common complaint to-day that Marshall's whole treatment of wages is a mere theoretical abstraction.

The breakdown of the common test of comparison, the test which, as has been seen, resulted in the eighties in the mutual determination of wage rates by reference to the wages of other grades of labour in the same industry, and of the same grade in other industries, may be dated from about 1890. At that time two main disrupting factors were beginning to exercise an appreciable influence. The first was the growth in numbers and organisation of the semi-skilled workers. This has, of course, been specially marked in the engineering industry as the result of technical changes, but since most industries are consumers of engineering products, the movement spread gradually in an indirect manner, while many industries were also affected directly by the application of the same sort of principles. Thus technical changes began to disturb the old conception of the proper wage differentials between skilled and unskilled. Secondly there was the development of modern socialism. This acted in two ways. By stressing men's common needs, it reinforced the disrupting influence of technical changes, because the skilled man's attention became concentrated on the fact that the unskilled worker, like himself, had a wife and family to maintain, and so, though a craftsman, he ceased to look down upon his labourer as an inferior species. Secondly, by stressing the workers' right to the fruits of his labour, and the existing inequalities of income between the wage-earner and the capitalist, modern socialism instigated a much more militant type of trade union policy, the immediate aim of which was the restriction of profits to the minimum, and its ultimate aim the supersession of the private ownership of capital, and the transference of at least a large measure of control to the workers. The degree of influence exerted by

these factors varied greatly in different industries, and among different groups of wage-earners, but there were definite signs in the years immediately preceding the war, that in certain industries the combined result was becoming very marked. The customary wage differentials between skilled and unskilled were no longer regarded with sacrosanct reverence, even if they had so far suffered little actual disturbance, and a second and perhaps more important fact was that each industry was beginning to "gang its own gait" in accordance with the temper of its workers. This differentiation of policy and action was becoming increasingly possible with the rapid development of trade unionism, for a trade union had no longer to consider the possible importation of unemployed workers from other industries: it had only to consider the attitude and fighting strength of the employers in the particular industry directly concerned. This produced a tendency for the personnel of each industry to form compact groups with corporate individualities of their own. By 1913, however, these developments had not proceeded very far: there was still tolerable symmetry in the wages of the same grade of labour in different industries, but psychological changes had been at work, in conjunction with changes in purely economic factors such as the change in the relative demand for skilled and unskilled labour. The old common attitude was disappearing fast, and the once universal principle of comparison according to customary standards was being deserted for much more varied views.

The war period accelerated these changes. The system of flat-rate increments in wages to meet the increase in the cost of living entirely obliterated the old ideas as to the fair and proper differential between skilled and unskilled. The skilled man grumbled, but in the main he accepted the system as a logical extension of the idea of the common need of all workers, especially when the common pressure came from the same cause. Secondly, wage-earners grew accustomed to seeing wages in some industries rise far more than in others, as the result of the unequal demand for munition as against other

types of product, and of Government control of wages in certain industries. Again, men got used to the spectacle of women earning more than they had ever known any woman earn before, perhaps even more than they themselves were earning. The last lingering traces of the old idea of "just," meaning customary and therefore fair and proper, wages was completely swept away. In 1919 and 1920 there was a certain amount of levelling-up as between different industries, due partly to the restoration of the old balance of demand, and partly to the universal hunt for parity with the increased cost of living. But before men had time to reflect on the whole war and post-war development of the wage structure, the slump in trade began. For the wage-earners it was very literally a case of shipwreck, in which the order of the day was *sauve qui peut*. Those groups of wage-earners, who were more fortunately situated, naturally made the most of their opportunities, and so the steadily-growing tendency to differentiation was very sharply and suddenly accentuated. In consequence, the wage structure of to-day lacks that uniformity and symmetry which it exhibited in the eighties, and in less degree in 1913. Undoubtedly purely economic factors account for the existing disparities up to a certain point, and undoubtedly there will be a tendency for the extreme differences to disappear, but it is also necessary to consider the possibility that the new and varied ideas and principles, held by different groups of wage-earners, have contributed to the existing complexity, and constitute a new and more or less permanent factor in the situation. The old, common standard of fairness has been largely superseded by a variety of new standards, and as I shall presently endeavour to show, the trade unions in many cases are now strong enough to translate their differing standards into practice. The old uniformity of the wage structure has certainly ceased to exist temporarily, and in the light of the above considerations, it is at least an open question whether it will ever be restored.

Against this general background, our five selected industries afford interesting examples of the change of trade union ideas

as to the proper principles of wage determination, and of their influence on trade union policy. In the building industry wages used to be settled on a purely local basis, and each town or country district had its own wage rates. As has been shown in Chapter IV above, comparison with the wage rates in adjoining areas was the main cause of the gradual development to the present national standardisation scheme. If for any reason the operatives in one district secured an advance, a very strong argument could be presented by the operatives in the adjoining districts for a similar advance, and inasmuch as custom rigidly fixed the relationships of the various skilled grades to one another, and to the unskilled, it was only necessary for one grade to secure an advance, in order to initiate a general upward movement. A shortage of one grade of craftsmen might lead to an increase, not only in the rate for that grade, but for all grades in the industry. Or when industry in general was active, building labourers might be attracted to other industries, and building industry employers might have to raise their labourers' rate: and this would be followed by a rise in the craftsmen's rates, in order to preserve the customary differential, even though the demand for building had not increased. When the demand for labour in other industries fell off, the building employers would find the whole weight of the skilled men's trade unions opposing any reduction in the labourer's rate, in order to preserve their own rates. Since the general trend of wages was in an upward direction, custom was an ally to trade unionism more often than to the employers. Undoubtedly the skilled man also compared his wages with the course of skilled wages in the other industries in his locality; and while the available supply of building craftsmen relatively to the demand for their services, undoubtedly exercised a powerful influence, custom was often almost as powerful a factor. The local variations in the demand for building, which are sometimes considerable, have always been softened, from labour's point of view, by the relative ease with which a craftsman can grasp an opportunity for work in another district. There is not, even to-day, that

specialisation which makes such transferences relatively difficult in many industries, such as engineering, or even, within broader limits, the cotton industry or coal-mining.

From about 1900 the building industry as a whole was depressed for nearly ten years, and though, in conjunction with the general spread of the new ideas, this long depression and the bitterness of the accompanying unemployment and under-employment, disposed the building operatives to a more militant type of trade unionism, it also forbade its practical embodiment and application. Normal building virtually ceased during the war, but after it, economic conditions became extremely favourable, and the smouldering fire of the new ideas was quickly fanned to a blaze. Trade union organisation rapidly became complete. With the standardisation of wages on a national basis, wage comparison between districts came to an end, and with an unprecedented demand for building, comparison with the wages of skilled men in other industries was obviously an absurd criterion. The flat-rate advances had also destroyed the differential between skilled and unskilled within the building industry itself as in most other industries. The emphasis of socialism on the common needs of all workers has resulted in a provision in recent national agreements that the labourer's rate shall never fall below three-quarters of the craftsman's rate, instead of the old two-thirds ratio. As regards the general level of wages in the industry, the unions have adopted the policy of "taking it out of the consumer." This idea must be distinguished from the common doctrine that wages should be at the maximum which the trade can bear, because the latter really implies only a determination to secure the theoretical marginal productivity equivalent. "Taking it out of the consumer" implies a deliberate intention to exploit any monopolistic power which trade union regulations can achieve. By regulating the admission of new labour, the building unions desire to prolong a temporary advantage by obstructing the normal working of supply and demand. They have achieved a degree of monopolistic power, and they proceed with their wage

bargain in just the same way as any monopolist approaches the problem of selling prices. Moreover, they are limited by very similar factors, chief among which is the force of public opinion. At the present time it is perhaps somewhat extraordinary that wages in the building trade are not higher than they are. The influence of public opinion has almost certainly had some effect, and difficulties have also been created by the uneven restriction of numbers, which, if all the unions act together, prevents those with the greatest monopolistic power from exploiting it to the full, without creating unemployment among some of the other grades: this is one reason for the recent split between the bricklayers and plasterers, and the remainder of the national unions. But it is an incident of comparatively minor importance: the general attitude of the building operatives is one and the same in their determination to extract the highest wages possible, without reference to any interests except their own. The old tests of customary comparison have been discarded, and the only criterion of fair wages is that higher wages would cause serious unemployment, or Government intervention on behalf of the consumer.

The coal-miners are exceptional in that they have never been influenced by custom and customary comparisons in their attitude to wages, as have other bodies of wage-earners. This is because of the geographical isolation of many mining districts, and of the self-centred life of the mining village even in the Midlands and other general industrial areas. The miner has never had much knowledge of the conditions of labour in other industries, and even if he had, there are obvious difficulties in any attempt to apply comparative principles. Moreover, in few other industries has labour been faced with such extreme short-period fluctuations in the value of its product, and the necessity of corresponding adjustments of wage rates owing to the large proportion of labour costs of production. As trade unionism began to consolidate a corporate mind among the miners of different districts, and then throughout the country as a whole, they acclaimed the sliding scale system of wage regulation as well-nigh perfect, for at that time the

central fact before their eyes was the very great variations in profit from one year to another. They knew that their employers would see to it that wages were decreased as profits decreased, and the whole object of trade unionism was, in their opinion, to ensure that wages also increased as profits increased. Their policy was entirely based on the principle of a share in profits, and so they enthusiastically welcomed the employer's invention of a device by which wages were correlated with the price of coal, since that was a fairly reliable guide over short periods to the general level of profits. But by the middle of the eighties, they had realised that no share in prosperity could make up for the absolute destitution to which the sliding-scales reduced them in times of trade depression. In some districts the scales were retained, but with the insertion of a lower limit, even though this, of course, involved consent to the corollary of an upper limit. In other districts wages were fixed by the conciliation board system of collective bargaining and arbitration. The idea of a living wage, therefore, took precedence over the idea of a share in profits, and gathered strength as years went by, until it culminated in the demand for a legal minimum wage for every individual man, and not merely a general minimum level of wages in each district. The individual minimum wage was claimed not simply as a remedy for abnormal places, though the campaign opened in that way, but primarily as one of the rights of man in accordance with the doctrines of modern socialism. But even before the 1912 Act, and especially during the war period, the ideas of the miners were undergoing a further change. The idea of a living wage combined with a share in profits was gradually supplemented by the idea that all surplus profits, profits greater than were necessary to afford the requisite return to capital, should be appropriated by labour, as the true source of all wealth : hence the demands for national wage regulation and the pooling of profits, and, at least, one main reason for nationalisation. The recent tremendous struggles for a national minimum level of wages were due primarily to the fear that the poorer districts would

drag down the minima in the richer districts, and to the attempt to enforce the principle that if a pit or a district could not pay a decent living wage, it should cease production: two arguments which are very closely intertwined, in view of the conventional and relative nature of the conception of a living wage. But in addition the idea has been steadily growing that a man ought to be remunerated according to his expenditure of effort and not according to the value of the product of his efforts: for example, that since miners in South Wales may be supposed to work no less strenuously than miners in Yorkshire, they should all receive the same, or approximately the same, wages: in other words, that labour's total share be distributed on the basis of the subjective cost of labour. The idea for a pooling of wages,¹ and a further argument for financial centralisation or nationalisation of the industry sprang from the same sources.

The history of the ideas which have actuated the miners, finds little counterpart in the cotton industry, in spite of the strong development of trade unionism, at any rate on the spinning side. The cotton operatives have never seriously advanced the principle of the living wage: there has never been a general minimum level of wages, nor even a guaranteed time rate for piece-workers. The cotton unions have concentrated almost exclusively on securing the observance and extension of the price-list system. It should be realised that these price lists have not the same functions as the tonnage rates or price lists in a coal mine.² The primary object of the latter is to balance out the variations in the productivity of the individual's labour due to the variations in the physical conditions underground: the corresponding variations in the

¹ See my *Wages in the Coal Industry*, pp. 134-136.

² The ultimate object is of course the same, the equalisation of efficiency earnings. But in the cotton industry this can only come about slowly through the replacement of old machines, and the gradual establishment of the perfectly balanced equilibrium of theory. In other words it is unlikely to be achieved in the dynamic state, and the cotton price list system in practice merely reinforces the natural tendency to equilibrium, while in the coal-mining industry the result will be achieved directly, if the price lists are fixed accurately.

cotton industry are variations in the machinery used, and variations in the value of the product. But the cotton price lists do not give the same earnings irrespective of the machinery with which the operative is working : a man will earn more on one kind of mule or loom than on another, and more if he is making one kind of product than another. What the cotton price lists do, is to ensure, first, that two men working with exactly the same machinery and producing the same kind of product, shall be paid at the same rate ; secondly, that if the employer speeds up the machinery, and so increases the operative's expenditure of effort, the latter shall get an increased, though not necessarily a proportionately increased, remuneration ; and thirdly, that the employer shall use the most efficient kind of machinery. The cotton operatives have no such idea as the right of man to a living wage, presumably because the standardisation of machinery and conditions makes it reasonable to assume that if an operative cannot make a living wage, it is his own fault. There is also no general minimum below which the level of wages as represented by the level of the lists must not fall, and the reason again lies in the economic peculiarities of the industry. Trade depression can be, and is, met by working short time, and not primarily by reducing wage rates so as to reduce the cost of production. The operatives have strongly favoured short time as the lesser evil, and for thirty years before the war there was less than ten per cent. variation in the percentage addition to the price lists : consequently a general minimum was not worth bothering about. Similarly while the unions usually tried to obtain some share in the profits of a trade boom, the increase obtained, and even the increase sought for, was quite small, partly because the common increase in the earnings of all the operatives, resulting from the restoration of full-time working, was a source of satisfaction and content, and they were not therefore disposed to risk their interruption ; and partly because as has been explained in Part I, earnings steadily rose apart from alterations in the level of list prices. This last phenomenon fortified the trade unionists' faith in

the maxim, "Look after the lists, and wages will look after themselves," and therefore they pursued a firm, but on the whole unaggressive, wage policy. Similarly the cotton operatives have made little or no attempt to secure a share of the specially large profits of some companies; and again this is probably due to the economics of the industry, for the conditions of production have become so standardised that any super-average profits are mainly due to good management, and that being so, the Lancashire mind sees no reason why good management should not have its reward. The cotton unions have therefore trusted mainly to the lists system to see that they were not defrauded. For the cotton industry, custom was embodied in that system, though it seems obvious that this would not have been the case if the lists system had not provided and maintained a general level of wages, which, in the opinion of the cotton operatives, compared favourably with conditions in other industries. It is noteworthy that during the war period the cotton industry was almost if not quite unique in its refusal of the flat-rate system of wage advances to meet the increased cost of living: and adherence to the list system maintained the old relative differentials between the various grades of labour. In regard to the general level of wages, the cotton unions appear to have continued their old policy by endeavouring to maintain the "real" wages yielded by the lists in 1913, slightly modified according to the level of profits. Thus in the post-war boom they eventually raised the level of the lists to something more than a parity with the increased cost of living, and in the subsequent slump they accepted reduction to something less: meantime the rate of earnings as distinct from list rates has continued to increase. The cotton operatives have, in fact, been little affected by the doctrines of modern socialism, nor has their industry been subjected to any important changes in the technique of production. The difference between the coal-miners and the cotton operatives in their whole attitude to the wage problem, is nearly as great as the gulf between Marx and Marshall.

Until the middle nineties the engineering unions continued to lay more stress on the friendly benefit than on the industrial functions of trade unionism. Wages were settled on a local basis, and little conscious attempt was made to formulate a uniform policy, or even to co-ordinate local efforts. As in the building trade, the principle of customary comparison was undoubtedly very strong, and this resulted in little disturbance of the differentials between different localities, or between different grades. As the changes in the technique of production developed, and minute specialisation of machinery and labour ensued, the old argument that a turner or a fitter was a skilled man in virtue of his apprenticeship, and was therefore entitled to a skilled man's wage, irrespective of the precise character of the work on which he was usually employed, began to lose its justification of reasonable agreement with the facts. The status of these two grades in particular was being threatened by the new technique of production, and the Amalgamated Society of Engineers, in which these grades were numerically preponderant, was roused to a more active industrial policy. The enemy was not capital so much as the semi-skilled man, but if the invasion of the latter were successful, it would inevitably mean serious breaches in the anti-capital defences of the trade union standard rates. If the trade unions consented to the principle that wage rates should be in accordance with the gradations of skill required to perform the new specialised tasks, the uniform trade union rates for turners and fitters would be replaced by an almost infinite series of rates, which no trade union could ever hope to control : something very little different to individual bargaining would inevitably result, and capital would regain its old freedom of exploitation. The compromise policy of enrolling the semi-skilled man, and throwing the combined strength of labour into an attempt to establish one or two definite semi-skilled rates, was not attractive to the skilled man of the nineties with his pride of craft and craft unionism, nor did it appear feasible, for trade union organisation on an industrial basis was only slowly proving its permanent worth. After 1900 the

A.S.E. took some feeble and tentative steps in this direction, but the process of conversion has been slow, and is only now beginning to gain ground rapidly. Right up to 1913 the A.S.E. continued to try and preserve the status of the turners and fitters by maintaining uniform rates, and on the whole it has succeeded better than might have been expected, because the other unions of skilled men have thrown in their lot with this policy. Their bargaining power without the A.S.E. would have been extremely small, and in addition they were faced in lesser degree with the same problem. But in concentrating their efforts on the proper distribution of labour's share among the different grades of workers, the unions could spare little attention to the size of that share, or the steps necessary to increase it. In the pre-war period, trade unionism in the engineering industry developed neither a definite policy as to wage determination, nor any great improvements in its own internal organisation. The war period resulted in the regulation of wage changes on a national basis, and this has continued up to the present. Some small progress towards the necessary reorganisation of trade unionism has been effected, but the individuality and exclusiveness of the craft unionist in this industry dies hard. Amongst the rank and file the ideas of militant action have greatly developed, and this has resulted in the adoption of a definite policy of equating wages with what the trade can bear. The prolonged negotiations with the employers during 1925 and 1926 clearly exhibit this policy, but its successful execution is hampered, not only by the weakness of trade union organisation, but also by the great disparities between what can be borne by different sections of the industry. Some sections, such as electrical engineering, have been prosperous even during the recent depression, others have been extremely hard hit, and it is more than probable that these disparities will become to some extent a permanent feature. The engineering unions are indeed beset by difficulties at every turn, and the emergence of definite policies, such as are pursued by other bodies of wage-earners, lies in the future.

Finally we have to consider the railway workers. In the absence of effective trade unionism until the immediate pre-war years, custom ruled the determination of wage rates in its most extreme form. Railway traffic work can hardly be compared with factory work: it does not demand the acquisition of any very definite standards of skill, but of that experience which breeds capacity for responsibility. Customary comparison is possible between craftsmen in the building or engineering industries, but the railway service has always been regarded as peculiar, and a law unto itself. To a large extent the service has recruited itself from agriculture, and the higher grades have been recruited from the lower. Agricultural wages advanced very little between the eighties and 1913, and since the agricultural worker for obvious reasons finds it easier to transfer to railway work than to manufacturing industry, and probably also finds the life more congenial than factory life, the railway companies did not find it necessary to raise their unskilled rates in order to obtain an adequate supply of recruits. It was the pressure of public opinion and the community's regard for its own safety, which caused the shortening of hours in the pre-war period, rather than any shortage of labour. The very stationariness of wages in the early part of the period probably helped to retard the rise which normal economic factors were slowly bringing about. Specific rates of wages had become customary themselves, and not in comparison with the wage changes in other industries, except perhaps the unchanging level of agricultural wages, and the companies saw no reason why they should be changed. The same atmosphere of the "traditions of the service" undoubtedly also exercised a great influence on the mental attitude of the workers, and was one reason for the slow growth of trade unionism. Possessing the great boon of security of employment, the railway worker adapted himself to an orderly and quiet existence, albeit at a stationary standard of living compared with most manufacturing industries. He completely failed to appreciate the latent possibilities of trade unionism in extracting higher wages by forcing

the railway companies to raise their charges to the consumer without too serious an effect on the volume of traffic, and by stimulating more efficient organisation of the service. This is what has been achieved since the war. The railway unions have adopted a policy of charging for labour what the industry can bear, in a form which is akin to the policy of taking it out of the consumer. The railway unions, however, make no serious attempt to obtain definite monopolistic power by artificial restrictions on the supply of labour, as the building unions have done ; and hitherto they have shown considerable moderation in their demands, for the development of effective trade unionism, and the adoption of this policy, have produced results so satisfactory to the railwayman that at present he is more or less content to leave well alone, and with some reason. How long these wise counsels will prevail, remains to be seen.

CHAPTER IX

THE BARGAINING POWER OF TRADE UNIONISM

A STUDY of the evolution of the ideas of different groups of wage earners as to the proper principles of wage determination, would give entirely erroneous impressions unless supplemented by a quantitative analysis of their bargaining power. The current ideas of wage earners, and their general attitude to the whole problem of wages, are of little practical significance until crystallised by trade union organisation into definite policies, and even then the importance of a policy depends on the means available for carrying it into effect. While a group of wage-earners remains unorganised, a study of their common thought may be of great interest from the historical and sociological points of view, but the economist need only concern himself with the indirect effects, of which account must certainly be taken, as of the innumerable other factors which compose the background of the general social environment. It is not until that group of wage-earners becomes organised into a corporate body, with a common will and some means of self-expression, that their mental activity becomes of direct economic significance. The mere growth of trade unionism in membership is by no means a sure guide to the growth of trade union bargaining power: mere numbers may be a source of weakness, as many a trade union has discovered to its sorrow. Equally it is absurd to dismiss the matter with the generalisation that trade union bargaining power is a coefficient of the state of trade. This may be largely true in the short period, but in the long period many other factors are in operation, and it is proposed to devote this chapter to their study and analysis.

