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THREE SOURCES OF UNEMPLOYMENT

The Combined Action of Population Changes, Technical Progress and Economic Development

BY

WLADIMIR WOYTINSKY

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PREFACE

One of the major social problems that has been exercising public opinion for some years back is that of the influence of technical progress on employment. In view of this fact the International Labour Office published in 1931, under the title *The Social Aspects of Rationalisation* [1], a number of preliminary studies on such aspects of the problem as output, hours of work, wages, employment possibilities, industrial hygiene and accident prevention. In course of subsequent discussions on the reduction of hours of work, very special attention has been paid to the importance of technical progress as a factor in unemployment. It was even suggested [2] that Governments should be asked to contribute to a sort of permanent enquiry on the subject by supplying, at regular intervals, direct or indirect information concerning the changes in the volume of employment resulting from technical advances in various industries or occupations or among certain groups of workers. One of the main obstacles to progress in this direction seemed to be the difficulty of isolating technical improvements from the innumerable other factors affecting the total volume of unemployment, and determining their exact relative importance.

Professor Wladimir Woytinsky's study, which the Office has pleasure in publishing in this volume, suggests an ingenious solution for this delicate problem of scientific method—a solution that will carry all the more weight because the author has been able to apply it to the actual course of recent economic developments in several countries. The reader will see how the method enables him to distinguish what fractions of the fluctuations in employment and unemployment can be attributed to demographic factors, to the increase in individual output and to changes in

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[1] *Studies and Reports*, Series B, No. 18.

[2] Cf. *The Reduction of Hours of Work*. International Labour Conference, Geneva, 1934, Report I.

the volume of production respectively. The value of such a distinction is obvious, since it would enable the various causes of disturbances on the labour market to be to some extent localised. The conclusions are, it should be noted, advanced with due reservations, for their positive value is inevitably affected by the degree of approximation of the available statistics. In this connection, the author has also certain suggestions to make for the improvement of employment and unemployment statistics.

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INTRODUCTION

Even during the period of prosperity from 1925 to 1929, unemployment in several industrial countries had reached alarming proportions; when the world depression set in, it grew to an unprecedented extent, and economists and politicians found themselves face to face with problems of such seriousness that the very fate of this generation may depend on their solution.

A society that fails to provide normal opportunities of employment for a large proportion of its members has forfeited its right to exist, and even if it still retained that right it would not have the power to defend itself against disruptive forces within and without. Does this mean, then, that our modern civilisation is doomed? Or does it still possess the power to master the blind, destructive forces of economic anarchy? The events of the next few decades can alone provide the answer to these questions, and that answer will depend in no small measure on the extent to which the world succeeds in comprehending the ties that unite the economic and the social factors of modern life. The old theories in this field have proved inadequate to meet the new problems that have arisen, and they must therefore be supplemented by empirical research. This means that a wide expanse of unexplored territory now awaits statistical investigation; it is with the tasks of statistical science in this field that the present study is more particularly concerned.

The path of statistical analysis is long: it comprises three stages, which must be taken successively. First comes the selection of the best method of observation; then the actual compilation of the figures, during which the selected method is tested, checked, improved and perfected; lastly, when the data have all been collected, comes the task of utilising them to scientific and practical ends.

The degree to which unemployment statistics have advanced along this path is far from being the same in every country. It is surprising, for example, to find that the United States, which have the finest statistics in the world in other domains, could not

tell, when the depression was at its worst, how many millions of their workers were unemployed. Again, it is significant that in Germany, where exact unemployment figures were published every month, it should suddenly be discovered that the statistics overlooked between 1.5 and 2 million " invisible " unemployed.

The attempts of the International Labour Office to evolve international statistics of employment and unemployment reveal the differences in the methods of compiling labour statistics in the various countries and how difficult it is to co-ordinate the results. Yet unemployment is an international problem; just as its practical solution requires international collaboration, so its theoretical study presupposes research on an international scale.

Unemployment exemplifies all the contradictions of the present economic system. Before the problem can be thoroughly grasped, various social facts must be carefully studied. Every separate aspect of the problem—movements of population, migration, technical progress, changes in the international distribution of labour and in world trade, etc.—must be systematically studied, always in the light of the experience of all the different countries, since the same phenomena occur in several of them, but in a variety of forms. But these isolated investigations, concentrating as they do on single factors in economic life, are not enough. The balance of the social system results from the interplay of numerous factors, and the fact that this balance has been upset, as is proved by the existence of such widespread unemployment, means that these factors are no longer in harmony. What is required, therefore, is an international investigation into the conditions of harmony and disharmony of the various elements that make up the economic and social life of peoples. Only thus can one hope to determine the degree of responsibility of the various factors (structural, cyclical or other) for the recent disastrous collapse of the labour market. And that is the immediate purpose of this study.

It may be thought that the title " Three Sources of Unemployment " is too wide. The writer is making no claim to discover hitherto unknown sources of our present great distresses or to proclaim some new panacea for their removal. All that he is endeavouring to do is to reduce the existing statistics of population, production and the labour market in the various countries to a simple formula that will clearly bring to light the interplay of population changes, technical progress and economic development,

In other words, the task the author has undertaken is essentially a matter of statistics and scientific method. He has had, it is true, to go into some of the material causes of the exceptionally severe unemployment in some countries, but the *method of investigation* remains the important thing. If that method throws a fuller light on the mechanism of the labour market in times of ample employment and in times of growing unemployment, the author will have achieved his purpose. The practical proposals made at the end refer not to the best means of combating or abolishing unemployment but simply to the best way of studying the phenomenon and representing it statistically. It must be left to the reader to decide whether the author has simply been engaging in statistics for statistics' sake or whether he has been helping, by the observation of facts, to pave the way for a sounder and more far-reaching economic and social policy.

The author is fully aware of several lacunæ in the study, but these can also be explained by the fact that he is concerned primarily with a problem of scientific method. For instance, only passing reference is made to seasonal unemployment; the question of women's work and that of juvenile unemployment are not touched upon at all, nor is any study made of the incidence of unemployment by occupations. No account whatsoever has been taken of the economic, social and political consequences of unemployment. All these problems and many more should find a place in a *sociological study of the recent depression.* But the task which the writer had set himself did not call for an examination of these questions. This is merely a preliminary study, the plan of which was restricted from the outset by the special aim in view and also by considerations of space.

CHAPTER I

THREE SOURCES OF UNEMPLOYMENT

The growing unemployment of recent years has given fresh point to a saying of T. R. Malthus, which he included in the second edition of his famous work, published in 1803, but deleted from the next edition three years later :

" A man who is born into a world already possessed, if he cannot get subsistence from his parents on whom he has a just demand, and *if the society do not want his labour*, has no claim of right to the smallest portion of food, and, in fact, has no business to be where he is [1]."

Malthus proceeds, with purposeful savagery, to depict the fate of this unwanted one, for whose labour those who possess the world can find no employment :

" At nature's mighty feast there is no vacant cover for him. She tells him to be gone, and will quickly execute her own orders. . . "

Nowadays, with systems of social insurance, there can be no question of executing " Nature's orders " in the sense in which Malthus used the term. But the fact of receiving a weekly dole from society does nothing to alleviate the moral distress of those whose labour is unwanted.

Since Malthus' day the population problem has undergone a radical change. Gone is the conception of Nature preparing her mighty feast for a certain given number of guests and turning the unwelcome guest from the door. What Malthus considered a law of nature is now thought of as the work of social institutions created by man and therefore capable of being changed by man. Nor is the mentality of those who are not admitted to the feast the same as it was 130 years ago.

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[1] *An Essay on the Principle of Population or a View of its Past and Present Effects on Human Happiness*, p. 531. A new edition very much enlarged. London, 1803. The italics are the present writer's.