In the first place, it is obvious that trade union bargaining

power depends to a large extent on the method and structure of trade union organisation. Until forty years ago, craft unionism virtually reigned alone, and it may be said that industrial unionism was of very little significance until the years immediately prior to the war. The relative efficiency of craft versus industrial unionism has been debated in many books and on many platforms, and undoubtedly the latter finds more and more favour, not only amongst economists and historians, but also in the trade union world itself. The claims of the industrial basis are, moreover, greatly reinforced if what ultimately matters is the potential stimulus to improvement in the methods and organisation of production.¹ Admittedly a strong craft union in an industry in which the other workers are unorganised, may achieve more spectacular results in the form of increased wages, because it can confine to its own members all that can be squeezed from capital: whereas an industrial union must share out its gains more or less equally amongst all the different grades of workers in the industry. A craft union may also be able to raise the wages of its members at the direct expense of the other workers in the industry. Even where a strong craft union and a strong industrial union exist side by side in the same industry, as in the railway service at the present time, the craft union may well be at an advantage from the point of view of its particular grade of workers, though it must handle its cards with great skill if the employers are not to play off the one union against the other. But the sectional pressure of a craft union tends not so much to evoke a genuine improvement in the methods and organisation of production, as merely to stimulate the substitution of cheaper labour. If the craft union allows this to take place unchecked, its standard rate of wages is almost immediately undermined: hence almost all craft unions are driven to adopt demarcation rules of one kind or another, and to fight for their maintenance as keenly as they

¹ This somewhat anticipates the contents of the next chapter, and the reader is asked to accept this contention provisionally, and on that basis to adjudge the arguments which follow.

would fight against a serious reduction in wage rates. These demarcation rules do not absolutely prevent improvement in the methods and organisation of production, but they often place serious obstacles in the way, and the general result is to introduce many twists into the path of progress. The policy of demarcation rules is therefore bad alike for the community as a whole, and for the whole body of wage-earners in the particular industry, while since the rules in no way reduce, but rather strengthen, the employers' desire to dispense with the craftsmen concerned, it is sooner or later abortive from the point of view of those craftsmen themselves. As it becomes clearer that the defence of the existing demarcation rules is being undermined, a craft union is driven, step by step, deeper into a morass of difficulties and inconsistencies, as for example in the engineering industry, where the whole wage structure of the industry has become to a large extent artificial and divorced from realities. In order to evoke a genuine improvement in the methods and organisation of production, trade union pressure must be not sectional but general—general throughout each industry, and up to a point throughout all industries, otherwise capital is left with an easy line of retreat, whether it be in the form of freedom to substitute cheaper labour without substantial change in the process, or in the form of freedom to pay other workers less than their services are really worth. The pressure of an industrial union must in the nature of things be more or less general; otherwise dissatisfaction and mutual jealousies will be aroused within its ranks. It is true that this safeguard becomes a drawback under certain circumstances. Thus in a heterogeneous industry like engineering, which is really a group of industries, some sections may be able to stand very much more pressure at one particular time than other sections, and yet the industrial union may not be able to risk the possibility of internal friction if the same grade of workers is paid at higher rates in, say, electrical engineering than in marine engineering. But a craft union is faced with precisely the same difficulty in this respect. The advantage of the industrial

union is that the pressure will be equal so far as all grades of workers in the industry are concerned, and therefore there is much less need for rigid insistence on demarcation rules and the like. Since the interests of all workers stand theoretically on the same footing, the view point of the industrial union is broad, and if one grade foregoes what they might have secured by sectional action, that becomes the gain of another grade. Equally an industrial union will not be tempted to use weapons such as unnecessarily prolonged apprenticeship, the effect of which is a similar tendency to warp and distort the most economical methods and organisation of production.

A comprehensive industrial union with an adequate and well-proportioned membership is therefore a more efficient type of trade union organisation than the essentially sectional nature of craft unionism. The modern development of trade union organisation has been very largely on the industrial basis, and the sectional character of even the great craft unions has been greatly modified by amalgamation and federation. Hence the bargaining power of trade unionism, quite apart from the numerical increase in trade union membership, has been increased, not only from the standpoint of immediate tactical considerations (with which contention most students of the subject would agree), but also from the long period standpoint of the results on the methods and organisation of production. At the same time it must be admitted that trade unionism on an industrial basis tends to penalise the interests of the really skilled grades in an industry, and the bitter opposition of many craft unions to amalgamation with an industrial union shows their fear lest their interests as craftsmen should be subordinated to those of their numerically stronger semi-skilled and unskilled brethren. Further, industrial unionism presents many new difficulties and problems as regards its internal organisation. The close tie of craft interests and instincts has to be supplied by the less tangible and less individual appeal to the common interests of all the workers in the industry. Mere size brings problems of industrial democracy, which are not susceptible to any rough and

ready application of those principles of constitutional government which craft unionism has so laboriously evolved. Apathy on the part of the rank and file, when the individual feels lost in the mass, becomes an even more serious danger than bureaucracy, and the proper boundaries of each union, and the maintenance and creation of an adequate degree of unity and coherence of policy in the trade union movement as a whole, are problems of the first magnitude. Whether industrial unionism will be able to develop its potentialities to their fullest extent, depends on the energy and capacity brought to bear on these problems, but the fact remains that industrial unionism has potentialities which craft unionism does not possess.

The growth of the industrial basis for labour organisation has certainly been stimulated by the development of employers' associations, which naturally take an industrial form, just as employers' associations have been stimulated by the growth of large industrial unions; each of course exerts a reciprocal influence on the other. So long as the district employers' associations retained their autonomy in all matters concerning labour, a craft union on a national basis was at no great disadvantage, for even though negotiations were entrusted to the district organisations, the national executive could usually exercise some degree of co-ordination and control, while in the background there was always the possibility of coercion by a more extended use of the strike weapon. But as the autonomy of district employers' associations is gradually reduced by the consolidation of the authority of the national body, so the bargaining power of a craft union is also reduced, at any rate where there are numerous craft unions in the industry, since it becomes increasingly possible for the employers to play off one union against another. Even when the craft unions are federated, some of them at least are likely to support the federation only half-heartedly, and to be extremely jealous of any extension of its powers beyond the strictest interpretation of its constitution, while divided counsels and mutual recriminations are all too common features. Thus in that part of

the industrial field where craft-unionism still predominates, it is probably true to say that on the whole, despite a very great increase in the numerical strength of trade unionism during the last thirty years, the collective bargaining power of labour has not increased as much as that of capital. On the other hand industrial unionism has greatly strengthened the bargaining power of labour in the rest of the industrial field, and its development has been so rapid, and on such a scale, that organisation on the employers' side has not kept pace, even though it has made very great strides. The bargaining power of both sides, however, has developed very unevenly in different industries. In some cases a strong industrial union is opposed only by a relatively weak employers' association; in others, for example in engineering, a multitude of craft unions are contending with an exceedingly strong and united organisation of employers: and it is therefore extremely dangerous to make sweeping generalisations.

There can indeed be no doubt that employers' organisations have become absolutely much more powerful, especially since the war with its "controls" of various kinds, and the need for collective commercial contracts with the Government. Account must however be taken of the spirit which animates them. In the previous chapter attention was concentrated on the psychology of trade unionism, because employers' organisations as a rule have not formulated or pursued definite policies as to wage determination, but rather adopted the dictates of opportunism. It was however pointed out that, over long periods of time, the employers' general mental attitude to the whole wage problem might undergo change. In the main, such changes may be classified with the many other factors which make up the social environment of a historical period. Thus the general body of employers has swung round from a militant condemnation of trade unionism, to a general recognition of its function in the modern industrial system, even though its policies and practices may be the subject of violent denunciation. The struggle for "recognition," in the broader, as well as the narrower, meaning of that term, was successfully

brought to a conclusion during the twenty years before the war, and trade unionism has benefited greatly by this change of attitude on the part of employers, and the middle classes generally. Further, during the last forty years there has been a growing recognition on the part of employers of the essential difference between wages and wage costs: the vast majority of employers to-day would not subscribe to the creed that the lower wages are, the better. This is not to say that employers do not on occasions fight for wage reductions as hard as did their forefathers, but more and more they do so in a spirit of regret rather than with feelings almost approaching satisfaction, and only under conditions which they consider absolutely necessary, instead of on every possible occasion, as was the practice of a large number of employers in the past. Thus, the principle of a minimum wage finds favour to-day amongst a large proportion of employers, not only because as efficient employers they wish to be protected from their less-efficient competitors, but because they largely agree with the very same arguments which the wage-earner advances in its support. The issue is therefore narrowed down to a difference of opinion on the precise level at which the minimum should be fixed. Again, in the matter of hours of work, employers no longer adhere to the doctrine that the longer the hours, the greater will be the output. Experience, coupled in more recent years with the fruits of scientific investigation, have conclusively disproved what was once a cardinal tenet of the employer's faith, and even to-day when hours have been so greatly reduced, employers are no longer prepared to assert that these reductions have caused, or that still further reductions will cause, a fully proportionate fall in output. A substantial increase in hours would in many industries meet with considerable opposition from those employers, and their number is not negligible, who are capable of taking all the relevant factors into consideration. Thus, in these and many other ways, the mental attitude of employers has changed, and the change has been definitely favourable to the development of trade unionism, the more efficient exercise of its func-

tions, and the fulfilment of its aims. On the other hand, employers' organisations have become much more powerful, though whether their growth has been relatively greater than that of trade unionism is a matter of opinion. It is therefore a question of balancing this growth of organisation against the change in the spirit on the part of the organisers, and because the former is the more tangible factor, the importance of the latter should not on that account be minimised.

Brief consideration must now be given to the effect of certain changes in the structure of industry on the relative bargaining power of organised capital and labour. In addition to the tendency towards an increasing size in the typical business unit, the last forty years has seen a less universal, but even more spectacular, extension of the nature and sphere of its activities. Vertical and horizontal combination has tended to obliterate the once clearly marked boundaries between different industries, while the modern joint stock company practice of investing reserves in other companies in the same or different industries, and even to some extent the widely distributed nature of the individual's investments, have tended to unify the interests of capital, irrespective of its precise occupation, in a more tangible fashion than was formerly the case. Thus relatively few important firms to-day confine their activities and interests solely to one particular line of production. A stoppage of work in one industry, therefore, does not necessarily mean a complete cessation of revenue to the firms concerned: even if the stoppage sooner or later involves a stoppage of all the firm's directly productive operations, it may still draw an income from its investments, sufficient perhaps to pay for the overhead costs of the idle plant and equipment. These developments of the industrial structure, and of the general organisation of capital, have therefore directly affected the bargaining power of trade unionism, and not merely in respect of the strike weapon. In that respect it has made it more difficult for trade unionism to get to grips with its opponent, and more difficult to deal a knock-out blow. But quite as important is the difficulty of ensuring

that an advance in one section of the front is not counter-balanced by an equivalent reverse in some other section : in other words, the very same firms, and not merely capital in general, may sooner or later recoup themselves at the expense of the workers in another industry whose bargaining power is not so great. There is, however, another side to this matter, for with a widely extended sphere of activities, the employer also becomes more vulnerable, in that he is, so to speak, holding a longer front. Provided that the trade unions concerned are acting in close co-operation, and are strong enough to resist a counter attack at any point, the employer may be willing to give a minor concession here and there simply in order to preserve peace along his whole front, and so avoid the distraction and worry of small engagements, or an interminable series of negotiations. Further, if the trade unions concerned only acted in close co-operation, they would be at no disadvantage even in major engagements. But in general trade unions are still more or less blind to the necessity for such co-operation, and for an all-round development of trade union organisation. Admittedly, the more thoughtful trade unionist of to-day realises the position, and some weak and tentative steps have lately been attempted by individual unions, and by the movement as a whole,¹ but when it has come to a crucial point, individual interests, mutual jealousies, and dissensions of one kind or another, have so far robbed these efforts of any considerable results, and perhaps even postponed their ultimate success. The trade union movement is here faced with a vital, and a most difficult, series of problems, and before action can be taken, much hard thinking and much educational activity is required of its leaders, and, as I shall presently suggest, the prospects of this are not particularly promising. Meanwhile the effect of changes in industrial structure and the organisation of capital must certainly be assessed amongst those factors which tend to reduce trade union bargaining power.

¹ e.g. in particular the establishment of the General Council of the Trade Union Congress,

We may now pass on from the factors which are directly concerned with the organisation of employers and employed, to the broader effects of the changes in our social institutions during the last forty years. Again a brief examination must suffice although several books might still be devoted to this almost inexhaustible subject. Foremost of these changes we must place the development of social insurance of all kinds, and, first of all, of insurance against unemployment. As Mr. and Mrs. Webb so rightly emphasised, the old "out-of-work benefit" was provided by trade unionism, not primarily for the benefit of the individual who fell a victim to the personal disaster of unemployment, but as a means of safeguarding the standard rate of wages by making it unnecessary for any man through stress of starvation to accept work at less than that rate. As trade unionism began deliberately to adopt the policy of resistance to reductions of wage rates in times of cyclical trade depression, even at the expense of considerable unemployment, so the industrial character of the out-of-work benefit became more emphasised, and at the same time it assumed the form of an insurance, rather than of casual benefit. The State scheme of Unemployment Insurance has, of course, been instituted solely with a view to the personal aspects, and the removal of one great cause of the social evil of poverty, but, at the same time, it has enormously strengthened the bargaining power of trade unionism.¹ The provision of benefit in the case of systematic short-time has had as great an influence in some industries as has benefit for absolute unemployment in others, and the two have enabled trade unionism to maintain wage rates in the face of a much greater volume of unemployment than they could otherwise face, or probably ever have faced in the past. Again, in respect of strike action, unemployment insurance has almost completely abolished the fear of blackleg labour by the unemployed, however numerous. While in general such black-

¹ Compare on this subject various passages in an article in the *Economic Journal*, March, 1927, by Professor H. Clay, entitled "The Authoritarian Element in Distribution,"

leg labour had ceased to be a serious factor in the calculations of the craft unions, this was by no means the case before the war where industrial unions were concerned, and their gain has been considerable. Moreover, it is clearly possible for trade unionism to make use of the unemployment insurance scheme in direct furtherance of industrial action. It is true, of course, that benefit is not payable to those who are directly concerned in an industrial dispute, but by skilful tactics a trade union might use the grades of key men in an industry as its " shock " troops, and though their absence would bring the entire industry to a standstill, the remainder of the men would be qualified to receive unemployment benefit : in other words, the State and the employers would very largely find its strike pay for the union. That trade unions have not deliberately exploited these possibilities may be counted to their credit by some, but by others it will be viewed as a striking example of the tenacity with which they cling to customary modes of action, and also as a striking commentary on the lack of brain-power, or its exercise, on the part of their present leaders.

Although the institution of unemployment insurance has in these ways greatly strengthened the bargaining power of trade unionism, yet it is probably not a clear gain, for it tends to reduce the mobility and fluidity of labour,¹ and therefore under certain conditions, may hamper the reorganisation and improvement of production. So long as a man is entitled to draw unemployment benefit in his home district, he will be less inclined to move to another, and still less inclined to change his occupation. So much stress has recently been laid on the cyclical nature of unemployment, that the ordinary wage-earner has absorbed the idea that the unemployed are merely the reserve force of each industry, while he remains heedless of the continual expansion and contraction of different industries, or of the same industry in different localities. Since

¹ The system of Labour Exchanges which accompanies the Unemployment Insurance Scheme works of course in the other direction, but it is extremely doubtful whether its influence effects a counter-balance, and in any case without insurance it would be still more efficacious.

1918 the mobility, and therefore also to some extent the fluidity, of labour have been seriously reduced by the housing shortage; employers have had to face the fact that without the provision of housing accommodation on their part, labour could not follow if they changed the site of their works or established new works in country districts, even though the unemployed have been legion: hence they have not attempted what might otherwise have been undertaken. It is therefore extremely difficult to assess the quantitative effects of unemployment insurance on the mobility of labour, but there can be little doubt that unemployment insurance is likely to reduce the potential response of capital to any stimulus to improvement whether created by trade union pressure, or the normal pressure of competitive progress. The ultimate gain to trade unionism is therefore only a net gain, but even so, it is certainly a very great gain.

Old Age Pensions are another form of social insurance which has been of great assistance to trade unionism. Workers who were daily becoming less efficient were often an incubus to their fellow-workers. Even works managers sometimes allowed their humanity to interfere with their duty, and where a man had given good service in the past, he would often be allowed to receive a wage rate which had ceased to bear its normal relation to output. From the trade union point of view, however, the great difficulty lay in those cases where the employer insisted on a reduced wage rate, for then the union was faced with the alternative of depriving old men of their jobs, or of granting numerous exceptions to the standard wage rate, which was obviously a dangerous expedient. Old Age Pensions enabled the difficulty to be surmounted.

In general, social insurance has tended to supplant the friendly benefit side of trade unionism. By itself, this would be detrimental, for in the past the influence of the friendly benefit side as an aid to recruiting, and as conducive to permanent organisation has been unmistakable. But the friendly benefit side was at the same time a serious drawback: it was an encumbrance in the pursuit of the industrial functions of

trade unionism, even though large financial resources had their advantages if and when the union's back was forced against the wall. But it was not conducive to the vigorous application of a really militant policy: and again on balance trade unionism has gained by its supersession.

The effects of the recent development of other social institutions must be more lightly sketched. The Co-operative movement, though at times a considerable source of mutual embarrassment, has been a most valuable ally to trade unionism, not only directly by the provision of credit, and so on, during disputes, but also in the additional opportunities which it has provided for the spread of trade union ideas and doctrine, and for self-expression by the working-class movement as a whole; while last, but not least, it has provided a solid basis for criticism of the ordinary capitalist organisation of production, and some concrete justification, at least in the popular mind, for the aspirations and objectives of modern socialism. The Trade Board Acts have greatly strengthened trade unionism, partly by raising the income of a very large body of workers who had previously been too poor to afford even the smallest trade union subscription, and partly by the obvious need for adequate representation of the workers on the boards, but mainly because the whole system embodies the clearest possible recognition and acceptance by the community of the principle of the minimum wage—a principle which in its more extensive form of standard wage rates, is the root of trade union policy, and the basis of all its functions. The effect of the trade board system is not confined to the three million wage-earners whose wages are regulated by the boards: it has produced repercussions throughout our whole industrial system, as embodying a general principle of wage regulation, and at the same time setting a standard level of wages and conditions with which labour in the more highly organised industries often makes comparisons. The Joint Industrial Councils' scheme has had somewhat similar effects by its explicit recognition of the functions of trade unionism in the conduct of modern industrial relations, and by emphasising

ing the fundamental justification for some measure of joint control, namely the contribution which labour can make to the efficient organisation of production. Further, in the numerous industries where Joint Industrial Councils have achieved some measure of success, a very decided stimulus has been given to trade union organisation and recruitment. Much the same may be said, though to a more limited extent, of the establishment of machinery for conciliation and arbitration. Though, as will be suggested later, trade unions should carefully limit their resort to, and acceptance of, the principle of arbitration, the Industrial Courts Act of 1919,¹ does contain a further recognition of the necessity and desirability of collective bargaining. Lastly, the development of factory legislation in particular, and the whole mass of our present industrial legislation, represent an achievement for which trade unionism can rightly claim a large degree of responsibility; and the successive gains of succeeding generations provide an ever-increasing volume of evidence as to the value of trade unionism, which even the most apathetic worker finds it difficult to ignore, and from which the keen trade unionist may draw an inexhaustible supply of inspiration for the future.

Finally, consideration must be given to the effects of political developments on trade union bargaining power. In the nineties, Mr. and Mrs. Webb's verdict as to the limited use which trade unionism could make of the method of legislative enactment,² owing to the cross sectioning of parliamentary and trade union representation, was well justified, but the advent and rapid development of the Parliamentary Labour Party has considerably changed the situation. Even if trade unionism in a large industry only succeeds in sending two or three representatives to Westminster, these representatives now find similar representatives from other industries, and by mutual arrangement the whole weight of the party can be directed to the support of the special interests of different industries in turn. That more use has not been made of

¹ The Act of 1898 was an earlier but less definite recognition.

² *Industrial Democracy*.

these possibilities is due, less to the lack of a parliamentary majority by the party, than to the sheer pressure of business before the House, which is forced to confine itself almost exclusively to broad national affairs. In this respect, the growth of the Labour Party has greatly strengthened the method of legislative enactment. In matters common to all wage-earners, such as trade boards and minimum wage legislation, health and safety, social insurance and so on, trade unionism, through its close association with the Parliamentary Labour Party is able to make its voice heard, and with considerable effect, while in the event of grave national disputes the trade unions concerned are able to ensure that the community hears both sides of the case. Trade unionism has undoubtedly benefited very greatly by the political developments of the last twenty years. Nevertheless, it is doubtful whether it is a clear gain, whether even there is a net gain. Strong views are expressed to-day that trade unionism is being diverted from its industrial functions to purely political objects, to the detriment of the members' interests as wage-earners; and that the resulting association of constitutional with industrial pressure, is a negation of political democracy, and therefore detrimental to their interests as citizens, as well as to the interests of the community as a whole. There is undoubtedly some truth in these contentions, but they are based on a rather shallow analysis. Modern trade unionism can achieve many of its legitimate objectives to-day only by means of parliamentary legislation: there can be no hard and sharp division between purely industrial and purely political objects. Parliament can be, and undoubtedly is, "coerced" by many forms of action as well as industrial action, and trade unionism will have to learn, if it has not already learnt, that the weapon of the strike is not a particularly useful form of such coercion, for it is apt to recoil in most disastrous ways. In the contention that trade unions have concerned themselves with party politics at the expense of neglecting their normal industrial functions, there is more substance, but the reason is not that politics and political

action are outside the proper sphere of trade union activity. The real reason is that in its rapid growth the Parliamentary Labour Party has drawn its supplies of man power very largely from the trade union movement : many of the more able trade union officials are attracted by the superior charms of Westminster as compared with the inevitable drudgery, and comparative obscurity, of trade union administration. In many cases the trade union official relinquishes his post, and becomes a politician pure and simple ; this is a serious source of loss to the movement, but the real loss is even greater when he continues to hold his trade union office, and yet devotes the bulk of his attention to parliamentary business. The Parliamentary Labour Party has bled the trade union movement white,¹ and while in time the trade union movement may provide an adequate supply of capable men for both organisations, at any rate temporarily, there is an acute shortage. This is one of the main reasons for the slow progress in the improvement of trade union organisation, for the absence of really constructive thought, and for the weakness of trade union leadership. The Parliamentary Labour Party may be a source of strength to the trade union movement in many respects, but it is also at present a source of very great weakness, to an extent which is often insufficiently realised.