Cf. Wl. Woytinsky : *Bevölkerungsbewegung und Ökonomie der menschlichen Arbeitskraft;* published by the " Comitato italiano per lo studio dei problemi della popolazione ", Rome, 1932.

Yet in one sense the picture drawn by Malthus is still true of our age: *society can at any given moment employ only a certain quantity of labour*, which is sometimes equal to the available supply, but is often far removed from it. Whenever society's demand for labour power falls short of the supply, there is large-scale unemployment, and those who do not happen to be in the employed quota are superfluous, unwanted guests. It is this fact that gives such point and appositeness to Malthus' phrase in a world in which unemployment is so rife as in the last few years.

Unemployment has always a dual source: *(a)* an inadequate supply of labour in view of the demand of the economic system; *(b)* an inadequate demand for labour in view of the available supply. In short, there is always a lack of harmony between two groups of conditions, and the first task in the investigation of unemployment must be to define those two groups.

The supply of labour depends on a number of factors, the most important being the natural movement of population—not, be it noted, the excess of births over deaths, which determines the trend of the total population of a country, but the changes in the number of persons engaged in gainful activity (occupied population) [1]. Experience shows—and I need quote no statistics in support of this assertion—that over a period of several decades the occupied population in any country maintains a more or less constant ratio to the number of persons of working age. After the war, the idea was current for some time that this ratio was no longer constant, having been upset by the recent rapid increase in the number of women in employment. But careful research failed to confirm this view: the change in the ratio of the occupied population to the total population corresponded very closely to the change in the age distribution of the population, which was marked chiefly by a decline in the number of children. In any case, the divergence between the increase in the occupied population and the increase in the population of working age is less than the probable error resulting from the difficulty of defining exactly the term "gainfully occupied population".

Generally speaking, the occupied population of a country comprises roughly three-quarters of the persons between the

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[1] L. HERSCH: "Population and Unemployment" in: INTERNATIONAL LABOUR OFFICE: *Unemployment Problems in 1931.* Studies and Reports, Series C (Unemployment), No. 16, pp. 173-217. Geneva, 1931.

ages of 15 (or 16) and about 65 years [1]. The proportion can easily be determined for any given country from the census figures, and thus the probable influx of persons to gainful activity can be estimated with sufficient accuracy in advance. Reference should be made here to the estimates made by A. L. Bowley for the League of Nations in 1926 [2]. On the basis of the censuses and the mortality tables he estimated the increase in the population of working age in 11 countries from 1921 to 1941. Using these figures, it would be a simple matter to reckon the probable increase in the occupied population of these countries over the same period [3].

But it is obvious that the whole occupied population does not come on the labour market of the country. To go back to Malthus' phrase, it is only those who " cannot get subsistence from their parents ". Independent work of all kinds and the assistance given by members of a family (especially in agriculture) do not affect the labour market; from its point of view all that counts is dependent work (wage-paid work in the widest sense of that term) [4].

In determining what relationship exists between the influx of wage-paid labour into economic activity and the increase in the total occupied population, there are two problems to be considered : the one concerns the general trend of population move-

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[1] In the age group mentioned, practically all the men and almost 50 per cent. of the women engage in some form of gainful activity. To these must be added a comparatively small number of persons above or below these age limits who also work for gain. The proportion is lower in agricultural countries, where the members of the family (e.g., peasants' wives) who assist the head of the household are not reckoned as forming part of the occupied population.

[2] League of Nations, Economic and Financial Section : *Estimates of the Working Population of Certain Countries in 1931 and in 1941.* Geneva, 1926.

[3] Cf. later, p. 162.

[4] The ratio of employed persons of all kinds (workers, salaried employees, public officials, domestic employees) to the total occupied population may be considered as expressing the degree to which that population has been proletarianised. The ratio is about 20 per cent. in purely agricultural countries (such as Bulgaria, Greece and India). It is between 30 and 45 per cent. in agricultural countries that are beginning to be industrialised (Poland, 27; Spain, 34; Yugoslavia, 38; Rumania, 43; Italy, 43 per cent.). In countries where small peasant holdings are the rule, the figure is usually about 50 per cent., even when the countries have a highly developed capitalist system (France, 49; Norway and Sweden, 51 per cent.). In industrial countries the ratio is between 60 and 80 per cent. (Czechoslovakia and Switzerland, 59; Germany, 66; Denmark, 67; Netherlands, 68; Belgium, 70; United States, 73; Great Britain, 79 per cent.); all these figures refer to the post-war period. (Cf. Wl. Woytinsky : *Die Welt in Zahlen*, Vol. II, pp. 1 *et seq.* Berlin, 1926).

ments, while the other concerns the temporary fluctuations in its social structure.

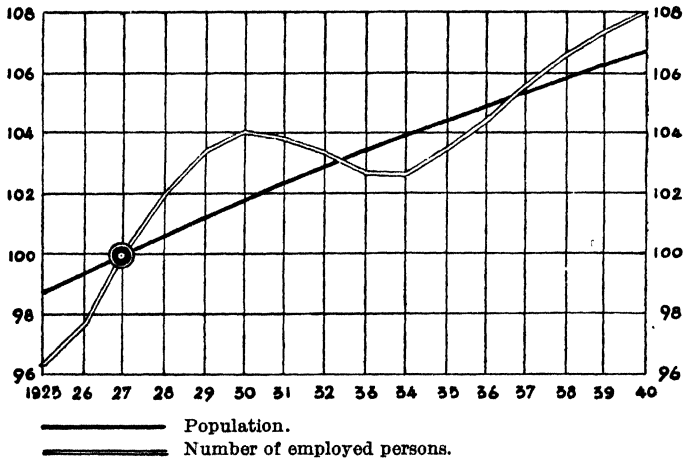
The simplest solution for the first of these problems is that used in the official German statistics, which are based on the assumption that the number of persons engaged in independent economic activity in the country does not change from year to year (since 1925) or fluctuates only to a negligible extent. Consequently, the full effect of any increase or decrease in the occupied population as a result of the natural movement of the whole population would be felt on the labour market.

This is, of course, only a working hypothesis, but it seems on the whole to be a happy one [1]. The statistics compiled by the National Statistical Office on this basis have often been used in German statistical literature and have proved consistently useful and illuminating.

DIAGRAM I.—INDEX NUMBERS OF POPULATION AND OF EMPLOYED PERSONS IN GERMANY [2]

(1927 = 100)

(From official estimates)



[1] The writer's only quarrel with the calculations of the German National Statistical Office is that public officials are not included in the number of employed persons.

[2] The index number for the probable movement of population (after 1932) is reckoned on the basis of the official estimate, which assumes that the birth and mortality rates will remain unchanged during the period under con-

Among the most interesting results of the calculations of the National Statistical Office is the conclusion that the variations in the occupied population (or in the number of employed persons) may follow quite a different rhythm from the movement of the total population.

According to the advance estimates of the National Statistical Office for the period up to 1940, there was reason to expect the population to increase at a more or less steady rate (falling off slightly), whereas the number of employed persons was expected to fluctuate considerably, reflecting the high birth rate of the immediate pre-war years, the drop in births during the war and the higher birth rate immediately after.

In America also it has sometimes been assumed that the influx of dependent workers on the labour market is the same as the increase in the occupied population. It is a hypothesis that is perfectly acceptable for calculations covering short periods (say, up to 10 years), but it would lead to errors if used for longer periods.