¹ It is of course questionable whether the recruitment of trade union officials has been entirely an unmixed blessing to the Parliamentary Labour Party, though it is difficult to see what other source of manpower could have been utilised.

PART III

WAGES IN THEORY

CHAPTER X

A RECONSIDERATION OF WAGE THEORY IN THE LIGHT OF MODERN COLLECTIVE BARGAINING

THERE is a notable absence of agreement among economists as to the validity and sufficiency of any particular theory of wages. While the differences between most of the theories which have been advanced in the last fifty years may be less fundamental than a superficial examination would suggest—differences in method of approach, terminology, and refinement of detail, rather than in basic principles—they are nevertheless substantial, and the student of wage theory is offered numerous alternatives. In recent years scores of books on general economic theory have made their appearance. Some of the writers have more or less deliberately evaded the attempt to formulate a general theory of wages, and, having given an account of the factors which govern wage differentials between different occupations, have been content merely to stress the broad relation between the general level of wages and the productivity of the community. A substantial case can be made out for this method of treatment, if values of all kinds are conceived capable of uniform explanation (under assumed conditions); the task of particular theories of different kinds of income then becomes essentially one of exhibiting differences. But the vast majority of the writers fall between two stools: they cling more or less closely to the traditional theories of rent, interest, and profits, fearing to grasp whole-heartedly the nettle of an uniform value theory,

and yet they cannot reconcile themselves to any traditional general wage theory. Under the circumstances the omission of any general wage theory gives a damaging sense of inconclusiveness and incompleteness to what otherwise appears a corporate body of doctrine. Other writers, as a lesser evil, choose to repeat the Marginal Productivity theory, as propounded by Marshall, frequently with some excuses for its apparent lack of connection with modern conditions, and some explanation of its apparent inconsistencies. Other writers, however, seem to find the Marginal Productivity theory entirely adequate, and accuse its critics of misusing it in a way which no general economic theory can stand, or should be expected to stand. In so far as there is a theory of wages, which to-day commands general acceptance, or at least nominal allegiance, it is the Marginal Productivity theory,¹ and since frequent reference will be made to it in the pages which follow, it will be as well to summarise very briefly its main features. The reader, who is familiar with the theory, is, therefore, invited to omit the next paragraph.

Marshall's theory² may be summarised as follows :

(1) By a series of hypotheses concerning an imaginary world in which everyone owns the capital that aids him in his work, the central fact is brought out that the aggregate national dividend is governed by the magnitude of Nature's return to man's work (in the state of the arts of production at any given time) and the distribution of that dividend between different kinds of workers is governed by the demand for their services.

(2) In the real world, where the relations of labour and capital play a great part in the problem of distribution, the distribution of resources between different uses is governed by the principle of substitution, as operated by the business

¹ In many ways this title, though sanctioned by customary usage, is very misleading, for marginal productivity only throws light on one of the many causes by which wages are determined, as Marshall himself clearly states. In J. B. Clarke's treatment a completely static state is assumed, a matter which is not always as fully realised as it ought to be.

² *Principles*, 8th edition, bk. VI, ch. i and ii.

organisers, who are always seeking to combine the various factors of production in such proportions, and to such an extent, that the sum of the prices which they pay shall be the least possible. This results in the employment of labour as a whole, or of any particular kind of labour, up to the margins where it is a matter of indifference whether capital or a different kind of labour is substituted.

(3) These margins of indifference are determined by the general conditions of demand and supply—that is, on the one hand, by the urgency of all the uses to which the labour can be put, together with the means at the command of those who need it: and on the other hand, by the available supplies of it.

(4) The determination of the marginal uses of the labour clearly also determines its marginal net product in each use—net, that is, after deducting any expenses that may be indirectly caused by the change, and adding any additional savings—and the marginal net product in each use measures its exchange value in each use, which will tend to be the same for all uses, since the law of substitution will tend to shift it from uses in which its services are of less value, to others in which they are greater.

(5) Thus, in determining its marginal uses, the general conditions of demand and supply also determine the exchange value of the labour, and hence the general conclusion that the earnings of the worker tend to be equal to the marginal net product of his work.

These propositions set out the bare bones of the Marginal Productivity theory. Marshall himself clothed them to some extent, not only in the *Principles* and other writings, but also in the oral tradition which he built up in the course of his teaching work. Professor Pigou has continued the process by his most important analysis of “unfair” versus “fair” wages, and the possibilities of rectification, or conscious manipulation, in either case.¹ Other writers of the Cambridge School have also added their quota. While, however, it may be claimed that the Marginal Productivity theory still com-

¹ *Economics of Welfare*, Book II,

mands the most general allegiance amongst economists, there are many rivals in the field. Thus Professor Cannan and his followers prefer to visualise the problem in terms of personal incomes, which may be classified in the two simple categories : incomes from property, and incomes from work. They, therefore, analyse the causes of the relative levels of wages in different occupations, and then explain the general level of wages as closely dependent on the productivity of the whole community, modified by changes in the size of the working population and similar factors. Professor Cannan has made a great contribution by his careful study of the causes of inequality of incomes, and by his insistence that an account of distribution by reference solely or mainly to the factors of production is entirely inadequate. While there is as yet no authoritative exposition of his theory of wages,¹ one may perhaps suspect that there is not really so great a gulf between Marshall and himself in regard to the determination of the general level of wages. At any rate, Professor Cannan appears to have more fundamentals in common with Marshall than with Walker, despite certain suggestions to the contrary which have recently appeared.² Then there is Professor Clay, who, though accepting Marshall's treatment in the main, lays great stress on the considerable reactions resulting from the popular notion of a conventional standard of living : this is important as one more recognition of the fact that economic laws are intimately connected with contemporary human behaviour and psychology, in a way which Marshall's treatment of economic theory tends to minimise, notwithstanding that he himself was well aware of its truth. From the United States Professor Taussig has emphasised that rigid character of social stratification with its non-competing groups of workers, which was pointed out earlier by Mill and Cairns ; and the necessity for a due recognition of this phenomenon has been realised by more recent writers, though they may not

¹ His exposition in *Wealth* must be regarded as elementary only. See also, however, Robbins' *Wages*.

² Compare *London Essays, Productivity and the Theory of Wages*, by E. M. Burns,

make allowance for its effects by direct agreement with Professor Taussig's contention that marginal utility, and nothing more or less, determines relative wages. If Professor Taussig's theory that general wages are determined by the "discounted" marginal net product of labour is perhaps less satisfactory, at least he realises that any general theory of wages cannot aspire to be more than a background; but if so, it is questionable whether Marshall's treatment is not adequate, without the further refinement of the conception of discounting. Professor Cassell has built up a theory of wages in line with his general principle of scarcity, but in the last analysis he differs only in degrees of emphasis from the basic principles of Marshall's theory.

These are some of the best known living writers on wage theory. But in recent years a great deal of semi-theoretical work has been going on in the United States, and there are many younger American economists, whose work contains interesting points of view and some suggestive conclusions, even if it does not as yet constitute a complete presentation of a new body of economic doctrine. Moreover, as well as the living, great and small, there are the many dead Olympians whose work still lives. The student of wage theory must still pay attention to the views of Clark and Carver, Walker, Sidgewick, and even Mill. Last, but by no means least, there is Karl Marx. If his theory, as a theory, has been completely discredited, the conclusions of that theory still exercise a powerful influence over the mind of the wage-earner, and the Marxian point of view contains a truth which the economist ignores only at his peril.

We are therefore faced with a somewhat bewildering array of wage theories, and a process of selection and rejection would certainly require very prolonged analysis and discussion. The mere number of these theories, and the fact that most of them, though battle-scarred in more or less degree, have already withstood searching criticism for a considerable period of time, suggests the probability that all of them contain some truth, but no single one of them all the

truth. When the statistical investigations embodied in the earlier parts of this book, were first begun, it was with some hopes that a more detailed study of wages in practice might point the way to a theory of a more realistic kind, such as would satisfy the experience of employers and wage-earners, and the historical developments of recent years. But it must be confessed that any such hopes have been disappointed. It seems impossible to achieve such an object by deductive methods without a much more widely extended field of study than those five industries, large as they are, and without far more detailed study than a single individual can ordinarily give : moreover, it is extremely doubtful whether the necessary data for a sufficiently long period can as yet be found. It seems that large scale co-operative research will be necessary, if realistic studies are to yield a complete theory of wages, embodying more of truth and less of error than any existing theory.

The study of wages in the limited field of these five industries does, however, yield two main conclusions as to wage theory. The first, and more speculative, is a strengthening of the doubt whether the conception of a general rate of wages is not, at least under modern conditions, a mere theoretical abstraction unsupported by even the widest generalisation of facts. It can at least be said that our statistical studies lend little support to the conception, while the individuality of wage rates in different industries and the independence of their relative movements, especially in more recent years, strongly suggest that factors peculiar to each industry have an influence which is not so completely submerged by common factors as existing wage theories are apt to imply. It seems questionable in fact whether there can be one all-embracing theory of wages, which will sufficiently satisfy our sense of reality, and stand the test of historical experience. It is possible to have a theory which will offer reasonably adequate explanations of certain very broad economic facts, such as why wages in general are markedly higher in England than in India, why the wages of women are on the whole lower than those of men,

why wages sometimes fluctuate so greatly in certain industries, and so on. But can any general theory explain with sufficient precision even this type of phenomena in cases where the differences are small, or such problems as the relative level of wages in specific industries and their relative movements, or the relative level of wages in different occupations? Marshall claimed for his theory, and other theorists would probably do the same for their theories, that "it indicates what policies do, and what do not, carry in themselves the seed of their own ultimate defeat; what policies can be maintained aided by suitable organisation; and what policies will ultimately render either side weak, however well organised."¹ As regards even the type of policy, more interpretation and more careful judgment would probably be necessary in the application of his principles than he supposed, especially under modern conditions of collective bargaining: as regards the quantitative application of even the sound policies, his theory is of very little assistance. Undoubtedly it is an advance to possess the means for such differentiation of the quality of different policies, and the statesman, the employer and the trade union leader have still much to learn in this respect. They are slow to learn because of the remote character of general wage theories, and still more both their apparent and real contradictions when applied to particular cases to an extent which they cannot and are not designed to bear. General wage theories need to be supplemented by particular and more precise studies of wages in different industries, occupations, and territories. The general theory should be relegated to its proper position as a background. At present if this is done, the stage is empty, and therefore the economist in an attempt at self-justification, too often yields to temptation, and presents marionettes cut out from this background, in place of living actors. It is now the turn of the theatre to be empty, though even marionette shows are instructive up to a point! The proper function for general wage theories is to furnish the background, and as such they perform an

¹ Marshall, *Principles of Economics*, 8th Ed., Bk. VI, Appendix J.

essential service and wield a vitally important influence. Though differing considerably in their analysis, most economists agree as to the main features of this background, and at least as important as the elaboration or refinement of general wage theories, is the execution of specific studies, and the formulation of principles relating to particular parts or aspects of the structure of wages. Those immediately concerned would then be provided with explanations which they will recognise as realistic, and with guidance in the selection, and still more the execution, of practical policies. It is true that such specific studies cannot yield conclusions of a permanent nature, because the phenomena with which they must deal are constantly changing, but this is no excuse for not attempting to populate the empty stage, and thereafter to alter the costumes and make-up of the actors to suit the requirements of the successive scenes in the drama of modern industrial life.

This first main conclusion from the studies in Part I is at best tentative, and it is not proposed to develop it at greater length. Our investigations of wages in these five industries may provide some raw material for those realistic studies, the need of which has just been stressed, but they were not designed with this precise purpose in view, and would require to be greatly intensified: account would also have to be taken of many different aspects, and other contemporary economic phenomena, which have been more or less neglected or ignored. The second main conclusion is more definite and more important than the first, because it concerns that background of general theory against which all specific studies must be placed. It was said above that there is tolerable agreement as to the main features of this background, but that is not to imply that it represents perfection. On the contrary, all existing wage theories appear to ignore a phenomenon which has completely changed the whole conditions of the labour market during the last forty years, namely the rise to power of trade unionism, with all its consequences. The modern developments in trade union organisation are the root cause of the numerous changes which have occurred in the whole structure

of wages in this country. Trade unionism has been a yeast which has altered the whole shape and nature of the loaf. In 1886 collective bargaining over wages was unusual, and even where it might have been said to exist, its existence was often rather nominal than real. Organisation on the side of labour produced organisation on the employers' side, and so collective bargaining gradually developed, and its sphere was steadily widened from locality to district, and so to a nationwide extent. For the last seven to ten years of our period, conditions of ordinary competition have ceased to exist in the market for labour, and have been replaced by conditions of almost complete bi-lateral monopoly. In all the five industries which have been studied in Part I, wage regulation is conducted by national representative bodies, and in two, and virtually in four, there is a very complete national standardisation of wage rates, hours and conditions. Whereas in 1886 the influence of collective bargaining could with reasonable justification have been ignored, or at least relegated to a position of quite minor importance, to-day such a procedure would be an absurdity. The modern economist in making his generalisations for the basis of inductive wage theory should obviously include amongst them the fact of organised national collective bargaining, and any theory which minimises the influence of modern collective bargaining, or disregards it, must justify such procedure by abundant and conclusive evidence. Commonsense and *a priori* reasoning make it well nigh impossible to suppose that the development of collective bargaining has had no effect of any kind on the general level and the structure of wages. To put the extreme case, it is beyond belief that wage rates in these five industries would have followed the same course if collective bargaining had not developed, that is, if the conditions of wage determination and regulation had not altered since 1886. It is beyond belief that when the general level of wages in an industry is settled by agreement between a few national representatives of the employers' associations and the trade unions, the result will be the same as would have been reached if each locality had

acted independently, with individual bargaining well to the fore. Again it seems impossible that the level and structure of wages should have been uninfluenced by the great changes in the outlook and psychology of employers and trade unionists since the eighties. It is difficult to suppose that wages and the wage structure will remain entirely unaffected when a million, or even half a million, men form an organised body, and at the same time imbibe the doctrines of modern socialism, as the basis of a vigorously pursued policy. Such *a priori* propositions might be multiplied almost indefinitely, but it seems unnecessary to stress the point that the onus of proof really lies on those who deny or minimise the influence of modern collective bargaining, and not on those who are prepared to pay it due attention. In other words, the position is now the exact reverse of what it was forty years ago, when the vast bulk of the middle classes and most of the intelligentsia were either quite unfamiliar with the nature and aims of trade unionism, or regarded it as the sometimes inconvenient, but quite meaningless, pastime of the more restless and discontented of their workmen.

Economists, however, have been very slow to realise the fundamental changes which have transformed the nature of the labour market during the last forty years. It is true that the rate of change was much slower in the period up to 1914 than it has been since that date. But while the pre-war developments were not spectacular, at least in comparison with the wholesale changes which have since ensued, and while outwardly wages were regulated in much the same way as they had been in 1886, the growth of trade unionism and of collective bargaining had been obvious, and the trend of future developments was becoming daily clearer. Yet, though the last forty years have seen the promulgation of a considerable number of wage theories, hardly one of them pays any serious attention to modern conditions of organised collective bargaining. Nearly all these theories unite in stressing productivity as a main determinant of wages, and with this contention it is difficult to quarrel. But these theories deny, tacitly or

explicitly, that trade unionism and organised collective bargaining can exercise any permanent influence on the determination of the price of labour. To-day economists are prepared to admit that there are circumstances under which employers may pay "unfair" wages, in the sense of wages lower than the productivity equivalent of the workers, and that there are cases where state interference to raise wages may do more good than harm. But apart from these special cases, existing wage theories continue to deny, or to ignore, the influence of any deliberate human control over wages and the wage structure, such as one or both parties may try to exercise under modern conditions of collective bargaining. Such efforts at control continue to be viewed as the puny struggles of man against the inexorable laws of nature, and though it is admitted that they may often bring temporary advantages or disadvantages to particular groups of human beings, the final result is deemed to be the same as it would have been without such struggles. To-day, economists may hold wage theories differing by little or much from that propounded by Marshall, but they nearly all unite in agreeing with his views as to the temporary and give-and-take character of the results of collective bargaining. Marshall realised quite clearly that even when employers and employed are more or less unorganised, the terms of any specific wage bargain depend on the relative strength of the competing parties, and that when both parties are strongly organised, so that conditions of bi-lateral monopoly reign, the result of the collective bargaining is indeterminate. But he viewed all specific wage bargains as mere ripples on the surface, of no particular interest or significance in the general theory of economics. He seems to have thought of specific wage bargains as merely the embodiment of short period oscillations round the true normal equilibrium of theory, just as the market prices of commodities oscillate round the equilibrium price. With ordinary commodities, market prices usually exercise an insignificant effect on the equilibrium price, and therefore in his view no more attention need be paid to specific

wage bargains than is paid in the ordinary theory of value to the factors influencing market prices. Marshall assumed in fact that the control and influence which employers and employed, or in other words human action, may admittedly exercise in the making of *specific* wage bargains, does not ultimately affect the normal equilibrium. He based his theory on the implicit assumption that wages are determined, at least within comparatively narrow limits, by the general conditions of demand and supply, that is by purely economic causes. With this general conclusion, nearly all wage theorists have been in agreement, though as has been said their diagnoses as to what economic causes are specially relevant, vary in detail. This has resulted in the belief that while trade unions are necessary to secure equality of bargaining power between the workmen and the modern large scale employer, and while in certain cases where exploitation has been taking place, trade unionism may be able to raise wages by a substantial amount, yet it can never do more than equate wages to the true equilibrium level, or raise the wages of one group of workers at the expense of others. In the less carefully guarded words of the man in the street, the economists say that "trade unions cannot raise wages."

Theoretical conclusions, which are contrary to instinctive feelings, may be right, but they stand particularly suspect unless fortified by unequivocal proofs. Such proofs are unfortunately impossible for any proposition in the realm of economics, and the fact that a theory of wages is logical and fits in conveniently with theories regarding other economic phenomena, counts for little if our instinctive reaction, or common sense, answers that it is not an adequate explanation of the facts. Common sense tells the student of wage history that in the last forty years the basic conditions of the labour market have fundamentally changed, that the evolution of organised collective bargaining is a phenomenon of such a kind as to provoke important reactions, and that this phenomenon must occupy a prominent place among the influences governing the determination and structure of wages. Existing wage

theory, however, insists that wages are determined almost exclusively by purely economic causes, and demonstrates how any human efforts will ultimately be brought to naught, if the equilibrium of economic laws is either consciously or unconsciously disturbed. Now while the student of wage history, or even the man in the street, may feel that a theory which denies any real or permanent effect to the development or influence of collective bargaining, is wrong, yet both will agree that at any rate to a large extent wages must be determined by economic causes, and both will be able to draw on their knowledge, or experience, for confirmation of the fact that economic laws do bring retribution if they are consciously or unconsciously violated. The ordinary trade unionist knows well enough that if wages are raised by more than a certain amount, there will be increased unemployment, no matter how strong his union may be. The student of wage history can hardly fail to be convinced that productivity is the most potent factor in the determination of the general level of wages, and to agree that productivity is governed by broad economic factors, such as natural resources, the quantity and quality of population, social habits and customs, and so on. The issue therefore is in a way a conflict between reasoning and instinctive common sense, and the latter ought not to be too proud to urge strongly that somewhere there must be the means of reconciliation.

Mention has already been made of the fact that economists to-day recognise that human interference to raise wages which are "unfair", in the sense that some degree of exploitation is involved, is under certain circumstances justifiable from the point of view of wage theory, and advantageous from the point of view of the national dividend. Professor Pigou, for example, has paid considerable attention to this problem in his *Economics of Welfare*, and he cites three principal ways in which the abolition of such exploitation may increase the national dividend. The first concerns the rectification of the relative supplies of labour to different industries, or different geographical areas. The second is that it will probably impel

the employers to seek profit along the line of technical improvement, when that of mere bargaining power is closed to them. The third is that since exploitation of such a kind is most often practised by relatively incompetent and badly situated employers, the prevention of exploitation tends to hasten their defeat at the hands of more efficient rivals. For the first and third conclusions Professor Pigou quotes little evidence of a historical character—indeed such evidence is obviously very difficult to obtain—but for the second conclusion there is ample support in the results of investigations into the problems of sweating, and particularly the effects of the 1909 Trade Board Act, by Messrs. Tawney, Mallon, Hunter, Rowntree, Miss Black, and others. At the risk of fatiguing those readers who have studied the subject in detail, it seems advisable to offer a brief account of the results of the 1909 Trade Board Act on the system and organisation of production in the industries concerned.¹

In the worst of the so-called “sweated” industries, wages were exceedingly low for two main reasons. In the first place, owing to various well-known circumstances, which it is unnecessary to detail here, the bargaining power of the workers relatively to that of their employers was weak, and it was this apparently obvious exploitation of the weak which aroused the conscience of the community and its wrath, because that seemed to be the chief cause of the poverty of the workers. But, as with many popular clamours for reform, it is exceedingly doubtful whether the popular diagnosis was correct: whether in fact the weakness in bargaining power was the chief cause of the trouble. That it was a cause can hardly be doubted, any more than that some individual employers used their power in an exceedingly vile manner against individual workers. But there is little evidence that sweaters in general

¹ It seems unnecessary and inconvenient to overload the following account with specific references, since it is merely a condensation of facts and conclusions which are now generally accepted. The reader is therefore referred to the well-known works of the above authors cited by Professor Pigou, and also such more recent literature as that which has been supplied by Miss Sells, and by the International Labour Office.

waxed fabulously wealthy, or that sweated goods were exceedingly cheap, at all events if account be taken of their quality. In other words, though labour probably did not get the complete equivalent of its marginal net product, it probably got something very near it. The second, and more important cause of the low wages was the simple fact, to which the marginal productivity theory insistently calls attention, that the marginal net product of these workers was low. In these sweated industries there was no breakdown on the employers' part in applying the law of substitution; rather they were applying the law too well. So long as they could get sufficient labour at a sufficiently low wage, just so long would they organise production accordingly. In other districts where labour was more scarce, the same processes were in certain cases performed as cheaply by more machinery and less, but higher paid, labour: but there was no incentive to run risks in adopting these alternative methods, even when they were known and practised elsewhere. The chief cause of the low wages was the large supply of labour, which having to push its way into uses for which as an agent of production it was not specially fitted, had therefore to be content with a very low wage.¹

The result of the 1909 Trade Board Act was the establishment of legal minimum rates considerably higher than the previous level of wages. The employers asserted that they would be ruined. Their assertion rested on the argument that they could not pay the minimum rates without raising prices substantially, and that this would choke the demand. Without much doubt this prognostication would have been realised, but for the omission of that qualifying clause which has earned such contempt for economists, "other things being equal." Those other things would have included the existing methods and organisation of production, which, fortunately for the success of the Trade Board System, and not least for the employers themselves, did not remain the same. The general results of the establishment of the higher wage level were:

¹ Compare Marshall, *Principles*, 8th Ed., Bk. vi, ch. ii, § 7.

firstly, an increase in the physical efficiency of the workers, so that the employer got more work out of the same number of individual workers ; and secondly, great changes in the methods and organisation of production. The price of labour as an agent in production had changed, and employers therefore found that the law of substitution now resulted in entirely different margins of indifference. They, therefore, revised their combination of the agents, and in due course they regained their profits. Where methods of production involving more capital and less labour were already known and practised, the change-over was relatively easy : in other cases, invention and improved organisation were stimulated with the desired results. For a time some workers were unemployed, as is the inevitable result of the introduction of nearly all improvements in production ; but in due course they were re-absorbed, partly into their own industries, which, owing to the reorganisation and cheapening of production costs, were able so to expand their output as to require the same amount of labour as before, despite its higher price, and partly into other industries. In those other industries wages were not depressed by the increased supply of available labour, because the trade board rates set a sort of standard, and the employers in those other industries were also doubtless stimulated to improve their methods of production, lest they should attract the attention of the Board of Trade with its powers of establishing further trade boards. It must be admitted, however, that the 1909 Trade Boards Act was passed at an exceedingly favourable moment, for the following years were a period of rapidly expanding trade prosperity, in which general unemployment became negligible, and prices and wages were both rising. These conditions undoubtedly helped to minimise the disturbances produced by the Act, and to shorten the period of readjustment, but they were merely auxiliary, and even if the difficulties had not thus been rapidly smoothed away, the Trade Board System would not have stood condemned.

The 1909 Trade Board Act affords, perhaps, the most

obvious example of a variation, caused by human action, in the short period supply price of labour and its effects on the methods and organisation of production, and so on the productivity of labour. But precisely the same sort of results are discernible in many of the industries which have been brought into the Trade Board System by the Act of 1918, by the Coal Mines Minimum Wage Act of 1912, by the Agricultural Wages Board, and so on : in fact by all legislation which has sought to raise wages which were deemed to be unfair. What reasons, then, can be advanced against the view that a similar raising of wages, even when wages are fair, will not have similar results of a beneficial kind to the national dividend? Professor Pigou, for example, considers that such a proposition rests on a confusion of thought. "When work-people are paid the full value of their marginal net product, no less than when they are exploited, employers are likely to introduce a larger amount of machinery, the more expensive is hand labour. It might, therefore, seem at first sight that the forcing up of exploited and unexploited wage rates is on all fours. But this is not really so. For the forcing-up of unexploited wage rates causes employers to resort to machinery as a *second-best* alternative to the labour which they are compelled to forego : whereas the forcing up of the exploited wages leaves the quantity of labour which it pays them to employ unaffected, and simply adds a stimulus to their inventive energy."¹ Now this line of argument, with its obvious corollaries, appears to me to be highly questionable. Suppose an employer does resort to machinery as a second-best alternative to the labour which he is compelled to forego. This presumably means that the cost of the job, when done by machinery, is higher than the old cost of doing it by hand labour at the original wage rate (otherwise the employer must be deemed to have been inefficient), but lower than the cost of doing it by hand labour at the new higher wage rate.

¹ Pigou, *Economics of Welfare* (first edition 1920) p. 518. In the second edition (1924) this passage is omitted, but it has been thought permissible to make use of it, since the general line of argument is of course the same in both editions.

The result of raising the wage rate is, therefore, to raise the cost of production, and though the cost of his competitors will be raised by a similar amount, and therefore a new equilibrium of supply and demand will be established, the total quantity demanded will be smaller than before, and either all the firms will have a slightly smaller turnover, or the least efficient, or least well situated, will be rapidly driven towards bankruptcy. If the new wage rate cannot be reduced, these conditions will inevitably provide an extra stimulus to the inventive energy of some or all of the employers, either in the special direction of improving their machinery, or in the general direction of improving the whole organisation and processes of production, for it is unreasonable to suppose that they will make no special effort to retrieve the situation. If, as the result of this additional stimulus, such improvements are effected that the cost of production is reduced below its original level, i.e. the level before the increase in the wage rate, the same number of men, or even possibly a greater number, will be employed at the new higher wage rate. The problem, therefore, turns on the probability of the additional stimulus yielding sufficiently satisfactory results, and the crucial issue concerns the response of inventive energy to any stimulus over and above the stimulus of ordinary competition.

It must be clearly understood that I have no quarrel with Professor Pigou, or with other economists who have argued in the same strain, as to the immediate effects of such an increase of unexploited wage rates. The immediate result is the creation of some unemployment, and therefore a reduction of the National Dividend ; the point is whether in the long run the magnitude of that dividend will not be restored, and even increased. The immediate result of the institution of a trade board has often been a certain amount of unemployment, for a period depending on the reactions of the physical efficiency of the workers, and of the organising and inventive energy of the employers, to the stimulus of the higher wage rate ; but the Trade Board System does not therefore stand

condemned. The idea that the raising of unexploited wage rates by a small or moderate amount stands condemned, while the similar procedure in the case of exploited wage rates does not, seems to me to rest upon the supposition that an additional stimulus to the inventive energy of an employer who is not exploiting labour, will have insignificant results. Admittedly those employers who practice exploitation are in general more incompetent than those who do not, and therefore the improvement in the efficiency of production which results from an increase in exploited wages, may be partly due to the displacement of the most incompetent of the existing employers by less incompetent newcomers. Admittedly, also, some means to improved efficiency are usually known, and even perhaps practised in other districts, and the employers have often simply to adopt the best existing technique rather than actually to invent improvements. Admittedly it may be possible in the history of the Trade Board System, to whittle down to a considerable extent the genuine response of inventive energy to the stimulus of higher wages. But the idea that there will be no response in industries where there is no exploitation of wages, assumes that in ordinary industries competition will cause the great bulk of the employers to practise the best technique of production as known at any time, and that the stimulus of competition to inventive energy is the maximum possible. In my view both these propositions are untenable.

The idea that in any ordinary industry competition will ensure the general and speedy adoption of the best existing technique of production, has long been widely held amongst economists. Competition, they say, tends to eradicate what is inefficient; and therefore what is left, is regarded as efficient. For example, in the Marginal Productivity theory, and in most other wage theories, it is tacitly assumed that employers as a body operate the law of substitution correctly and adequately in the existing state of man's knowledge of the arts of production. Much the same sort of assumption is made as to the efficiency of labour: it is assumed, for example, that

men do not deliberately restrict their output. As a result, it is concluded that the marginal net product is as large as it can possibly be, and therefore, that no human interference with the ordinary working of economic forces can increase it. But it is extremely doubtful whether employers as a body do know and adopt what is best for their own interests. Marshall himself appears to have had misgivings on the point,¹ and one of the main trends of economic thought during the last twenty-five years has been in the direction of emphasizing the amount and importance of economic friction of all kinds. The great captain of industry is often horror-stricken at the general inefficiency of other industries, and even of his own competitors,² and this is probably a minor, though genuine, cause of the expansion of his activities into fields remote from his own.³ Almost every craftsman who has worked for more than one or two employers, is able to point to extraordinary variations in the technique and organisation of similar processes in different firms. Though in many cases the circumstances are by no means the same, the exchange and adoption of new ideas across national boundaries is often astonishingly slow and halting, a fact which has suddenly been more fully realised in the last few years. Indeed, whenever an industry, or industry in general, is subjected to public enquiry and critical scrutiny, as is becoming more and more common, the investigators are nearly always able to reveal considerable imperfections, and very often to assign the remedy. In some cases this criticism by outsiders is misconceived, and is due to an imperfect appreciation of the economics of the industry, while the proposed remedies would sometimes, for the same general reasons, be worse than the disease. But the results of recent investigations into the coal industry, agriculture, electrical power and various forms of transport undertakings, the experience of the State in its relations with industry during

¹ Marshall, *Principles*, 8th Ed., Bk. vi, ch. ii, § 8, and elsewhere.

² See Henry Ford's views in *My Life and Work* on agriculture, or the efficiency of the Ohio railway before his purchase of it, and his experiments in medical science and hospital management. Also his general impressions of the motor trade in his early years.

³ A recent example is provided by Mr. W. Morris' purchase of the Forest of Dean Coalfield.

the war, the experience of certain Whitley Councils, and above all, the very reorganisation of structure which under the stress of post-war conditions has recently been taking place in innumerable industries—all these would seem to point unmistakably to the conclusion that there is in all industries, at all times, a variable but universally wide margin for the more speedy adoption of known and tried improvements in the methods and organisation of production.¹ The stimulus of competition under normal conditions is not in fact sufficient to ensure the operation of the law of substitution either with great speed or great exactitude. There is undoubtedly scope for improvement, and there is the strong probability that an improvement would result, if an additional stimulus is applied by increasing wages.

When we turn to the second assumption, namely that the stimulus of competition to real invention, as distinct from the mere adoption of the best existing technique, is the maximum possible stimulus, we are on more treacherous ground.² The success with which competition performs this second task, depends upon the character as well as the apparent intensity of the competitive struggle. Especially in the less important industries, and those from which social custom debars the most educated and, on the whole, therefore, the most intelligent class of employers—and not all these industries are in the class where exploitation of wages has been a common feature—the employers may be conscious of acute competition among themselves, but it is a competition of dullards, and will not probably evoke the inventive faculty to the same extent as similarly keen competition among employers who are more enlightened. Competition at the bottom of a large firm of schoolboys is far better than no competition, but it does not produce the same results as competition at the top. Moreover

¹ Investigations of industrial efficiency in the United States supply further evidence in support of this contention. See the report "Waste in Industry" by the Federated American Engineering Societies.

² For example, much less can be deduced from the history of the Trade Board System in support of this second contention than of the first, because in most cases trade boards have not fixed wages beyond the capacity of the most efficient firms; trade board experience is, therefore, inconclusive as regards the stimulus to real invention.

at all times, and especially in recent years, some employers have been able to escape in part from competition, and though a monopolistic combine may be able to point to well-equipped laboratories and a staff of scientific management experts, it is by no means certain that as great an amount of progress in technique is always achieved as in ordinary competitive industries. The advantage of combination or co-operation, as against competition, in securing industrial progress, still awaits the confirmation of sufficiently long experience, while if the verdict is favourable, the argument in favour of competition as affording the maximum stimulus is in a way badly shaken. Even if it is admitted that invention, in the broadest sense of that word, is reasonably well secured by what may be termed economic forces, there is no reason to suppose that these forces are not, and cannot be, reinforced by any other stimulus. As yet we know very little of the causes governing the flow of human inventions, but economic historians are more or less agreed that the proverb as to the creative rôle of necessity is as applicable to the community as a whole, as it is to individuals. Moreover, the history of the last two hundred years seems to suggest that the progress of invention is similar to the ever-increasing accumulation of the rolling snow-ball. In the early part of the Industrial Revolution period, inventions, though of major importance, were few relatively to the countless examples of human ingenuity, both small and great, which have been forthcoming in recent years. A major invention breeds a race of children, which live useful lives, and some of them at least will be the parents of further major inventions. Thus it would seem that to-day invention will more readily respond to urgent calls than ever in the past, and will do so more readily still in the future. The resourcefulness of mankind increases with its resources, and it would be a mistake to underrate the ability of the business community to meet serious difficulties by the creation of new inventions, or to consider that ability in any sense small or straitly limited. The greater the necessity, the greater will be the response, and it is unlikely that

ordinary competition imposes the greatest possible burden of necessity on the shoulders of the business community, or that the addition of a small increase in wages will not still further stimulate inventive energy.

In my view, therefore, it cannot be allowed that a small increase in wages even where there is no exploitation, is necessarily bad or futile in the long run. Admittedly wages can be raised by a greater amount, and more speedily, in industries of the Trade Board type where the existing organisation and technique of production are at a relatively low level, than in industries where they are at a relatively high level. But the reactions produced will be of a similar kind in all industries, and the differences will be quantitative, not qualitative. All employers rightly conceive themselves as continually struggling under the burden of their wage costs : in times of trade prosperity the burden becomes lighter, and it is a natural and well-recognised fact that it is not in periods of prosperity, but in periods of trade depression, when the burden is usually heaviest, that improvements in the methods of production and organisation are instituted.¹ Most people to-day would agree that in a period of depression, when the demand for labour is sub-normal, employers are less likely to concentrate on reducing costs by improved organisation, technique and equipment, if they can obtain an almost unlimited reduction in the price of their labour, than if wages are held up by agreement or by statute. The principle of "wage reductions last not first" is recognised as having an economic, as well as an ethical and philanthropic justification. But what is true of resistance to wage reductions must also be true of the pressure of wage advances. The greater such pressure, the greater the stimulus to organisation and invention. Capital's task should be that of a Sisyphus,

¹ Compare, for example, Professor Cannan in his *Economic Problems*, p. 417. "No improvement was made except on threadbare profits. . . . The severe pressure that has been put on all management by the difficulty of reducing wages . . . has forced thought and energy into the economising of labour and material in such a way as to make the worker really produce more so that he may be really worth the higher real wage he gets."

and as fast as one stone is rolled up the hill to the feet of labour, another one should be sent rolling down the hill, so that Sisyphus may not rest or even slacken his exertions, for fear lest he be crushed by the accumulation. The ordinary stimulus of competition can be, and should be, reinforced by a constant pressure to raise wages, if the utmost is to be got from the present, or indeed any system of industry. Within limits,¹ which are probably in most industries, and at most times, appreciably wide, an increase in wage rates, if it is maintained for a reasonably long period, is more than likely to generate sufficient improvement in the efficiency of production to pay for itself, in the sense that though the first results will be some unemployment, and some reduction of the National Dividend, the ultimate result will be the re-absorption of these unemployed workers, and an increase in the National Dividend.

During the course of this argument, no attention has been paid to the means by which the raising of wages might be effected. As the argument was most conveniently developed from the starting point of the Trade Board System, the reader might be forgiven for supposing that my ultimate objective was to advocate the extension of that system to all industries, or at least some form of state control of wages, operated on the principle of keeping wage rates just a little above the current productivity equivalent. But the extension of state control of wages in any form raises issues of another kind, which it is not intended to consider at all, since my ultimate objective is entirely different, namely, to find for collective bargaining a place and a status in wage theory, such as commonsense and the history of the last forty years demands. So far I have been concerned to show that human intervention to raise wages, whether fair or unfair, is not necessarily brought to nought by the play of natural economic forces; and that existing wage theory is wrong in asserting or implying the opposite, because certain of its fundamental generalisations, particularly in respect of the law of substitution, are at the

¹ Consideration of these limits is postponed until chapter xii.

very least highly questionable, and most probably inadequate and misleading. If these contentions are accepted, it must be further accepted that collective bargaining, at least under modern conditions, is able to exert a definite influence on the level of wages.

Let the matter, in the first place, be considered from the trade union side. A powerful trade union to-day can clearly maintain wages, despite considerable unemployment, for a period sufficiently long to stimulate invention and improved organisation in the way which has been described; and the ultimate result will quite possibly be such a lowering of production costs, and consequent increase in demand, as will reabsorb all those who became unemployed. The ability of trade unions temporarily to raise wages above the theoretical equilibrium point, has always been recognised, but economists have been slow to realise that the greatly increased bargaining power of trade unionism, and the assistance which it has derived from such modern developments as social insurance, increased facilities for emigration, and so on, has considerably extended the temporary character of such interference with economic forces. Within appreciably wide limits, modern trade unionism can probably control the supply price of labour for periods sufficiently long to produce a direct effect on the technique and organisation of industry, and so on the normal equilibrium level of wages. Marshall, for example, recognised that the equilibrium may be altered by changes in the demand for labour in the short period, but he tacitly assumed that changes in the supply of labour do not take place except over comparatively long periods, and therefore for any less period he regarded the supply of labour as a fixed stock. He was driven into this position by the difficulty of the conception of a supply price of labour based on cost of production, in line with that of material commodities; and in any case at the end of the last century, before the development of trade unionism and collective bargaining to its present strength, the assumption of insignificant short period changes was not unwarrantable. But modern trade unionism has made

the conception of a short period supply price for labour much more definite and clear cut, and it becomes reasonable to suppose that short period changes on the supply side, in accordance with the changes in trade union structure and policy, do occur, and do affect the normal equilibrium through the resulting re-actions on industrial organisation and technique. The character of the labour market at the end of the last century, combined with his exaggerated ideas as to the efficiency with which employers as a body operate the law of substitution, and as to the all-sufficing nature of competition as a stimulus to inventive energy, led Marshall into the error of neglecting the influence of specific wage bargains, and denying the ability of trade unions to exert a permanent influence on the remuneration of labour. With these erroneous conclusions most other economists have agreed, but the time has now come to recognise the full potentialities of trade unionism in its influence on industrial organisation and technique.

Just as trade unionism by constant pressure to maintain, or raise, rates of wages may exercise a salutary influence on industrial organisation and technique, so employers can exercise a malign influence by securing and successfully maintaining a reduction in wages below the productivity equivalent, because this will ease the pressure of the spur to improvement. On the whole, employers' associations in this country are today equally as powerful as trade unions, and therefore equally able to take advantage of any change in trade conditions which will give them a temporary superiority in bargaining power. The influence of employers' organisations on industrial organisation, and so on the equilibrium level of wages, is exactly on a par with the influence of trade unionism. But it must not be supposed that the influence of employers' associations is necessarily bad, or that of trade unionism necessarily good. Employers can exert an influence for good, which may be more effective than any effort of trade unionism, by deliberately setting themselves so to organise their business that they can pay higher and ever higher wages : in other

words, they can voluntarily dig the spur into their own flanks deeper than ordinary competition can do, even when reinforced by trade union pressure. This is at least a part of the explanation of the remarkable results which many philanthropic employers have secured from the days of Robert Owen onwards; they have both paid higher wages, and also made higher profits. The explanation is not only that by paying high wages, they have obtained the pick of the labour market,¹ and also secured some increase in the physical efficiency of their workers: there remains the fact that these employers have set themselves a certain standard of industrial efficiency, and deliberately sought to achieve it in whatever way they could. This spirit is notoriously absent among the vast mass of employers, who at best rarely get farther than a determination not to reduce wages, or at least those of the lowest paid of their workers. If the employers in an industry were so thoroughly imbued with this spirit that they carried it with them into the arena of collective bargaining, determined to plunge and make the best of it, there can surely be little doubt that the average efficiency of production would be considerably raised. Equally the influence of trade unionism is not necessarily always good. For example, trade union insistence on rigid demarcation rules, or on higher payment to one set of workers at the expense of others, as in the engineering and shipbuilding industries, may interfere with the operation of the law of substitution to produce a less efficient organisation of production, with the result that wages are lower than they would otherwise have been. Further, by applying a pressure on employers so great that they either will not, or cannot, bear it,² trade unionism may fail to evoke any response towards greater efficiency, and so lose just as much as they may forego by an unnecessarily lax policy. Both employers and employed have it in their power to-day, through their collective agreements, to raise and to lower the value of labour.

¹ If this was the complete explanation, the policy of high wages could not, by necessity, be advocated to all employers. In recent discussions of the economy of high wages this point has often been overlooked in making generalisations from particular cases.

² These limits are considered in chapter xii.