With regard to the temporary fluctuations in the social structure of the population, it must not be forgotten that in a capitalist society there is no hard and fast boundary between independent and dependent work, and that many a man does not know himself whether he is—statistically speaking—independent or not. It is by no means surprising, when a change takes place in the economic situation, that many a craftsman should become a wage earner, while his neighbour, formerly a factory worker, endeavours to earn a livelihood as a hawker—i.e., as an independent worker. But the difficult question is how to show such cases in statistics of the labour market. In the writer's opinion, the problem is insoluble, at least as statistics are at present; we have absolutely no idea whether the depression accelerates the flow of new workers to the labour market, or whether, on the contrary, it causes the surplus of unemployed wage earners to change over to " independent " work. It is probable that the former reaction is more marked than the latter, but it is impossible to prove it.

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sideration (*Statistik des Deutschen Reiches*, Vol. 401, II; Cf. Friedrich BURGDÖRFER : " *Vorausberechnungen über die deutsche Bevölkerungsentwicklung bis zum Ende des 20. Jahrhunderts* " in the reports to the World Population Congress, Rome, 1931). The index number for the number of employed persons is based on the official estimate, the results of which are given in *Statistisches Jahrbuch für das Deutsche Reich*, 1932, p. 17.

In any case, these are only temporary encroachments of one social group upon another, and as they are temporary they can be ignored.

That being so, the increase in the number of wage earners in a country may be taken to be approximately the same as the increase in the gainfully employed population. For the whole of a country, as well as for branches of its economic system, such as industry, mining, commerce, etc., the hypothesis $\Delta S = \Delta Pa$ holds good, where ΔS represents the increase in the number of wage earners *(salariés)* and ΔPa the increase in the occupied population *(population active)* [1].

Over a comparatively short period, in a country that has not an advanced proletarian character, it may be assumed also that the increase in the occupied population is distributed evenly over the various social grades, the formula then being $\Delta S : S = \Delta Pa : Pa$. In the following pages each of these formulæ will be used, according to circumstances.

If the figure for the occupied population is taken from the census, the result of migration movements will be included in the term ΔPa. If on the other hand the figure is an estimate based on the data of the last census and the mortality tables, allowance must still be made for the balance of migration movements.

It will thus be seen that variations in the labour supply can easily be traced back to demographic causes and that they can be assessed statistically with reasonable accuracy [2].

The various conditions determining the demand of society for labour, more especially for wage-paid labour, are not so easily analysed. For Malthus, the deciding factor was the rigid limit of the means of subsistence : in his view, the available quantities of wheat, meat and potatoes determined the amount of labour that could be fed and usefully employed by society. That was the law of population in the eighteenth century. Nowadays it is not the lack of foodstuffs and raw materials that limits production (and therefore also employment); it is the absence of sufficient markets. Technical progress has made such strides that not

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[1] As was pointed out above this method is used in Germany and the United States.

[2] The effects of legislative measures (prohibiting the employment of young persons, raising the school-leaving age, fixing an upper age limit for employment, etc.) can also be easily expressed in statistical form. A reduction in the statutory working hours, for instance, can be expressed as a decline in the supply of hours of labour.

only industrial production but also the provision of raw materials and foodstuffs can be enormously increased. Somewhere there is a limit of production that cannot, for material and technical reasons, be exceeded, but it is still far off and is hidden from sight by other and much closer obstacles. It is possible for industry to go on for some little time producing for stock; it is even possible for a part of the output to be destroyed on occasion so as to prevent a glut. But in the long run the volume of production is determined by market possibilities—in the widest sense of the term, including the current needs of society, investments of all kinds, exports, etc.

As market openings develop, the labour requirements of undertakings will, *ceteris paribus*, increase; there will be room for more guests at " Nature's feast ". When, on the other hand, markets shrink, the number of guests must fall.

But the labour requirements of a country are determined not only by the extent of production; they depend also on the number of workers necessary to carry out a given programme of production—i.e., on the individual output per worker. This may sound like tautology, for the average output per head is, of course, reckoned by dividing the volume of production by the number of persons employed. In reality, however, the productivity of labour is one of the most important of the factors that determine the demand for labour by any undertaking or branch of production. Frank recognition of this fact does not imply that the spectre of technological unemployment is to be held responsible for all economic ills.