Moreover, the influence of collective agreements is not confined to the influence exerted by the establishment of a particular general level of wages. Much may depend on the wage differentials between different kinds of labour. It is not only that the differentials may influence the relative supplies of the different kinds of labour: it is that these differentials affect the process of substitution. If the wages of skilled men are excessive as compared with those of unskilled, there is not only a tendency for the supply of skilled men to increase, there is also a tendency for the employer to substitute unskilled or semi-skilled labour; and vice versa if the mal-adjustment is in the reverse direction. Either way, the remuneration of the labour as a whole is affected by the result on the methods and organisation of production. Similarly the area over which the collective agreement operates, has some influence, and it is incredible that the development from extremely local wage regulation to national standardisation schemes should not have exercised some influence on the methods and organisation of production, and therefore on the remuneration of labour, even though in practice it may be difficult to assess. Similarly, too, the duration of collective agreements is important; if employers are faced with the prospect of a higher wage level for a period of years, they will be likely to set themselves to effect the necessary reorganisation: whereas, if the agreement is only for a few months, they will probably reconcile themselves to a lean period, and concentrate all their energies on securing a more favourable agreement when the present one expires. In fact, all the terms and every aspect of a collective agreement has some effect, however small, on industrial organisation and technique, and there is no warrant for supposing that these effects cancel out, and can therefore be neglected, as they are by current wage theories. If the general line of argument in this chapter is well-founded, the influence exerted by employers and employed through the effects of collective wage settlements on industrial organisation, ought to be recognised in all wage theories as a definite and important factor in the determination of the normal value of labour.

CHAPTER XI

THE INFLUENCE OF MODERN COLLECTIVE BARGAINING AS A STIMULUS TO INDUSTRIAL EFFICIENCY

AN attempt will now be made to estimate the influence of collective bargaining during the last forty years on the methods and organisation of production, and therefore on the "normal" value of labour. This will show whether there is any definite practical evidence in support of our theoretical proposition that collective bargaining should be recognised as a definite factor in the determination of wages. It must, however, be recognised that this is an exceedingly difficult task. The virtual impossibility of distinguishing the influence of collective bargaining from the normal influence of competition and the other factors which engender industrial progress, renders it impossible to obtain any quantitative measurement of the former's influence. The most that can be expected is some broad indication of the direction of its influence—whether the trend has been to hasten or to retard improvement, and therefore to raise or to lower marginal productivity—though for the verification of the theoretical proposition it would, of course, be sufficient to show simply that collective bargaining has had some influence, irrespective of its direction.

The special studies of five industries in Parts I and II suggest the following broad reflections, but, however broadly they are expressed, it cannot be denied that their general tenour is highly controversial.

(1) In the building industry, customary comparisons were until the war period very strongly entrenched. In the absence of any important technical developments under the normal spur of competition, and in the depressed condition of the industry during the first decade of the twentieth century, the new ideas of modern socialism as to the proper principles of wage determination, made slow progress, and the bitter inter-

nal quarrels of the craft unions greatly hindered their corporate expression through the medium of collective agreements. The influence of collective bargaining in the pre-war period, while probably considerable on the detail of the employer's organisation of production, was not of such a kind as to produce sufficiently broad general effects to be noticeable. Since 1918 the building unions have pursued an exceedingly "advanced" militant policy, though this has been hindered, as of old, by the maintenance of an extreme craft unionism. The recent inelasticity of the demand for building has enabled capital to pass on the burden of increased wage rates to the consumer, at least to a considerable extent, and a sufficiently long period has not yet passed to make it possible to appraise the influence of recent wage settlements on the methods and organisation of production. The rigid insistence by the building trade unions on working rules which have become hallowed by custom, places a severe limitation on the adaptability and resourcefulness of capital, and the present tendency is rather towards the substitution of less satisfactory, but cheaper, materials, in the endeavour to reduce costs, rather than an increase in real efficiency. The only substantial evidence is, so to speak, of a negative kind. It may not be a mere coincidence that the absence of any concerted and serious pressure by trade unionism in the pre-war period, was accompanied by a remarkable absence of progress, or even minor alteration, in the methods of production and the organisation of capital in the industry. Further, the technique of management has remained, even to-day, at an extraordinarily low general level of efficiency, though admittedly there is a wide difference between the few large firms, who are, of course, mostly engaged on commercial building, and the many small firms, partnerships, and owner-managers. It can hardly be doubted that there has long been a wide margin for improvement in this respect, and the acceptance of customary wage comparisons, with its accompanying absence of severe trade union pressure, may very well have been at least one factor in the maintenance of customary methods of production, and a customary low level of manage-

ment, though this is not to deny the undoubted economic peculiarities of the industry.

(2) The coal-mining industry offers perhaps the clearest example of our proposition. Ever since the late eighties, and even earlier, trade unionism in this industry has been of a singularly militant kind; and, in degree varying greatly in different coalfields, it has persistently pressed for higher wages and shorter hours. Mr. Smillie remarked some years ago that on every occasion of wage settlement during his long experience, the Scottish coal-owners had declared that the new agreement would ruin them, and yet they had survived to make even bigger profits. This corresponds with the declarations of employers concerning the Trade Board rates under the Act of 1909. It is not necessary to suppose that these Scottish coal-owners were hypocrites: this was probably their considered opinion, if not on every occasion, at least five times out of six. As the years went on, and the general level of wages rose higher and higher, many coal-owners in Scotland and elsewhere must have genuinely marvelled at their ability to obtain reasonable profits. The demand for coal was, of course, increasing by leaps and bounds, but wages on the average were rising even more than prices. The explanation is, at least in part, that during the last thirty or forty years mining science has made vast strides, and there has also been very considerable improvement in the organisation of production. The rapid development of new pits of the most economical size, the introduction of electrical power and of coal cutting and handling machinery, the extension of surface plant in order to make the very best use of the coals produced, the tendency to amalgamation and the establishment of colliery selling agencies—all these and many other improvements have enormously increased the technical efficiency of the industry. The fact that the industry has been passing through a very difficult period, and has recently been subjected to the closest scrutiny which has found fault freely and with considerable justification, should not cause us to forget the great technical progress of the last forty years,

nor blind us to evidence that the most efficient business units have continued to prosper ; indeed a large part of the recent trouble has been caused by the still irregular and uneven adoption of the most efficient technique and organisation. It seems unlikely to be a mere coincidence that, in this period of rapid progress, a well-organised trade unionism should have developed, through an extremely militant policy, a pressure for higher wages which has probably never been equalled, and certainly not exceeded, in any other industry. The rise in wages in the pre-war period was of course partly the result of the improved technique and the expansion in demand, but it also seems likely that in part the rise in wages was an active cause, and not merely a passive result, of the improved technique. As well as the pressure for higher wages, there has of course been the pressure for shorter hours and greater safety, and while the results of the latter have been largely embodied in the law of the land, it cannot be doubted that trade union agitation was mainly responsible for all that mass of legislation. Equally it cannot be doubted that this legislation has decreased the subjective cost of labour, if it has not increased its marginal productivity, which is highly probable. The coal-owners rightly boast that the principle of free competition has resulted in a very high level of efficiency, and up to a certain limit they are right, but it is as well to remember the militant policy of well-organised trade unionism in this industry, and its possible effects as a stimulus reinforcing the ordinary stimulus of competition. The miners' leaders and the rank and file, in the pre-war period, gradually learnt the lesson that the more they asked, the more they received : there seemed to be no limit to the " squeezability " of capital. When the tide of demand began to ebb, they failed to realise that their previous experience had been due in part to the speed of its previous flow, and that if they had to rely only on improvements in the technique of production, they would have to allow capital sufficiently long periods in which to effect such improvements. A period of acute trade depression temporarily weakened their bargaining power, and capital

seized the opportunity to revolt. The 1926 dispute would not have taken the same course if it had not been the culmination of a long series of events. The coal-owners more or less openly declared that they were going to teach labour a lesson : the lesson which the Miners' Federation ought to have learnt, is not that "there is no getting away from economic facts," but that it cannot be done in a hurry. This has been the great error in the miners' attitude and policy : fundamentally that policy is sound, but in recent years it has been applied with insufficient care and caution. Their other great fault has been the tendency to restrict the freedom of capital to organise production in the most advantageous way. Though as individuals the miners are extremely conservative as regards all that pertains to their craft and calling, their unions have never been organised on a craft basis, and they have never adopted the rigid working rules which are so greatly prized by the craft unionist ; there has never been apprenticeship in any regularised form, or demarcation rules, while the promotion of even the unskilled adult is a regular and common practice. But the miners in some districts have strenuously opposed the introduction of machinery underground, and in others the adoption of multiple shift systems, though the solid resistance of South Wales has now become almost unique. Further, the unions have never given their co-operation to the employers, even when the latter have tried to encourage it, which, to their discredit, has been seldom enough. The unions have indeed completely failed to realise that constructive co-operation is not only compatible with the most militant wage policy, but a direct means of reaping its fullest results. Hence the miners have not achieved all that they might have achieved, and they have suffered serious losses through trying to achieve what could not be achieved, especially in the great strikes of 1921 and 1926. But on the whole they have gained far more than they would have gained by following a quiescent policy based on the old principle of customary comparisons, and it requires a great stretch of the imagination to suppose that their policy

has had no effect at all on the methods and organisation of production, and therefore on the "normal" value of their labour.

3. The Lancashire cotton industry prides itself on its technical efficiency, and its praises have been loudly sung by the many economists and economic historians, whose interest it has never failed to attract. Yet mechanical invention, at any rate, seems to have run dry towards the end of the nineteenth century. In the eighties and nineties, the carding engine was certainly being greatly improved, the number of spindles per mule was increasing, minor inventions were facilitating the processes preparatory to weaving, and the Northrop automatic loom was attracting attention. But all this was essentially only a final polishing, and the mechanical equipment of the cotton industry has undergone comparatively little change during the last twenty-five years. Equally, until the boom of 1919, there was little change in the organisation of capital, other than a more or less steady tendency to an increased size of business unit, and this was mainly on the spinning side. Although, on the whole, the industry was in a thriving condition until 1914, it was like a successful man of middle age, who conducts his affairs somewhat rigidly on the lines which have raised him to his present prosperity, but which are steadily deepening into ruts. Even the prolonged and severe depression since 1921 has not successfully aroused the employers to strike out on new lines, and although they have been very worried, they survive their troubles with a philosophic assurance that the prolonged rain does not betoken a repetition of the Flood.

Again it may be asked whether it is a mere coincidence that trade unionism has been equally conservative in the maintenance of a long accustomed policy. The cotton operatives have been affected by the ideas of modern socialism to a smaller extent than almost any other large body of workers. The union officials have become an expert administrative staff, immersed in the technicalities of the price list system, and unable and unwilling to take an interest outside their daily activities, except perhaps in a political as distinct from

a purely industrial direction. The admixture of craft unionism and industrial unionism has not conduced to strength, nor even on some occasions to adequate unity, while the large proportion of women has presented considerable difficulties to the union organiser. One is tempted to add that the women have acted as a drag on the development of a militant policy, but even the spinners' unions have offered them a poor lead in this respect. In the pre-war period the cotton operatives shared in the general prosperity of the industry, and were content. Like their employers, they took a pride in their own efficiency. All this has its good side, but it was not accompanied by any great improvement in the methods and organisation of production. It is at least an open question whether if the cotton unions had pursued a more militant policy, and applied a strong and persistent pressure for higher wages, the Lancashire genius would not have speedily supplied at least a modest measure of their desires.

4. Engineering appears to be an awkward exception to our proposition. This industry has been undergoing little short of a revolution in the technique of production, and its efficiency has been enormously increased. This revolution was certainly not the result of trade union pressure on capital, for trade unionism was of relatively little account in the eighties and early nineties, and was itself aroused largely by the revolution, with its threat to the status and economic position of the skilled craftsman. Yet it should be remembered that the ideas of standardisation and interchangeable parts were originally imported from the United States, where labour in general, and skilled labour in particular, was scarce, and therefore very expensive, and there can be no doubt that this stimulated the inventive resourcefulness of American capitalism.¹ The normal pressure of competition was suffi-

¹ Such a natural shortage of labour is not of course on all-fours with the sort of artificial shortage which trade unionism may achieve, because the former kind of stimulus involves no costs. The argument reversed is simply that if there had been plenty of labour in the United States it is possible, and even probable, that there would have been less technical progress.

cient to cause their adoption in this country. The partially successful opposition of the craft unions to many of the changes involved, has affected the course of the technical revolution in more ways than one. For example, the insistence on uniform skilled rates for turners and fitters has probably stimulated the employer to introduce machinery which would be so automatic, and so fool-proof, that the services of these skilled grades would no longer be required : on the other hand, the action of the union in this respect has probably deflected the stream of the developments from its normal and most direct course. The same is probably true of the host of written and unwritten working rules in this industry, and it is impossible to assess the net result of trade union policy during the period up to 1914. To-day the unions are alive to the fact that they urgently require a new policy, but the necessary thinking has still to be done, and before effective action is possible, the whole organisation of trade unionism must be overhauled and consolidated. The present structure of wages in this industry is more artificial than ever, and with the technical revolution still in progress, it is as yet impossible to form any definite conclusions.

5. Trade unionism on the railways was of virtually no account until after 1900, and had achieved little beyond its own recognition before the war. The great developments since 1918 have already been discussed, and it is clear that sufficient time has not yet elapsed to adjudge its effects on the efficiency of the service. It would be absurd to suggest that the 1921 Grouping Scheme was the outcome of the 1919 wage settlements, but it is by no means extravagant to suggest that the enormous increase in wage costs was at least an important factor in the decision to try and secure greater economy, as well as greater efficiency of service. Though the development of road transport has considerably affected the position, a large part of the demand for railway transport is so inelastic that the companies have been able to pass on a share of their new burdens to the consumer, and to that extent the stimulus

to greater efficiency is reduced. That the remainder is still considerable, cannot be doubted, but it remains to be seen whether the semi-public management of the present railway companies has the same resourcefulness and adaptability as the ordinary capitalist undertaking. The railway trade unions are very powerful, but they will have to use their power warily if it is not to recoil on their own heads, and incidentally to the great detriment of the whole community.

It must be confessed that the detailed study of these industries does not yield much in the way of definite proof or evidence as to the validity of our theoretical hypothesis. The above general observations may be severely criticised, but it would probably be going too far to dismiss them as mere special pleadings. The interpretation of recent events is a particularly treacherous task, which can rarely be undertaken without reference to some previously conceived hypothesis ; and the hypothesis in this case appears reasonably valid in theory. It is not surprising that its verification in practice should be extremely uncertain, for it is only really in the immediate pre-war years that trade unionism developed deliberate and definite policies on the basis of the new socialistic ideas ; and it is only since the war that trade unionism has acquired the power necessary to increase and maintain wages above the equivalent of marginal productivity for a sufficient time to stimulate improvement in the methods and organisation of production. The effects of custom, and its variegated influence, are always peculiarly difficult to assess, and in the pre-war period, and even to-day, trade union action is to some extent rendered abortive by sectional policies and artificial restrictions which handicap the adaptability and resourcefulness of capital. The full verification of the theory in practice must be in the future. As yet, it must rest mainly on such specific evidence as the general results of Trade Board and minimum wage legislation, and the vague and faint indications in coal-mining and a few other industries. But as general evidence, attention may also be drawn to the recent history of industry in the United States, and the contrasting

conditions in "low wage" countries. Finally there is the whole experience of this country since the war. In many industries the level of real weekly wages has been raised, but even more striking is the reduction of the working week. In nearly all industries the working week was shortened in 1919 and 1920 by the equivalent of one half to more than a whole day's work. Organised labour has consistently declared that whatever might happen to wages, there was to be no going back on this reduction of hours. The reduction of hours took place under the spell of post-war reconstruction and all its magical incantations, but it has remained a reality, despite the general disillusionment which so speedily occurred. Employers were faced with the virtual impossibility of a return to longer hours, and they have set themselves to make the best of it. While some industries have maintained their prosperity partly perhaps at the expense of other industries,¹ and while in certain cases there has been an increase in the output of labour directly attributable to the shortening of hours, there can be little doubt that the national income would not have been so well maintained if there had not been a great increase in the general efficiency of production. Without going into details, it seems clear that the organisation and technique of industry as a whole has been progressing during the last five years at a rate which is almost, if not quite, unprecedented, and once more it appears reasonable to suggest that the rise in wages, and particularly the shortening of hours, between 1914 and 1920, has had a considerable share in stimulating this progress. A close observation of developments in the next few years will alone show what truth there is in this suggestion, but if it does contain

¹ This appears to me a very difficult question. For example, the common argument that the relatively high level of wages in the railway service has recently contributed directly to the depression in the coal-mining industry, is somewhat undermined by the facts that railway rates are not unduly high as compared with the rise in general prices, and that railway profits are in no sense excessive. On the other hand, similar arguments relating to the high wages of some municipal workers are probably more valid, at least under the present system of local rating.

truth, then the history of the last five years supplies an impressive general example of the proposition that collective bargaining should be recognised as a definite factor in normal wage determination.

CHAPTER XII

IMPLICATIONS

THE recognition of collective bargaining as a definite factor in the determination of the value of labour is not merely a matter of academic interest : it carries with it certain practical implications of great importance to all sections of society. If the claim is admitted that collective agreements between employers and employed are not mere ripples on the surface, but that " all the terms and every aspect of a collective agreement has some effect, however small, on industrial organisation and technique,"¹ a general revision of their current ideas, policy, and general attitude, is required from employers, trade unionists, and the community at large. Assuming the general conclusions of Chapter X to be correct, the resulting implications will now be briefly discussed from the standpoint of these three parties.

Employers must face up to the fact that capital is, as it were, the pursued, and labour the pursuer. With the spread of education, and of modern socialistic principles, labour will never be satisfied with a stationary standard of life, any more than individual capitalists and professional workers. More and more, labour is coming consciously to regard capital as its servant, rather than its master ; and this realisation of what economists have always recognised as the true relationship, makes for a determination to tolerate the capitalist system, and the so-called capitalist control of industry, at most only so long as that system is a good servant, and continually increases its master's comforts. The capitalist system must " produce the goods " in ever increasing volume, or labour, through direct action, or more probably through political action, will either exchange its services for those of some other

¹ Page 214 above.

system, or bind it more firmly in the bonds of servitude. Employers therefore must realise more clearly that in the nature of things, though they may occasionally defeat labour, such engagements are bound to be only of the temporary character of successful rear-guard actions, and worth their cost only in cases of dire necessity. They should adopt, frankly and fully, the policy of endeavouring to reduce wages only as a last resort, and recognise improvement in the technique and organisation of production as the normal method of obtaining relief from labour's pressure. The dissemination of the best existing technique and methods of organisation, and the promotion of invention, are matters of the first importance to employers as a body, and not merely as individuals. At present employers' associations in many industries exist solely or mainly for the purpose of dealing with labour, but while this function is essential for the proper conduct of collective bargaining, it should not be allowed to eclipse the still more important function of stimulating greater industrial efficiency. In days gone by, this was commonly regarded as the function of individual employers, but to-day, and in the future, the promotion of improved technique and organisation is a matter of vital common interest to employers as a body, or in other words to capital and all capitalists. Employers' organisations should take all possible steps to raise the average level of efficiency, and to promote such changes in industrial structure as may be deemed advantageous. Where research work of all kinds can best be done for any particular industry, or for industry as a whole, by one central agency rather than by unco-ordinated individual effort, it should receive every encouragement and the most active co-operation.¹ Moreover, since invention is not a monopoly of the trained technician or of any grade of workers, employers' associations should do all in their power to secure the active interest of the trade unions particularly concerned,

¹ For an account of the small amount of co-operative research work in Great Britain, see the Balfour Committee's Report, "Factors in Industries and Commercial Efficiency," chap. iv. Comparison is also made with the United States and Germany much to our discredit.

and of the trade union movement as a whole, while individual employers should encourage suggestions from all grades of their staff, not only on details of mechanical efficiency, but as to the whole organisation of their works. In these respects, employers should look more favourably on the principles and system of Joint Industrial Councils and Works Committees. Time and effort spent in haggling and bargaining with labour is entirely necessary under modern conditions, but, in that it does not directly increase industrial efficiency, it should be viewed as a necessary evil, and therefore to be reduced to a minimum. Time and effort spent in what may crudely but truthfully be described as picking labour's brains, or in co-operative effort with labour to reach those objectives which are best reached in that way, is likely to be well spent, and even more productive than similar time and effort spent by employers, as a body or as individuals, alone. But the main revision which is required from employers is that they should cease to play "the ostrich game" and that facing up to the naked realities of modern tendencies, they should realise the only sound policy, and pursue it with all their might, not in despair or bitterness, or with vain regrets for "the good old days," but as men who realise the true dignity of conscious service to the community.

Hitherto the aim of trade unionism, at least as interpreted by the economist, has been to increase the bargaining power of labour to a position of equality with the bargaining power of capital, and so to raise and maintain wages that labour is always in receipt of the full value of its services. In the phraseology of the Marshallian school, the function of trade unions has been to equate wages with marginal productivity. But the function and aim of trade unionism should be to *increase* the marginal productivity of labour, by reinforcing competition as a spur to progress. In passing, it may be noted that if the stimulus to progress is considered to be weaker under conditions of monopolistic combination than under conditions of ordinary competition, then in view of the rapid growth of the former, such reinforcement of the latter is all

the more necessary. The analysis and argument of Chapter X point the way to a revision of trade union policy. Trade unions ought consciously to try and keep wages not in exact adjustment with, but a trifle above, the current marginal productivity equivalent ; to accept the fact that this is bound to produce a variable, but permanent, margin of unemployment, which is of their own deliberate making and no inherent fault in the capitalist system ; to take all possible steps to increase the mobility and fluidity of labour, in order to facilitate the reorganisation and improvement of technique which must ensue before a fresh advance in wages is possible ; and to mitigate the incidence of unemployment on individuals in every possible way.