It must be noted that the volume of production and the output per worker are not unconnected variables, for the market for any commodity depends to no slight extent on the cost of production, which in turn depends in part on the productivity of labour. It is always so in the realm of economic and social phenomena, which form a network of reciprocal actions and reactions.

Notwithstanding their reciprocal relationship, therefore, marketing possibilities and labour productivity must be considered as two distinct factors acting from different sides and in opposite directions on society's labour requirements. If the volume of production be denoted by V and the average output per individual worker by T, then the number of workers that can find employment will be expressed by the ratio V : T.

Everything that leads to an expansion of markets at home and

abroad, and thus to an expansion of production, tends to increase the demand for labour.

Everything that increases the productivity of labour without at the same time opening up new market possibilities reduces the demand for labour.

There are therefore three groups of factors, the interplay of which determines the trend of employment possibilities or of unemployment:

(a) change of population;

(b) economic conditions;

(c) technical progress.

In calling these *the three sources of unemployment* the author is fully aware of the looseness of this expression. As was pointed out above, unemployment really springs from one single source—the absence of balance between certain economic and social phenomena. But every scientific plan of investigation requires the breaking up of the phenomena under observation into their component parts. The threefold division here adopted has, it is thought, the advantage of doing the least violence to the actual facts, while at the same time it can be adapted to the existing statistics and will be found to facilitate their co-ordination and use. But there is no need to argue the merits of the method; the reader must judge it for himself in the light of the results it gives.

Before applying this threefold formula to the investigation of unemployment in various countries at different periods, it will be necessary to explain it in somewhat greater detail. And as the statistical data will have to be dealt with by mathematical processes, formula of investigation will first of all be converted into mathematical terms.

CHAPTER II

THE MATHEMATICAL FORMULA OF UNEMPLOYMENT

Let

S represent the number of wage earners *(salariés)*,

E the number of wage earners in employment *(salariés employés)*,

Ch the number of unemployed *(chômeurs)*.

Then $S = E + Ch.$

Further, let

V be the volume of production,

T the output per head of the wage earners in employment (the *technical* factor).

Then $E = \frac{V}{T}.$

The number of unemployed can therefore be expressed by the formula :

(i) $$Ch = S - \frac{V}{T}.$$

That is the basic formula for unemployment. It is of course impossible, by means of this formula, to determine to what extent the unemployment in any country at any given time is due to an excess of wage earners (S) or to an insufficient volume of production (V) or to excessive technical development (T).

But the formula can be used to follow the course of unemployment, starting from a date at which unemployment was comparatively slight. The symbol Δ (difference) will be taken as marking the extent to which, at any later date, each of the terms of equation (i) has changed from its initial value (Δ may be positive, negative or nil).

As equation (i) remains true for all values of its components, the following equation can be formed :

$$\text{(ii)} \qquad Ch + \Delta Ch = S + \Delta S - \frac{V + \Delta V}{T + \Delta T}.$$

This second equation subtracted from equation (i) gives :

$$\Delta Ch = \Delta S - \left(\frac{V + \Delta V}{T + \Delta T} - \frac{V}{T}\right) = \Delta S - \frac{\Delta V.T - \Delta T.V}{(T + \Delta T).T} =$$

$$\Delta S + \frac{V}{T} \cdot \frac{\Delta T}{T + \Delta T} - \frac{\Delta V}{T + \Delta T},$$

or

$$\text{(iii)} \qquad \Delta Ch = \Delta S + E \cdot \frac{\Delta T}{T + \Delta T} - \frac{\Delta V}{T + \Delta T}.$$

Each of the three terms of this last equation has a definite economic meaning :

ΔS represents the increase in the number of wage earners;

$E \cdot \frac{\Delta T}{T + \Delta T}$ represents the number of wage earners who, assuming that the volume of production had remained constant, would have had to be dismissed in consequence of the increased output per head, which rose from T to $T + \Delta T$;

$\frac{\Delta V}{T + \Delta T}$ represents the number of wage earners who, at the new level of technical efficiency, were able to find employment as a result of the increase in production ΔV.