The idea that trade unionism should deliberately create unemployment may appear somewhat strange, but it is in fact only the extension of a policy which has long been commonly practised in times of trade depression. At such times trade unions deliberately choose to maintain wage rates as far as possible, rather than to alleviate unemployment by accepting a reduction. This policy has been defended in the past on two grounds : first, the practical difficulty of raising wages promptly as soon as trade improves ; and secondly, the argument that since in times of trade depression demand is often extremely inelastic, the total income of all the workers in the industry, whether employed or unemployed, may quite possibly be smaller after the reduction (despite a slightly less amount of unemployment) than it would be if there was more unemployment, but those working received the old higher rate of wages. Both these arguments are often valid up to a point, but they are powerfully reinforced by the present contention that a reduction in wages reduces the pressure on employers towards improved efficiency. This argument applies equally to times of good as well as bad trade, and in addition to creating unemployment in times of bad trade, the contention is that trade unionism should do the same at all times. In my view the absence of unemployment except in very rapidly expanding new industries, or under other special

circumstances, is not a healthy, but rather an unhealthy, sign. This is not to say that trade unions should never under any circumstances accept a reduction in wages; far from it, for, in technical terms, marginal productivity may change greatly and swiftly in the short period, and an absolute refusal to allow any corresponding adjustment of wage rates might well bring ruin upon the industry. In my opinion trade unionism to-day often carries its resistance to wage reductions too far. While in certain industries demand in times of trade depression is certainly very inelastic, this is by no means a universal or regular state of affairs, and a speedy reduction of wage rates, accepted with a good grace, would often be to the almost immediate advantage of the labour normally engaged in the industry, and would rapidly re-establish conditions which would make possible the restoration of wages to the old level. The argument as to the practical difficulties of securing such restoration with reasonable promptitude has largely lost its cogency, because the bargaining power and general strength of trade unionism to-day is so much greater than in the past, and modern machinery for negotiation can be made to function with considerable speed, if either side so desire. Trade union policy should not then include an uncompromising resistance to wage reductions under any and every circumstance: the real point is that wages should never be allowed to fall to the marginal productivity equivalent, but should always be a trifle above it, both in times of good and bad trade. When unemployment in an industry, or in industry in general, falls below the 3—4 per cent. which is generally reckoned as due to the almost inevitable immobility of labour, it is some evidence, though by no means conclusive evidence, that wages are at or below the marginal productivity equivalent, and should, therefore, at once be raised. But unemployment alone does not provide the trade union leader with that close estimation of marginal productivity and its movements, which he obviously requires if he is to keep wages a trifle above it. Translated into popular phraseology the marginal productivity equivalent is "what the trade can bear," and so far

trade unionism has been content to utilise the very roughest measurements as to the position of this limit. Much more detailed and scientific study is required, since as will be seen in a moment, the adjustment of wages must be as accurate as possible. An aptitude for bargaining, some oratorical powers, and an infinite capacity for bluff, are attributes of the trade union leader which will be more and more heavily discounted in favour of a training in economics and statistics, skill in the presentation of cold facts, and an all-cards-on-the-table policy.

Even when the trade union leader has determined the exact position of the marginal productivity equivalent, he has still to determine how far he shall try and raise wages above this level. In this problem he must consider two principal factors, the ability of employers to effect improvement in industrial organisation and technique, and secondly their will to attempt the task. Clearly the scope for improvement by the general adoption of the best existing practices, varies greatly in different industries and at different times, but judgment here is on surer ground than any attempt to estimate the probable flow of new invention, whether in respect of mechanical equipment and processes, or of business organisation and industrial structure generally. The determination of the probable response to the additional stimulus of wages higher by given amounts than the normal productivity equivalent can but rest, of course, on estimate and guesswork, though a wide and yet detailed knowledge of all the conditions in his industry, combined with some degree of intuition, will greatly assist the trade union leader in this exceedingly difficult task. If he under-estimates the potential response, he foregoes benefits which might have gone to his members : if he over-estimates it, he creates a futile and unnecessary amount of unemployment. Clearly, however, any contribution towards improvement which comes from the side of labour, not only assists the employer, but at the same time furthers labour's own ends. If a trade union feels that it can make a solid contribution, it may aim to fix wages higher

than would otherwise be advantageous, and even if it has no corporate contribution, at least it can, and should, encourage its members to make individual contributions. It has already been said that employers' organisations and individual employers should seek the co-operation of labour's brains and experience, and the same applies to trade unions, and their members as individuals. Both sides should do so simply in their own self-interest. Backed by a powerful trade union, an individual wage-earner who suggests an improvement in organisation and technique, is not making profits for his employer, or for the capitalist in general, but is directly increasing wages, since the trade union will take the matter into account at the next adjustment of wages. Trade unions should lend support to the principles of Whitleyism, for precisely the same reasons as should employers' associations. Much misguided opinion exists on both sides to-day in regard to such matters, but for practical purposes the onus may be said to lie more with trade unionism, inasmuch as employers in the main would readily back the system if they could be convinced that labour can and would make a really solid contribution. As it is, employers are apt to consider that time spent at Joint Industrial Council meetings, and at Works Committees, would be time wasted; while trade unionism either stands aloof because it is not run after with open arms and solicitous invitation, or stands distrustful lest such co-operation shall undermine the fighting spirit. Trade unionism should realise that such an attitude is simply cutting off one's nose to spite one's face, and that militant trade unionism and the most forward wage policy are not incompatible with a policy of co-operation as regards the organisation and technique of production, but actually its natural and necessary complement.¹ As well as making the greatest possible positive contribution, trade unionism must refrain from putting any obstacles in the employer's way. For

¹ Compare, for example, the policy of the Amalgamated Clothing Workers of America. See the *Documentary History* and also the *Clothing Workers of Chicago*, published by the Union,

success, a forward wage policy demands the abandonment of all restrictions on the adaptability and inventive energy of the capitalist system. It is no use for trade unionism to seek to stimulate the resourcefulness of the employer, and at the same time endeavour to bind his hands and feet with demarcation rules, hindrances to the fluidity of labour, inelastic systems of wage differentials, and opposition to this, that, and the other. This side of trade union activity really belongs to a past age, when fear of exploitation and abuses was combined with conscious inability to deal successfully with the individual cases concerned: hence it was sought to prohibit altogether any action on the employer's part which might lead to such individual cases, and so undermine the whole position. To-day, in most industries, trade unionism is fully able to deal satisfactorily with such cases, and reliance should be placed on the general power to prevent abuse rather than on vexatious prohibitions and regulations of a general character. Just as employers are called upon to realise certain difficult and unpleasant facts, so are trade unionists, and for the latter this aspect of the problem is one of them.

As well as the ability of employers to effect improvement in industrial organisation and technique, the trade union leader, as has been said above, must consider their will to attempt the task. If he succeeds in obtaining an agreement whereby wages are very substantially increased, a number of the marginal employers may throw up the sponge, despairing at the great odds with which they are faced.¹ They will not attempt to save themselves by determined effort to reorganise their methods of production: they will simply go out of

¹ It is also possible that the most efficient employers would do the same, not in despair, but in disgust that labour does not appreciate their efforts, or in anger at any attempt to hustle them. This would be all the more serious, because it is these employers who usually introduce real inventions as distinct from the mere adoption of the best existing technique. But, since they are the most efficient employers, they will feel the pressure least: for them it will be a prospect only of a reduction of super-average profits, not of loss and bankruptcy. In any case, it must be remembered that the great captain of industry is not actuated solely by motives of economic gain, and for many of them difficulties and obstacles are the very spice of existence.

business, or, in so far as they can, transfer their attentions elsewhere. In consequence, the demand for labour will be permanently decreased, and not merely temporarily contracted, and in due course wages will be reduced to the previous level, and in all probability, lower than that. The contemporary psychology of employers is, therefore, a most important factor, which must be carefully studied and weighed by trade unionism. The will to tackle the problem on the part of employers, is, of course, greatly affected by general economic conditions. In the initial stages of a trade cycle, when there is general optimism amongst the business community, the reaction of particular sets of employers is likely to be more vigorous than when general pessimism reigns: in the light of recent history the maxim, "Once bit, twice shy," may be applicable: and so on. But behind such factors, lie others which are of much greater importance and wider application. For the employer may decide to transfer his seat of operations abroad, rather than continue here and attempt to reorganise. The less the loss entailed in such transfers, and the less the new risks which it involves, the more likely is this to be the line of least resistance. But in most industries the loss involved in selling the works and plant would be great, as also the risks involved in conducting operations abroad. Purely as regards the will of the employers in particular industries to shoulder the burden, there is not much likelihood that transference abroad will be more attractive than closing down altogether, though if profits were too largely diminished for too long a period, new companies, instead of establishing their works at home, would tend to do so abroad. Behind the entity of the joint-stock company, however, there is the individuality of its owners. It may be difficult for a company to transfer abroad, but it is relatively easy for an individual to sell his shares, and re-invest in some other industry: in this way the company's ability to face the music at home may be seriously weakened, for if its shares are low, it will find difficulty in financing its current needs and in raising new capital. If we suppose only

a few trade unions in particular industries to be applying active pressure on capital, this result is exceedingly likely, but the position is entirely different if the pressure is more or less general. It will then be necessary for capital to transfer abroad. This is admittedly becoming more easy and more common, but a wide margin of advantage seems still to be required before the bulk of the investing public will transfer their wealth to the ordinary stock of foreign companies. If we could deduct gilt-edged securities of all kinds from the total British capital invested abroad, the remainder would not be a very substantial sum, and yet the pressure of trade unionism can hardly be said to have been negligible in this country during the last few years, or even during the last generation. These considerations, however, do undoubtedly set limits to the willingness of employers to face severe odds, and attempt whole-heartedly to overcome them. The trade union leader must, therefore, jointly consider both the ability and the will of the employers immediately concerned, and of the capitalist system in general.

The part of trade unionism has been considered at this length, because it is in reality the attacking force, and because employers are likely to continue to leave the initiative mainly to labour, as is only natural under the circumstances. But to those who believe that the capitalist system in something like its present form, is a more potent instrument of production than any which has yet been devised, or is likely to be devised, the matter has another aspect. Few people can doubt that, no matter what counter-steps employers might take, modern trade unionism has it in its power for all practical purposes to achieve the wreck of the capitalist system. This might be done consciously, but it is far more likely to be done unconsciously, if it is done at all. If trade unionism can weaken the efficiency of the system, it can also strengthen it; and therefore, it is of the utmost importance that trade union policy should be directed not along such lines as will bring the greatest immediate benefit to its members, nor such as are calculated to smooth the path of the capital owner towards greater riches,

but along such lines as will lead to the ever-increasing efficiency of the capitalist system in its task of advancing the material welfare of the whole community.

This leads, finally, to the necessary revision of public opinion, or what is often termed the attitude of the community, towards the industrial problem. In the present structure of society, if the capitalists and the wage-earners are, so to speak, subtracted, we have left the so-called middle-classes, and therefore public opinion, in so far as it has a corporate existence of its own, must be deemed to be the opinion of these middle-classes. The very fact that the opinion of the middle-classes is termed public opinion, and their attitude so commonly referred to as the attitude of the community, is significant. Under modern conditions of collective bargaining, capitalist and wage-earner are often so equally matched that the opinion of the middle-classes sways the issue, as has been unmistakably demonstrated in recent years. The middle-classes often form a genuine third party even in specific industrial disputes, and certainly exercise a very real influence in the whole conduct of industry: hence it is of vital importance that their general viewpoint should be correct. They should realise, first of all, that the apparent struggle between labour and capital is only a feature in the larger struggle of man against Nature; that it has its good side; and that its bad side is mainly due to man's ignorance, and his faulty appreciation of the working of economic forces. A certain kind and degree of strife between capital and labour is bound to exist, because the national dividend is not, and never will be, big enough to satisfy human desires, no matter how it is distributed among individuals. In their mutual struggle, capital and labour each extend the other's powers, and at the same time their combined power to wrest from Nature her resources, and transform them for the satisfaction of human desires. To speak plainly, a great deal of nonsense is, in my opinion, talked to-day about industrial peace. Not only is such peace virtually impossible, unless human desires for material wealth are suddenly and greatly slackened, but it is almost certainly

undesirable, unless mankind is content to accept a slower rate of material progress, and a distribution of wealth which would probably be more uneven and unjust than it is to-day. The gain which would result from the avoidance of the present relatively small net¹ losses of production entailed by strikes and lock-outs, would be more than outweighed by the weakening of the stimulus to improved organisation and technique and the general slowing-down of inventive energy. But this is not to say that all industrial strife is always beneficent, and that the more strikes and lock-outs there are, the richer we shall all become. Such a conclusion is obviously absurd. In the first place, a large proportion of strikes and lock-outs are merely caused by bad bargaining; "both sides being the victims of unsuccessful bluff, may find themselves in a fight over an issue which both know is not worth it."² Such misfortunes are less likely to occur if the relations of the parties are cordial, the machinery for negotiation of a suitable kind, and so on. But they are even less likely to occur if trade unions do not merely pursue a policy of getting all they can, and giving as little. If a trade union frankly and openly adopts an elastic policy of basing wages just a little higher than the trade will bear, that is in theory just a little higher than the marginal productivity equivalent, the employers will then know where they stand. They will know upon what principles the trade union will fight, rather than give way. The issue will, therefore, tend to turn on the respective opinions of the parties as to what the trade will bear. In the present state of knowledge, it is virtually impossible to determine with sufficient accuracy what a trade will bear at the present moment, and since wage settlements look into the future, in which there are bound to be many uncertainties, there is

¹ It is necessary to distinguish the net from the gross loss involved by a strike, because undoubtedly the work in hand is often merely delayed, and many new orders are postponed rather than placed elsewhere, as is shown by the great activity which usually follows a strike. There is really no means of accurately measuring the loss. Merely to take the number of idle days is a very crude form of measurement though even this test shows the loss to be relatively small.

² Pigou, *Economics of Welfare*.

also bound to be room for the most honest and impartial divergences of opinion. When such exist, the parties will be ready to back their opinion by action, and a fight will ensue. The remedy of arbitration is not entirely satisfactory, for the arbitrator is in most cases far less well-equipped to form an opinion than either employers or employed: consequently, he usually splits the difference. Very often such an award is not far off the mark, and so reasonable justice is done, even if the method is somewhat rough and ready, and entirely unscientific. The probability of such a result is the justification for recommending arbitration as a method of settlement, but neither of the parties can really be blamed if they form the opinion, in any particular case, that arbitration is unlikely to result in reasonable justice, and that the arbitrator's award would ultimately be to the greater disadvantage of the national income than the loss inflicted on it by a fight. The valid arguments in favour of arbitration are merely arguments of expediency in particular cases, and general abstract arguments rightly leave the actual parties to a dispute unmoved. Some industrial fights, then, arising from this sort of cause, are virtually unavoidable, and in addition, it cannot be supposed that capital will not occasionally turn, and try to reduce labour's pressure by a successful rear-guard action. Further, human nature being what it is, it is too much to expect that the unions will consistently pursue the policy which has been advocated above: they will be tempted to take special advantage of favourable situations, and on a future occasion this will create doubts in the mind of the employers as to how far their declaration of policy can be taken at its face value. If industrial peace is an objective in itself, and simply means the avoidance of any and every stoppage of work, it is both impossible and undesirable. If, on the other hand, industrial peace means a policy of co-operation between employers and employed to increase industrial efficiency, then it is entirely sound. But, as we have seen, in this latter sense its complement is a forward wage policy, and that entails issues which are almost bound to give rise to a certain amount of fighting.

Secondly, the middle-classes must realise that the permanent existence of a certain amount of unemployment is not to be regarded as a serious misfortune, still less as a disease, but rather as a mark of progress, and at the same time as its price. For example, despite all the marvellous prosperity of the United States in recent years, it is estimated by the National Industrial Conference Board, and by the Commissioner of Labour Statistics, that in any normal year, 12½—15 per cent. of the workers in manufacturing industries are unemployed.¹ It can hardly be doubted that the recent great advances in industrial organisation and technique have contributed a substantial addition to this volume of unemployment, even though it would anyway be considerable, owing to the different conditions of industrial life in the United States as compared with European countries. In the United States ordinary competition is so far a sufficient stimulus to improvement, because it has been reinforced by the actual shortage of skilled labour. In Great Britain there is no such shortage, and the operation of a forward wage policy by trade unionism² would be an artificial, but a necessary and justifiable substitute. In both countries the result would be the same—a certain amount of unemployment as the price of progress. Unemployment so caused may be a misfortune, but it is more or less unavoidable, and the popular notion that anything which creates unemployment, is therefore *ipso facto* to be condemned without further investigation, urgently requires revision. It does not follow that a trade union which maintains wage rates at the expense of some unemployment, is exercising an iniquitous tyranny over the workman; on the contrary, such a policy may well be for the ultimate good of himself and his fellows. But if unemployment of this kind is the price of progress, the corollary is obvious, namely that

¹ See also Appendix No. 9 of the Report of the British Delegation appointed to study Industrial Conditions in Canada and the U.S.A. Cmd 2833.

² If American trade unionism had been sufficiently powerful to operate such a policy, it would probably have been very ill-advised to do so, as the combined pressure would probably have been too great in many industries.

every possible means should be adopted to minimise it by increasing the mobility of labour, and also to mitigate its influence on the individual.

Thirdly, it is clear that since an increase in industrial efficiency is the common aim of all parties, the industrial policy of the State should be far more positive and constructive than negative or merely ameliorative, which has been its chief complexion in the past; and the middle-classes should assist in bringing about this change. The State should give every encouragement and substantial financial assistance in facilitating and developing improvements in the organisation, and especially in the technique, of production. There are certain kinds of research which benefit nearly all industries, and therefore there is a tendency for no one industry to shoulder the expense, when the fruits cannot be retained for its own advantage: in such cases the State should take the initiative. There are other kinds of research which are so costly as to be beyond the reach of the industry concerned. In the last few years the State has undertaken a certain amount of research, but its efforts are minute in comparison with the value of the potential benefits.¹ Moreover the scope of research is too narrowly interpreted: at present it is too strictly confined to the realm of chemistry and physics, and requires to be developed in many other directions, especially into economic problems. Again, the dissemination of information as to the best existing organisation and technique should be an important adjunct to the task of actual research. Recent efforts by the Ministry of Agriculture² are in the right direction, and there is no reason to suppose that industry and commerce would not benefit in at least equal degree from similar efforts, since few

¹ Under the direction of the Department of Scientific and Industrial Research. This body also administers the capital sum of £1,000,000 allotted by the Government in 1918 for the purpose of developing and assisting Industrial Research Associations in individual industries. The results of this scheme to date can also be termed minute. See the Balfour Committee's report, "Factors in Industrial and Commercial Efficiency," chap. iv.

² Their Economic Series of Reports on Marketing Problems, Agricultural Credit, etc.

employers are less receptive of new ideas than the average farmer. The financial provision for all such work should be greatly increased. A million pounds a year will finance a great deal of research, and would probably pay for itself many times over in an enlargement of the national income. The middle-classes should see that no false economy is practised in this direction.

A final word may here be added for the consideration of students of economics, who can make a specially valuable contribution. If the theoretical conclusions of this study of wages are correct, it will be necessary for the different schools of thought, each to find a place for the influence of collective bargaining in whatever precise theory of wages meets with its special approval; and in particular, certain practical conclusions regarding trade unionism will have to be radically revised. But there are further implications. It becomes clear that economists should devote more careful study to the principles and methods of wage determination by collective bargaining, and to the general form and terms of specific agreements. Such studies will help industry to select that which is best from the point of view of industrial efficiency and its improvement. Further, the study of industrial structure and organisation should receive more attention. It is clearly of the utmost importance that the combined efforts of the economist and the statistician should be placed at the service of employers' organisations and trade unions, in forms which suit their various needs. The distinction still commonly made between analytical and descriptive economics is very misleading: the terms theoretical and applied, though not wholly satisfactory, are to be preferred, because they do give some notion of a joint partnership, whose members must co-operate to achieve the best results of their efforts. At present applied economics is in its infancy, and requires to be developed at the greatest possible speed, in order to establish the balance of a partnership, which should be capable of a most valuable service to the community. If modern economics fails to produce counsels of wisdom and strength in the solution of

purely industrial problems, and continues to confine itself to the general economic problems of the State, as it has done so largely in the past, it will be failing in its duty to industry and society. Economists can and ought to make themselves the valued servants of both capital and labour, in the daily business of perfecting the industrial machine.

APPENDIX I

COURSE OF WAGES IN THE RAILWAY SERVICE 1886-1913

APART from the returns of rates of wages in 1886 and 1891, which form part of the first general wage census, there is no comprehensive information until 1906. There are a few statements as to wage rates in the evidence presented to the 1892 Select Committee on the Hours of Railway Servants, and to the Royal Commission on Labour which had been appointed in the previous year. From 1896 until 1913 the Board of Trade obtained reliable returns of the average earnings of all employed during one week in each year. In 1906 the Amalgamated Society conducted a most extensive census of wages among its members. Returns were obtained from 259,000 persons, and in default of any other information, considerable reliance could be placed on the results. But as in the next year an almost complete census was carried out by the Board of Trade as part of the second general wage census, it seems better to utilise this official return, not in distrust of the results obtained by the Amalgamated Society—in so far as the two censuses can be compared, the results are substantially the same—but because the Government returns are even more complete, and are tabulated on the same principles as the returns for other industries. This seems to be all the statistical information available, and our task is to piece these fragments into a consecutive record.

The 1907 Census report states that no comparison can be made with the returns of 1886 and 1891 for the following reasons :

- (1) The grades included are not the same : in particular the earlier returns included a large number of men employed on construction works, who were excluded in 1907.

- (2) The composition of grades called by the same name is not identical: for instance, in the earlier returns porters include porter signalmen and porter shunters, who are separately distinguished in 1907.
- (3) The earlier returns only give the numbers paid at rates falling within certain specified limits, mainly 5/- groups, while the 1907 returns give the numbers paid at each and every different rate.
- (4) The earlier returns only covered about 90 per cent. of all employed, while the 1907 census is complete.

Now while such details are very valuable warnings, they hardly constitute a strong case for the impossibility of effecting any comparisons at all. As regards the first point, the inclusion of a large group of low paid men would certainly tend to depress the average wage of all returned, but not probably to any very appreciable extent. As regards the second point, porter signalmen and porter shunters received in 1907 only slightly higher rates than ordinary porters, and while the former numbered 2287, there were only 238 of the latter. The third reason is of course more substantial, but with such large numbers returned, the calculation of an average, whether for all employed or for any particular grade, should not be subject to any considerable degree of error. The last point is obviously unimportant—anything over 50 per cent., let alone 90 per cent., would be a reasonably reliable sample. Therefore, despite this official declaration, it is proposed to make comparisons. The results may not be correct to a penny, but they should at least afford a fairly adequate measurement of the movement of wages between these dates.

Although the true average is available in 1907, it will be better for comparative purposes to calculate a weighted average from 5/- groups, since this is the only method of dealing with the 1886 and 1891 returns. In other words, since we are concerned with relative changes, it is better to introduce the same degree of error throughout, rather than to compare an accurate figure with figures which must necessarily be subject to some error; there is, of course, no reason to suppose that the degree of error, arising as it does from the common assumption that the distribution within each 5/- group is spread evenly over the group, will be radically different at the different dates. On this basis, we get the following results:

	1886	1891	1907	
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Average Rate of Wages of all employed	22. 7	22. 11	23. 8	(24.4) ¹
Lower Quartile	17. 7	17. 10	19. 6	(20.0) ¹
Median	20. 11	21. 5	22. 3	(23.0) ¹
Upper Quartile	25. 8	26. 4	26. 9	(26.9) ¹

The average rate shows a rise between 1886 and 1907 of 5 per cent., while the medians show a rise of 6 per cent. : a satisfactory correspondence, though the rise seems incredibly small in comparison with other industries. Remembering the large group of low paid men on construction work which was included in 1886 but not in 1907, it seems probable that a rise of 5 per cent. is in fact too great, but lacking more detailed information, this figure may be taken as the broad result of this comparison of the two wage censuses.

Further evidence may be drawn from the Board of Trade returns of average earnings in one week of each year, which, beginning in 1896, cover half the period. The returns are shown separately for England and Wales, and Scotland; but, when combined according to the relative numbers employed, they show a rise in earnings of 8 per cent. Thus in the period 1886-1907 wage rates apparently rose only 5 per cent., against an 8 per cent. rise in earnings between 1896 and 1907. Moreover the first wage census returns show that rates of wages rose 1.5 per cent. between 1886 and 1891, and while wage rates in general were falling from 1892-95, it is contrary to accepted evidence that the general level of railway wage rates has ever fallen.

In order to substantiate the results of the two wage censuses, it would be desirable to secure evidence showing why the rise in rates was less than the rise in earnings. Fortunately such evidence is forthcoming. The difference between rates and earnings is due to the following factors: bonus payments, piece-work, and extra payments for overtime and for Sunday duty. Bonus payments used to be made for freedom from accident, good time-keeping, punctuality, and so on, but in 1907 while the value per

¹ These figures in brackets are the true figures for 1907, which have been included to show the sort of error introduced by calculating from 5/- groups.

head of certain grades was considerable, the value per head of all employed was only two pence per week, and as there is no evidence that bonus payments were more common in 1886, this factor can be disregarded. Piece-work on the railways, with the exception of the engineering shops, has always been confined to engine drivers, firemen, and guards. In the engineering shops there was probably some increase in the proportion of piece-workers during the period 1886-1907, and therefore a tendency for average earnings to rise more rapidly than time-rates, but spread over all employed in the railway service, the effect would be negligible. As regards the train staff, there is no piece-work in the strict sense of the term, but in the eighties payment was often made not at a weekly rate, but at so much per trip run during the week. Evidence given before the Select Committee on the Hours of Railway Servants in 1892, relating chiefly to the Lancashire and Yorkshire Railway, where it was most common, shows that the trip system did not result in weekly earnings appreciably greater than the time-rates for the grades concerned. The system was opposed by the railway unions on the ground that it tended to result in the working of unpaid overtime, owing to delays for which the men concerned were not responsible. By 1907 the trip system was rapidly dying out, though in one sense it was being replaced in the case of the engine drivers and firemen of long distance passenger trains, by extra payments according to the mileage run over a certain minimum, generally 150 miles per day—a practice which is now firmly established. But this is more of the nature of an additional payment for work of peculiar intensity and strain, rather than an addition to normal wage rates.¹ No precise information is available as to the number of engine drivers and firemen in receipt of mileage allowance, nor its average value: but it probably does not amount to much per head of these grades, and certainly would make no appreciable difference to the average wage of all railway servants. Piece-work, therefore, in whatever form, will not explain the tendency for earnings to outstrip the rates.

An increase in earnings from overtime and Sunday duty may result either from an increase in the amount of time so worked, or from an increase in the rates of payment, or from both together.

¹ Hence no allowance on this score has been made in estimating the wage rates of engine drivers as a grade in chapter ii, section iv.

As regards the amount of overtime worked at different dates, there are many statements of a general nature in the evidence submitted to the Hours Committee and the Royal Commission on Labour, relating to the period 1890-02. From 1890 onwards the Board of Trade published at intervals returns showing the number of cases of hours worked in excess of 12 per day, which was the length of the normal day's work. By 1907 these figures show some reduction, but on the other hand the normal day's work had decreased to 10 hours, so that at the latter date it is quite possible that just as much overtime was being worked, even though the number of cases of more than 12 hours show a decrease. There is no information in the 1907 census report, but on the whole there was probably no great change in the amount of overtime. On the other hand, while the evidence is again extremely meagre, it is probable that payment at an increased rate was more general in 1907 than in the eighties. In 1907 overtime was commonly paid at time and a quarter: in 1886 it was exceptional to pay more than the ordinary time rate. Since a considerable amount of overtime was undoubtedly worked by several of the numerically important grades, even a small extension of payment at higher rates would make an appreciable difference even to the average earnings of all employed. Similarly it was probably more usual to pay time and a half for Sunday duty in 1907 than in 1886, and there is no mention of the payment of a minimum of half-a-day's pay during the earlier part of the period, though this was becoming a frequent practice in 1907. Moreover it is quite certain that there was no diminution in the amount of Sunday duty, while in all probability it was greater owing to the undoubted increase in the amount of Sunday passenger traffic.

While therefore the available information is extremely slender, such general conclusions as may be drawn confirm the probability that earnings increased faster than wage rates during the period. In any case there is no reason whatever to suppose that the two wage censuses do not provide a measurement of rates of wages at least as accurate as that which the annual returns afford for earnings.

It may therefore be concluded that from 1886 to 1907 the general level of wages rose 5 per cent. From 1907 to 1913, the only available wage data are the returns of earnings for one week

in each year which show a rise of 8 per cent. This was the era of the Conciliation Boards, and though numerous commissions and committees issued reports, they are entirely concerned with the administration of the scheme, and contain little or no information as to actual wage rates. Nor can much be gleaned from the records of the decisions of the Conciliation Boards. In many cases they are concerned with purely local matters, and in others, though it is evident that a large number of men were affected, it is virtually impossible to determine the effect of the changes, owing to the lack of information as to the number of men to which each related. It is difficult even to obtain a general idea of the main drift of the changes, but the alterations seem to have been mainly in the direction of further extending the practice of payment at an increased rate for overtime and Sunday duty, of eliminating specially low rates, and of raising slightly the rates for most grades at different times in different areas. On the whole, this period saw a continuation of the same sort of changes as were in progress from 1886-1907, only at an increased pace: in other words, earnings probably continued to increase faster than rates of wages. The estimate is purely arbitrary, but it may perhaps be assumed that wage rates only increased 6 per cent. as against the 8 per cent. rise in earnings.

It is thus possible to ascertain the average wage rate at the four dates, 1886, 1891, 1907 and 1913, and the following index numbers measure the relative level of wages at these dates, taking the average of 1886 and 1891 as the base (= 100).

1886	..	99
1891	..	101
1907	..	104
1913	..	110

For the intervening years no precise statistical measurement is possible, but it would be consonant with such general information as is available, to assume that the upward movement was more or less uniform, and this assumption has been made in constructing the graph in Chapter II.

APPENDIX II

DETAILED PROCEDURE IN THE ASCERTAINMENT OF TRUE WEEKLY WAGE RATES

A

In the Building Industry

AT the taking of the 1886 wage census, the Board of Trade was satisfied that rates of wages and hours in this industry were almost universally the subject of district collective agreements, and that the vast majority of workers in any grade were actually paid the agreed rates, and worked the standard hours in a full normal week. The Board was supplied with a schedule of wage rates and hours in the various districts by the National Association of Master Builders, and this forms one part of the census report.

Such a schedule, however numerous the districts it contained, would obviously not supply exact averages for each grade or for the industry as a whole, though, with care, such averages could be closely estimated; therefore, in addition the Board obtained a small sample of actual wages earned in a full normal week. The 1906 census was conducted for the building industry on the same lines as for all the other industries, and therefore gives weekly rates. Since 1906 no further investigations¹ as to weekly earnings have been made: such figures as those which are given at intervals in the *Labour Gazette*, are simply calculated from the standard hourly rates and the length of the normal working week, and incidentally they are confined to towns of 100,000 population and over. For the later part of the period, therefore, reliance must inevitably be placed on calculations based on the hourly rates, and since the 1886 census sample gives no information as to the number of hours in the normal week, we shall later

¹ The 1924 census did not distinguish the grades of workers.

be bound to utilise the schedule of district standard hours in order to obtain the hourly rates in this industry. It seems better, therefore, to rely on the district standard rates and hours throughout the period, and to use the two census reports simply to check the calculations made on this basis.

The selection of a representative group of towns is the most difficult task in attacking the problem on these lines. Selection has in the first place been somewhat straightly confined by the limited number of towns for which information is available in 1886, and also at the three subsequent dates. Secondly, since rates of wages are found to differ not only between large and small towns, but also between different geographical areas, it is necessary to secure not only a combination of large towns and small towns in proportion to the numbers therein employed, taking the country as a whole, but also to secure such a balance within the various geographical areas as shall be typical of each area. Accordingly while the number of small towns selected is very much less than the number of large, the average is adequately affected, and the inclusion of a larger number would probably make it less accurate, unless some system of weighting according to the numbers of men in each town could be adopted, which it cannot. Similarly, the North, with its great industrial centres, must not be allowed to supply rates for small towns in the same numbers as the South. In the end, a selection of 53 towns in Great Britain has been made, and its accuracy may be tested by comparison with the two wage census reports.

There can be no doubt that the 1906 census is far more reliable than that of 1886, and therefore comparison may first be made at the later date. If that comparison is satisfactory, there will be a strong presumption in favour of the standard rates' averages, even if the comparison with 1886 census is not satisfactory. Rates of wages rose by approximately 4 per cent. between 1906 and 1913, and this addition has therefore been made to the census figures.

HOURLY RATES IN 1913

	Bricklayers.	Painters.	Labourers.
1906 census plus 4 per cent.	8.8	8.1	5.7
Average of 53 towns ...	9.1	8.1	6.0

The correspondence is reasonably close, though the excess of

0.3 pence in the case of bricklayers and labourers may mean that their weekly rates calculated on the 53 towns' averages are about one shilling too high.

In 1886, however, there is no such agreement. The 1886 census results are given as weekly rates, and dividing the summer rates by the average of the summer hours in the 53 towns, we get the following results :

HOURLY RATES IN 1886			
	Bricklayers.	Painters.	Labourers.
Census	8.0	6.9	4.9
Average of 53 towns	7.2	6.5	4.5

Here the position is reversed, and it is the census figures which are higher. The excess is particularly great in the case of the bricklayers, and in addition to the supporting evidence afforded by the close correspondence with the 1906 census, we have also the fact that of all the 53 towns only 13 had a bricklayer's rate of 8d. or more, and only 4 had a rate of more than 8d. There seems to be little doubt that the 1886 census results must include a certain amount of overtime, for the excess of the summer weekly rates over the winter rates divided by the difference between summer and winter hours, gives an hourly rate of no less than 11.5 pence! It may be objected that the recorded standard hours per week in the 53 towns are assumed to be accurate, but if they understate the facts, the census hourly rates will be, of course, smaller and, therefore, more in line with the 53 towns' averages. As a matter of fact, much greater reliance can probably be placed on the average of the hours in the 53 towns, than the average of the wage rates. The same sort of conclusions apply to the painters and labourers, though in their case the excess is not so great. The substantial accuracy of the 53 towns' averages is, therefore, considered to be vindicated at the expense of the accuracy of the 1886 census.

The average of the hourly rates in the 53 towns at the selected dates are as follows :

	1886	1913	1920	1926
	Pence per hour.			
Bricklayers	7.2	9.1	26.5	19.2
Painters	6.5	8.1	26.25	19.2
Labourers	4.5	6.0	23.0	14.8

The 1886 schedule of standard rates and hours gives the standard hours both in the summer and winter periods. The 1913 report on Standard Time Rates of Wages only gives the hours in summer,¹ but the 1906 wage census shows that the hours in winter were on the average shorter than the summer hours by 7.3 for bricklayers, 8.1 for painters, and 6.7 for labourers ; and these differentials may be utilised for 1913 without risk of appreciable error. The 1886 report estimated the length of the winter period as 15 weeks, but no detailed returns were apparently obtained, as was done in the 1906 census, which showed that the winter period then lasted for approximately 14 weeks in the case of bricklayers and labourers, and 16 weeks in the case of painters. There is no evidence of any change of practice between 1886 and 1906, or between 1906 and 1913, and it seems better to apply the more detailed results of 1906 both to 1886 and 1913, rather than to use the contemporary general estimate for 1886. On this basis the average summer and winter hours have been estimated, and the results are as follows :

AVERAGE SUMMER AND WINTER HOURS			
	Bricklayers.	Painters.	Labourers.
1886	51.8	52.9	51.5
1913	51.3	51.2	51.5

In 1920 there was a 44-hour week for all grades throughout the year. In 1926 hours were 46½ during the statutory period of "summer time," and 44 hours during the remainder of the year, but in many districts the 44-hour week existed by local agreement all the year round, and so the average for the whole country was only 44.25 hours.²

B

In the Coal-mining Industry

No further details are given, as this would only involve a repetition of a large part of my *Wages in the Coal Industry*. P.S. King, London, 1923.

¹ The average summer hours of bricklayers and labourers in the 53 towns in 1913, were actually a trifle longer than in 1886, but the winter hours were shorter. Painters' hours were shorter both in summer and winter.

² See *Labour Gazette*, 1925, p. 342.

C

In the Cotton Industry

The *Labour Gazette* monthly returns of employment and earnings, to which reference has been made in the text, are in the form of a sample of the numbers employed and total wages paid by a large number of firms in the last pay week of each month. These returns are available back to and beyond 1906, and provide a most valuable basic indication of the movement of average earnings from year to year. The returns distinguish various districts in Lancashire, and are classified under five headings—the preparing, spinning, and weaving departments. “Other” departments, and “Not specified”—but they include men and women, boys and girls, and are not related to the number of hours worked. Before 1919 the possibility of earnings being swelled by overtime can be neglected, since for women the normal working week was the same as the Factory Act week, and except in rare cases the men cannot be employed without the women. After the reduction in hours to 48 per week, overtime was occasionally worked in a few mills by certain grades, but the effect on the *Labour Gazette* returns would be almost negligible, for the amount was never considerable, and trade union opposition was so strong that it very soon ceased. Short time, however, is a very important factor, since in this industry slackness in trade is met primarily by that method, and not by the discharge of operatives.

Broadly speaking, it is safe to compare the *Labour Gazette* returns only at periods when there was no short time at all, since no detailed returns of the amount of short time in the different departments are available, even though the *Labour Gazette* has, since September, 1922, published an over-all figure. By selecting two periods of full-time working, and comparing the increase or decrease in earnings per head with the alteration in the level of list prices, we have a means of testing whether there has been an increase in earning power, apart from changes in list prices. Thus trade was extremely good in the winter of 1906-07, and again in 1913. The lists covering the preparing and spinning departments were at the same level at both these dates, but the weaving lists were 5 per cent. higher in 1913. Adding 5 per cent. to the

earnings of the weaving department in 1906-07, the *Labour Gazette* returns compare as follows :—

AVERAGE WEEKLY EARNINGS PER HEAD.

Department.	Sept. 1906—April, 1907.	The year 1913.
Preparing 18.3½	18.6
Spinning 19.6	20.0
Weaving 19.3	20.0

Such comparisons must not be pressed too closely, and it would be unwise to deduce from the above figures more than a slight tendency for earnings to increase a very little more than list rates. It would be absurd to attempt accurate measurements based on these *Labour Gazette* returns only, and as the increases are in any case small, it seems best to ignore them for our purposes, and to use the 1906 census figures for 1913 subject to the increase of 5 per cent. on the weaving lists. For 1886, the census figures of that year, as has been said in the text, require the addition of 4 per cent. on account of short time.

In December, 1920, the cotton trade was considerably depressed, and in order to get a period of full-time working, it is better to take the spring of that year. Since 1920 there has continually been a varying amount of short time, and it is difficult to obtain any fair comparison. The 1924 wage census¹ provides a much larger sample than the ordinary monthly returns, but it does not distinguish between different departments, as do the *Labour Gazette* monthly returns, and similarly only one over-all figure for the amount of short time is given. Trade conditions were fairly good in October, 1924, and the census gives only 2.4 hours as the average loss of time for all employed. The following table shows the percentage increase of earnings beyond the level of the price lists since 1913, according to the *Labour Gazette* monthly returns in April, 1920, and October, 1924, together with the corresponding figure for the latter date according to the 1924 census, while the right-hand column shows the results if the recorded earnings for October, 1924, are increased by 2.4 hours' pay at the current hourly rate for all employed.

¹ See *Labour Gazette*, June, 1926.

PERCENTAGE INCREASE OF EARNINGS ABOVE LIST RATES.

Departments.	April, 1920.	October, 1924.	
		As re- corded.	Including allow- ance for short time.
Preparing	13	9	—
Spinning	8	6	—
Weaving	15	10	—
Other and Not Specified	23	21	—
All Departments	16	12	19
1924 Census—All Departments	—	16	23

There can be no doubt that there has been a general tendency for the earnings of all the main grades of operatives to increase, apart from the alterations in the level of list prices. The 23 per cent. increase for all employed shown by the Census when allowance has been made for short time, may be taken as the most accurate available measurement. The *Labour Gazette* monthly returns, which are a much smaller sample, therefore register too low throughout, and in any case there is no doubt that the *Labour Gazette* "As Recorded" figure of 12 per cent. for 1924 is much too low, since we know that there was then an appreciable amount of short time. The *Labour Gazette* monthly returns show 16 per cent. in April, 1920, as compared with 19 per cent. in October, 1924. If there had been any comprehensive record of short time in April, 1920, it is possible that some small amount would have been discovered, and in any case the difference is very small. The causes of the extra increase in earnings up to 1920 were discussed by the present writer in an article in the *Economic Journal*, June, 1924, and it was inferred that while some part of the extra increase would be permanent, there was at least a possibility that the excess would very slowly diminish, and in any case no reason to suppose that there would be any further appreciable increase at least in the near future. It seems therefore reasonable to conclude that the increase was as great by April, 1920, as by October, 1924, and to put it for all employed at 23 per cent. : equally it may be concluded that there was no significant change between 1924 and 1926. It is most unlikely, however, that the extra increase was similar for all departments, or for all grades of operatives: the *Labour Gazette* returns supply proof of this. Equally there is no reason to suppose that the incidence of short

time is always equally spread over all departments. The variations in the "As Recorded" figures for the various departments in October, 1924, are affected by the varying incidence of short time, and therefore it seems safer to use the April 1920 figures and to increase them by the 7 per cent. necessary to bring up the average to the 23 per cent. for all employed. It is impossible to apportion the increase for each department among the different grades in that department, but it is reasonable to suppose that the main grades, spinners, grinders and women weavers, must have gained at least a substantial part of the increase, or the average for the three departments would never have increased as much. These grades may, of course, have gained more than the average increase, and the other grades less, but in default of the necessary detailed information, it is not unreasonable to apply the average increase for the appropriate department to each of our three typical grades. Thus 15 per cent. has been added to the spinners' wage in 1920 and 1926, as calculated by adding the increase in list rates to the 1906 census earnings; 20 per cent. to the grinders' wage and 22 per cent. to the women weavers' wage.

D

The Engineering Industry

Since 1886, and before that, piecework has been increasing rapidly in certain grades, and this introduces an exceedingly awkward problem. Our task will be simplified if attention is first concentrated exclusively on time rates. The 1886 census supplies the average time rates for turners and labourers. Separate figures are given for the different grades of machinemen, but these can be combined in a weighted average according to their numerical strength.¹ The 1906 census gives the one heading machinemen, and also of course the rates for turners and labourers. According to the Board of Trade Index² of changes in rates of

¹ The grades combined are planers and shapers, slotters and borers, drillers and screwers.