In this way the increase in unemployment is resolved into its component parts, corresponding to the three sources of unemployment. The relative importance of each of these components can at once be determined.

Two examples will serve to show the practical application of equation (iii).

Example A.

Let it be assumed that, initially :

$$\begin{aligned} S &= 1{,}000{,}000 \\ E &= 990{,}000 \\ Ch &= 10{,}000 \end{aligned}$$

Let it be assumed further that the output per head of the wage earners in employment $T = 1$, and that consequently $V = E \cdot T = 990{,}000$. After a certain time (say, 10 years) it is found that $S = 1{,}200{,}000$, so that $\Delta S = 200{,}000$; T has increased by 20 per cent., so that $\Delta T = 0.2$; V has increased by 30 per cent., so that $\Delta V = 297{,}000$.

Then formula (iii) becomes :

$$\Delta Ch = 200{,}000 + 990{,}000 \cdot \frac{0.2}{1.2} - 297{,}000 \cdot \frac{1}{1.2}$$

$$= 200{,}000 + 165{,}000 - 247{,}500 = 117{,}500.$$

Example B.

Assume that the initial values are the same but that they develop differently, so that :

$$\Delta S = 100{,}000$$
$$\Delta T = 0.1$$
$$\Delta V = 0.08\ V = 79{,}200$$

In that case formula (iii) gives :

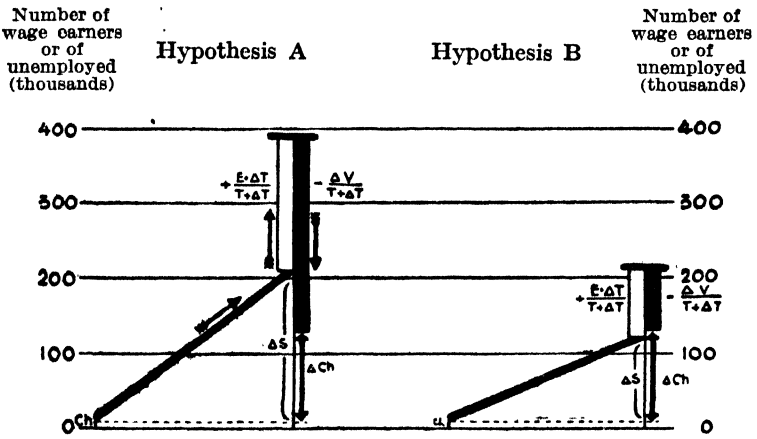
$$\Delta Ch = 100{,}000 + 990{,}000 \cdot \frac{0.1}{1.1} - 79{,}200 \cdot \frac{1}{1.1}$$

$$= 100{,}000 + 90{,}000 - 72{,}000 = 118{,}000.$$

The increase in unemployment is practically the same in the two cases. In the first example it is due to a marked influx of new wage earners combined with very considerable technical progress, which is not entirely balanced by the 30 per cent. increase in production. In the second case, on the other hand, where there is a comparatively small influx of workers, the increased unemployment is due to the fact that the rise in production has not kept pace with technical advances, slight as the latter have been.

Two cases are shown schematically in diagram II, in which the value $\frac{E \cdot \Delta T}{T + \Delta T}$ and the increase in the number of wage earners ΔS have been added and the value $\frac{\Delta V}{T + \Delta T}$ deducted from the total thus obtained.

DIAGRAM II.—THE INFLUENCE ON THE NUMBER OF UNEMPLOYED (Ch) OF AN INCREASE IN THE NUMBER OF WAGE EARNERS (S), IN TECHNICAL PROGRESS (T) AND IN THE VOLUME OF PRODUCTION (V)



The same method can be used to follow the development of unemployment from one year to another; if necessary, it is quite easy to represent diagrammatically a negative value of ΔS (due to a fall in natality at an earlier date) or of ΔV (decline in production caused by market slump).