² This index covers ship-building as well as engineering, but the changes in the pre-war period were very similar in these two industries.

wages, there was a general rise between 1906 and 1913 of approximately 4 per cent. There is no means of determining the exact advance gained by each grade, but if we assume a uniform 4 per cent. advance, no great error will result. By adding 4 per cent. to the 1906 census rates we therefore obtain the figures for 1913. Little or no change occurred in 1914. In 1915 and 1916 additions of varying amounts were made by districts, and in April 1917 the increases given since the outbreak of war were levelled up throughout Great Britain to a minimum of 7/-. Actually a good many districts had gained more, and as Professor Bowley has shown,¹ the average increase was at least 7/10 for turners, and 7/6 for labourers. It may perhaps be assumed that the machinememen got at least as much as the turners. These increments were added to the permanent time rates. Then came the various war wage additions, which by the end of 1920 totalled 32/6 plus the 12½ per cent. bonus on weekly earnings. In 1921 the total war wage was reduced by 6/-, and by January 1, 1922, the 12½ per cent. bonus had been completely withdrawn. During 1922 the war wage was reduced by 16/6, leaving only 10/- addition. Since the end of 1922 wage rates have remained unchanged. The following table shows the average time rates at our selected dates :

	1886	1913	1920	1925
Turners	29.6	35.6	85.4	53.4
Machinememen	21.10	28.1	77.0	45.11
General Labourers ..	17.10	21.3	68.11	38.9

The effects of piecework must now be considered. The 1886 census gives the earnings of piece-workers as well as time workers for a full week, and as there is no very reliable information where-with to check the accuracy of the relative numbers returned, the results must be taken as they stand, and may be directly combined in a weighted average. The 1906 census distinguishes two kinds of payments by results, ordinary piece workers, and those who receive some kind of bonus based on their individual or collective output. The proportions of full-time workers on time, piece, or bonus, are, however, radically different from those of "All work-people," that is including those who worked less or more than full time. To get the true proportions of time and piece workers, we

¹ *Prices and Wages in the United Kingdom 1914-20.*

must take the numbers of "All workpeople," but to get the true weekly wage rates we must apply these proportions not to the figures for "All workpeople," but to those for full-time workers only. For convenience we may include the workers on bonus schemes with the piece-workers.

The tendency for piece work to increase almost certainly continued in the period 1906 to 1913, but no great error will be introduced if we use the 1906 proportions as applicable to 1913. During the war years, the proportion of piece-workers undoubtedly increased very greatly, but as the industry returned to the more diversified production required in times of peace, at least a part of this increase disappeared. For the post-war period, we have evidence from two sources. In 1920-22 the Amalgamated Engineering Union obtained a return from a large proportion of their members, which showed that approximately 40 per cent. were working under some system of payment by results.¹ The union's membership is mainly composed of turners, fitters, machinemen, and other skilled and semi-skilled grades of small numerical importance; for practical purposes this 40 per cent. may be taken as an average of the three grades named. The other source of information is a return relating to March, 1927, collected by the Engineering Employers' Federation² from 1,615 firms, representing rather over 90 per cent. of the Federation's employing power. This probably also represents at least as big, or even a bigger, percentage of all employed in the industry, and, while the firms not included are probably below the average size, and therefore likely to show less than the average proportion of piece-workers, the effect of their inclusion would not be considerable. These returns show 63.4 per cent. of the turners on piece-work, 51.7 of the fitters, and 55.4 per cent. of the machinemen. Making a rough allowance for the numerical proportions of these grades, the average would be approximately 55 per cent. There is a big difference between this and the 40 per cent. of the A.E.U.'s returns. There has undoubtedly been a rapid increase in piece-

¹ These returns have never been published so far as I know; the information was given to me by the General Secretary. The returns did not distinguish the different grades of workers.

² The Federation apparently collected similar returns for several earlier dates, which have not been published. This may be inferred from R. Spicer's *British Engineering Wages*, which has appeared while this book has been in the press, though the source of his statistics on page 25 is not stated.

work during the last five years, but even if the figure of 55 per cent. is a little on the high side, it is difficult to suppose that the increase has been so great as these figures indicate. Equally it is difficult to suppose that there was little or no increase in piece-work between 1906 and 1921-22, which is what the A.E.U. figure implies. In the absence of details regarding the A.E.U. returns, and in view of the very large sample afforded by the Employers' returns, it seems better to use the latter as applicable to 1920 as well as to 1926. The percentages on piece-work at the various dates are therefore as follows :

PERCENTAGE ON PIECE-WORK.

	1886	1913	1920-26
Turners	6	39	63.4
Machinemen	11	47	55.4
General Labourers.....	2	9	15.4

The 1886 and 1906 wage census reports give the actual earnings of piece-workers in a full normal week, but in the post-war period we have no fully comparable information. The Employers' returns referred to above, also give the average time and piece earnings of certain selected grades,¹ but the facts that the firms within the Federation who did not make returns, as well as the firms who are not members of the Federation, are in all probability small firms, and many of them in country districts where wages are relatively low, rather vitiates these returns as affording a properly balanced sample : as averages for the whole country, and therefore comparable with the 1906 wage census, they are almost certainly too high. It seems safer only to utilise these 1927 returns in order to obtain the ratio of piece-work earnings to the corresponding time-rates. For all our three selected grades, the returns show piece-work earnings approximately 25 per cent. above time rates : this is incidentally a much higher ratio than

¹ These figures, as returned, include both overtime and night-shift earnings, and, which is probably more important, they include bonuses of various kinds which firms in the more prosperous sections of industry such as electrical engineering, have recently been giving : no detailed information as to these bonuses exists, and in any case they must at present be regarded as of a temporary character.

the 18 per cent. shown by the 1906 wage census. In default of information relating to 1920, this ratio will be used for that year as well as 1926. The average earnings of piece-workers are therefore as follows :

	1886		1913		1920		1926	
	s.	d.	s.	d.	s.	d.	s.	d.
Turners	33	8	42	3	106	8	66	8
Machinememen	26	7	33	5	96	3	57	5
Labourers	23	1	27	10	86	2	48	5

By combining these figures with those previously given for time rates according to the proportions of piece-workers and time-workers, we obtain the true average rates as given in the text.

E

In the Railway Service

The following notes relate to the small additional sources of income, which must be considered in the calculation of true weekly wage rates.

(1) Before the war various bonuses were customarily paid for freedom from accident, good time-keeping, and so on.¹ Frequent mention of their existence is made both in the evidence before the Select Committee on Hours, 1892, and before the Royal Commission on Labour, 1891, but no reliable estimates are given of its value per recipient, or per head of all the men in each grade. Full details are given in the 1907 census, and as there is no evidence to show that the bonus system was either more or less important in 1886 than in 1907, the best available course is to add the values in 1907 to the 1886 rates as well as to those in 1913. The additions are 3*d.* for engine drivers, nil for goods guards, and 9*d.* for goods porters.

¹ These bonuses are distinct from payments to train staffs on the trip system, and the later practice of mileage allowances to engine drivers and firemen on long distance express trains. Mention is made of the insignificant effects of the trip system on wages in Appendix I, and it is there pointed out that the mileage allowance is of the nature of additional payment for work of peculiar intensity and strain, and therefore belongs to the category of earnings rather than rates of wages,

(2) Slightly more important is the value of free uniform or other clothing. The 1907 census report estimates the weekly value per head of all the men in each grade as follows: engine drivers 3*d.*, goods guards 11*d.*, and goods porters 2*d.* Any modification of these figures to allow for the change in the price of clothing between 1886 and 1907 would make so little practical difference, that the figures may be applied to the earlier date as they stand, and also to 1913. So far as is known the issue of free uniform and clothing allowances have continued on the same lines up to the present time. The Ministry of Labour estimate the retail prices of clothing in December, 1920, to have been 290 per cent. higher than in 1914. The railway companies of course purchase at wholesale prices, and it is unlikely that they had to pay as much more as this, but for comparison with wage rates in other industries, it is not so much the cost to the companies as the value to the railwaymen which should be taken into account. By way of compromise we may perhaps take an increase of 225 per cent., and apply it to the pre-war figures. Similarly we may take the increase to have been about 100 per cent. in December, 1926.

(3) The value of rent free, or reduced rent, houses per recipient was considerable in the pre-war period, but as the number of recipients was very small, the value per head of all the men in any grade was negligible.

(4) Payments for overtime and Sunday duty, even though they are of a more or less regular nature, belong to the category of earnings, not of wage rates. See Appendix I and also Chapter III.

(5) Holidays with pay. The history of this practice may be summarised as follows:

In 1892 "The rule with regard to holidays varies in different grades. The traffic men have as a rule from 3-6 days in the year, with pay and passes. Those in the lower grades, such as platelayers, goods porters, and men in workshops, are allowed no holidays at all." (Mr. Andrew Clark, Secretary of the Railway Workers' Union, in evidence before the Royal Commission on Labour).

In 1907 "About 70 per cent. of railway employees were given annual holidays with pay, and for about 90 per cent. of these (or nearly two-thirds of the total numbers

employed) these holidays amounted to from 3-6 days. The holidays stated, included the public holidays (so far as allowed) except in the case of the coaching and traffic department, who were granted these holidays in turn ; in addition, the men who took duty on those days being allowed to leave as circumstances permitted." (1907 Wage Census Report).

In 1920 By the National Agreement of this year, provision was made for one week's holidays with pay to all employees in the conciliation grades (virtually all employees except those in workshops) after twelve months, service.

The 1907 Census Report makes it fairly clear that, in the main, the grant of special holidays was made in lieu of the public holidays to those grades who were required to handle the holiday traffic. When Mr. Clark spoke of "no holidays at all," he obviously meant other than the public holidays, for the grades which he mentions, and others who would not then be required for duty, as would the traffic grades. The grant of special holidays, therefore, may be said to have done little more than put the traffic grades on a par with the other grades, and with the workers in other industries, and no allowance should be made on this account in reckoning their true wage rates. While the practice has gradually spread to almost all grades of railwaymen proper, it must also be remembered that the volume of traffic on the public holidays has grown very greatly and now often demands the full normal staff. As well as an equivalent to the public holidays, the grant of special holidays may also perhaps be regarded as some compensation for periodical Sunday duty, the inconvenience of which is not entirely made good in the eyes of all railwaymen by the higher rate of payment.

APPENDIX III

CHANGES IN THE EQUIPMENT OF AN ORDINARY MACHINE SHOP

1 *The Grinding Machine*

THE introduction of this machine has been described in the text by way of illustration, and little further comment need be made. The various types of machines, some with the wheel set horizontally, others vertically, have undoubtedly been improved since the first models, and in recent years fully automatic machines have been introduced for special purposes, but the work on a universal grinding machine is to-day highly skilled, as it always has been.

2. *The Lathe*

No machine has been so affected by the process of specialisation as the lathe. To-day there are literally hundreds of different types, some designed for general purposes, others to do only one small operation. Yet the two distinct methods of lathe working remain unaltered: that where the work is fixed between two centres (centre lathe working), and that where it is fixed by "chucks" to the left-hand centre only (face lathe working). On the old standard lathe, the former method was used for screw-cutting and all turning proper, while the latter made possible all kinds of boring operations. These principles hold good to-day, but improved methods of "chucking" have resulted in an enormous development of "face" lathe working, mainly because, once fixed, the work is in position for both kinds of operations, and so time is saved. If a typical lathe of forty years ago and a modern centre lathe were compared, the change in general structure would be seen to be not so great as is sometimes imagined. They are substantially the same type of machine. The modern machine looks more complicated, particularly as to its slide rest, but, on the other hand, the gearing is as a rule completely enclosed and the speed of the slide rest is controlled

by one lever, whereas on the old pattern there were a large number of gear or "change" wheels which had to be altered by hand. In the modern machine the tool can be made to move in any direction, and is under the most perfect control if the operative thoroughly understands his machine. It must be remembered however, that the self-acting slide-rest was in common use forty years ago, and this invention really marked a far greater step forward than has any subsequent improvement. It is very difficult to estimate how much work was done with hand tools thirty or forty years ago, but they were not greatly used, although unquestionably the proficient turner at that time would be able to use them, and use them very skilfully. At that time the hand tool was rapidly disappearing—to-day it has completely disappeared, and so has the turner's ability to use it. Then, the turner would keep the few cutting tools he needed under his lathe; to-day, owing to the greater number and variety required, they are the property of the firm, kept in a special store, and issued to any man indiscriminately as required. In turn this has resulted in the establishment of a special department for tool grinding and sharpening. In the old days the turner used to do all his own grinding, and even make any special tool he might require; now, not only does he not do so, but he cannot. The other great line of development has been in the calculation of "speeds" and "feeds." Forty or even thirty years ago, the turner would have to decide for himself what "speed" and "feed" he required for each job: to-day tables are worked out for nearly all machines, and the specification for each job issued to the turner from the office¹ contains directions which, in conjunction with the tables, make the problem soluble by rule of thumb. The "setting-up" of the modern lathe demands a sufficient degree of trained intelligence to grasp what movements are possible, and how they are controlled. But when once a man knows his machine thoroughly, the alteration of particular bolts is hardly a matter which can be said to demand skill, since the factor of personal judgment has been practically eliminated.

As regards the "face" lathe, the position is very different.

¹ In most works there is now a special "rate fixing" or "job estimating" department, which works out in detail the exact way in which each job is to be done, since this is a necessary preliminary to the setting of piece-work rates.

In the first place, the boring machine in its various forms (see below) has taken much of the work for which the "face" lathe was originally introduced. Secondly, as has been indicated above, the "face" lathe has more and more replaced the centre lathe, and it is mainly from the principles of the former that the new types have been evolved, which bid fair to replace both of them. By about 1900 the principles of the turret and capstan lathes were being widely introduced in a variety of forms. The turret is really a development of the slide-rest. The right hand centre or "sliding poppet" is done away, the work is fixed by a chuck on the left hand centre, and the slide-rest goes right across the main bed of the lathe in the form of a turret with grips for anything up to half-a-dozen tools. This turret can be made to slide up and down the lathe bed horizontally, and also to revolve so that one tool after another is brought into contact with the work, and effects its own particular job. With the introduction of "stops," so that the tool can only begin to work in the right position and automatically disengages when its work is finished, we have the semi-automatic machine, which can be operated by any man after a few hours' instruction, once the machine is "set-up" for the job. From this to the completely automatic lathe is a comparatively small step. This machine, which seems to think for itself, is indeed a modern miracle. For example, a bar is fed through the left centre and begins to revolve; as the right speed is obtained, the turret moves up and the first tool begins cutting; as soon as it disengages from the work, the turret slides back, revolves so that the next tool is in position, slides up to the work again, and so on, until finally the article is cut off, and the next section of bar comes forward. It is impossible to give any idea of the extent to which semi-automatic and automatic lathes have replaced the ordinary types. Some firms do the bulk of their work on these machines, others only a few oddments, so to speak, but even in the "general" shop they have found a large place, and according to the degree in which mass production methods are in operation, so is their use extended. They are worked by a semi-skilled or unskilled man, unless the operator has to do his own setting-up, which is often very complicated. The various tools have to be set so as to perform their operations in the correct sequence relative to the other tools, and the "rig" generally is complicated, simply in order to render

it more or less foolproof for the unskilled operator, and to obviate any necessity for adjustment on his part. Usually the setting-up is therefore done by a specialist, and though he receives detailed instructions from the office, he requires considerable skill, especially if faulty working has to be rectified. But this skill is again far more simply trained intelligence than the manual dexterity and mechanical experience of the old turners.

3. *Boring Machines*

Thirty-five years ago the introduction of specialised machines for particular kinds of boring was just beginning. Prior to that, all boring had to be done by the turner on an ordinary lathe. To-day there are really three classes of machines :

- A. Those where the work is fixed and the tool only revolves, the movement being horizontal.
- B. Those where the work revolves, and the tool is fixed, the movement being horizontal.
- C. Those where the work revolves and the tool is fixed, the movement being vertical.

A. are very much easier to work than B., since complications are introduced when the work has to be fixed, so that it will revolve truly. A. are worked by semi-skilled men, and a definite grade of "borers" has been established referring to this class. B. are really only specially adapted lathes, and have always been worked by fully qualified turners. C., generally known as "vertical boring mills," have been introduced during the last twenty years in order to avoid the very difficult and lengthy task of fixing large work to an ordinary lathe. There is probably not the same degree of skill required as for B. or ordinary lathe work, but the turner has always made good his claim to these machines on the ground that they are really only inverted lathes—a proposition which seems highly disputable. In reality, the introduction of A. and C. resulted in the transfer to less skilled hands of some of the most difficult jobs which the turner of forty years ago had to undertake. For example, in order to machine the inside rim of a locomotive driving wheel, the turner used to have to fix it on an ordinary lathe so securely that it could be revolved without the smallest displacement, an operation which is obviously extremely difficult owing to its size and weight : to-day it is placed on the table

of a vertical boring mill, centred, clamped lightly, and the cutting may then proceed. But these machines are chiefly used for heavy castings, where the smallest slip would be extremely costly. Hence perfect confidence in the adjustment of the tool, and judgment in gauging, etc., is required, and this demands that caution born of experience which is generally absent in the case of unskilled or semi-skilled men.

4. *The Planing Machine*

There has been very little change in the main structure of these machines. The tool is fixed, and the work passes to and fro below it on a table, moving horizontally. The only alterations are of a kind which, while enabling a greater output in the same time, do not affect the effort or skill necessary on the part of the operative. For example, the table used to move at the same speed both forwards and backwards, and this speed obviously had to be the cutting speed: now it travels back much faster on the return journey, thereby saving a considerable time for the total operation. The planer's skill¹ lies in fixing the work and setting up the machine: during the cutting operation, he has only to watch in case of a breakdown.

Two other machines may be referred to under this heading. The first is the shaping machine, which is in principle the exact reverse of the planing machine, i.e. the tool moves and not the work. Its virtue lies in the reduced motive power needed, and in the fact that for planing small short surfaces the movement of the tool can be adjusted so as just to clear the work, and no more, at either end in its journeys backwards and forwards. Hence the proportion of cutting time to the total time needed for the operation is much increased, but its use is confined to small jobs and it has not replaced the ordinary planing machine to any appreciable extent. It is usually worked by apprentices, or other semi-skilled labour. The second is the slotting machine, which is simply a vertical planing machine, but as again its utility is confined to certain special jobs, it calls for no further comment. Both these machines were introduced during the early part of

¹ He is, and always has been, reckoned a semi-skilled man, though some of the more complicated modern machines are worked by fully skilled men, who have served their apprenticeship as turners.

the period, but they have not made any fundamental change in the general work of a machine shop.

5. *The Milling Machine*

The milling machine is in a general way a development of the planing machine. The fundamental distinction is that the tool revolves, whereas it is fixed in the planing machine. There are three main types :—

- A. *The Plain Milling Machine.* The work is fixed to a bed which moves horizontally backwards and forwards below a revolving tool also fixed horizontally.
- B. *The Universal Milling Machine.* Much the same, with the addition that the bed can also be tilted to almost any angle desired.
- C. *The Vertical Milling Machine.* The tool is fixed in a vertical position, and revolves in contact with the work, which is fixed on a bed moving in any direction horizontally.

A. and C. were coming into general use about 1890, while B. was introduced 8-10 years later. But the milling machine has come into its own, not so much owing to improved design of the machine, as to the improved design or quality of the tools used, and, as regards A. and C., the merit for successful work rests not with the miller, but with the tool-maker. The same rule-of-thumb procedure as regards "feeds and speeds" has been made possible for the miller equally with the turner, and, as a generalisation, it may be said that probably less skill is required of the ordinary miller to-day than when the machines were first introduced. On the other hand, the universal miller is, and always has been, a skilled man. When B. were introduced they were taken over by the best of the turners, and though a definite grade has been gradually formed, the universal miller has always been rated equally with the turner, in sharp contra-distinction to the men who work A. and C. machines; and if it were not for trade union pressure, the universal miller would probably rank superior to the average modern turner.

The milling machine has in fact replaced not only the planing machine, especially for small work, but also the horizontal boring machine. In comparison with the former, it effects the same results far more quickly, and as regards the latter much time is

saved by the greater ease of fixing the work. On the universal type, almost any kind of machining can be done, if need be, and many jobs which would have been done on the lathe thirty years ago, are now done by the miller, though the lathe is still of course the best tool for most kinds of cylindrical and conical work.

6. *The Drilling Machine*

Forty years ago the "radial" drill was not in existence. The machine used was the "pillar" drill, in which the actual drill was fixed, and the work was moved about on a table below it until the drill came down on the required spot. The radial drill is in principle the exact opposite. The drill is mounted in an adjustable arm which swings round on a vertical column: the work is placed on a table, and the drill is then adjusted to suit the work. The radial has almost completely superseded the old pattern for large work, but the modern sensitive drill for small work is of the pillar type, since below a certain size it is more convenient to move the work to the drill than the drill to the work. Multiple spindle drills are also generally modelled on the old pattern.

It is a very disputable point whether the radial drill demands more real skill of the operator than did its predecessor. It is certainly a much more complicated machine, since the arm possesses so many possible movements. But as has been pointed out above, this is primarily a question of knowledge and intelligence, rather than the sort of real skill which was often required to adjust the work to the tool of the pillar drill. Some jobs, which were very difficult with the old type, are perfectly simple with the modern machine. On the other hand, there is no doubt that a greatly increased standard of accuracy is now demanded. But wherever interchangeability is required, drilling jigs are employed, which ensure the identical location of the holes every time without any skill on the part of the operator. On the whole the ordinary modern driller cannot be regarded as more skilled than his predecessor, though the character of the machine has so altered that comparison is very difficult.

7. *Passing and Stamping Machines*

There has been an enormous advance technically in these machines, but the work is to-day, as it has always been, com-

paratively quite unskilled. The machines have been made more fool proof, the chance of accidents has been diminished, and the liability to breakdown has been reduced, while the rate of striking and the ability to cut thick material have been greatly increased. But these improvements have not demanded more skill of the operatives, who have never set-up their own machines.

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