It will simplify the calculations if the initial values of the various factors be taken as : Ch = 0, S = 100 and V = 100; in that case E = 100, and the formula becomes :

$$\text{(iv)} \qquad \Delta Ch = \Delta S + 100 \frac{\Delta T}{T + \Delta T} - \frac{\Delta V}{T + \Delta T}$$

where ΔCh, ΔS and ΔV are expressed as percentages of S or of V.

On the basis of equations (iii) and (iv), the conditions for the maintenance or loss of economic equilibrium can be expressed as follows :

Unemployment remains unchanged in volume when

$$\frac{\Delta V}{T + \Delta T} = \Delta S + E \cdot \frac{\Delta T}{T + \Delta T}$$

or (ignoring the difference between E and S at the initial point of the observation period) when

$$\frac{\Delta V}{T + \Delta T} = \Delta S + 100 \frac{\Delta T}{T + \Delta T}.$$

Unemployment increases when the left-hand term of these last two equations is smaller than the right-hand term; it diminishes when the left-hand term is the larger.

The boundaries of the economic system to which these formulæ are applied may be as narrow or as wide as is desired. If good, comprehensive statistics were available they could be applied to the whole economic system of a country. But that would necessitate production figures that included every type of economic activity in a single index. It is true that attempts have been made to compile such indices, but as a rule there are grave doubts as to their reliability. Moreover, it is extremely difficult to establish a true relationship between agricultural production (within the general index figure) and the number of wage earners, for in agriculture independent work (including the assistance of members of the family) usually plays a more important part than wage-paid work [1].

In practice, therefore, the application of the method described above is more or less limited to industrial production. But the concept " industrial production " should be made as wide as possible, including manufactures, handicrafts, light, water and mining. With regard to the building trade, which sometimes has its own special rhythm of development, independent of the rhythm of industry in general, it is best to follow the statistical practice of the country in question : if building is not included

[1] In most capitalist countries the " degree of proletarisation " of agriculture shows no tendency to increase with the advance of economic progress; it remains far below the proportion of wage earners in industry or in commerce and transport. Before the depression the " degree of proletarisation " (as a percentage) was :

Country	In industry	In commerce and transport	In agriculture
Germany	85	69	28
France	60	47	33
Belgium	87	55	53
Switzerland	76	71	24
United States	93	75	39

in the index of industrial production, then building workers will not be reckoned among industrial wage earners.

In interpreting the concept " industrial occupations " one is also bound by the available statistics. When using census results, the volume of production will have to be correlated sometimes with the number of persons occupied (engaged in gainful activity) in industrial production, and at other times with the number of wage earners.

In every case, the difficulty is to determine what exactly is the E that is to be related to V in the equation $T = \frac{V}{E}$.

It is obvious that, for any given value of V, the wider the interpretation given to E (the number of persons in employment) the smaller will become the value of T. But in so far as index figures are employed and E (or S) and V are taken as being 100 at the initial point, the question is of no importance. The important point to bear in mind is that the value ΔT is influenced by any extension of the concept " persons in employment " (E).

Technical progress leads to a relatively more rapid increase in the number of salaried employees in industry, than in the number of wage earners engaged in production processes. But this latter figure in turn increases more rapidly than the total number of persons gainfully engaged in industrial production. Accordingly, the value of $\frac{V}{E}$ will rise most rapidly if the denominator includes all persons engaged in industrial occupations. It will rise less rapidly if E denotes wage earners only, and more slowly still if E includes both workers and salaried employees in industrial occupations.

Before this formula can be applied, the statistics on which it is to be employed must first be carefully examined. The results obtained will be comparable only in so far as the statistics used in the calculations were compiled by the same method.

CHAPTER III

UNEMPLOYMENT BEFORE THE WAR

General Survey

Before the war, unemployment was already known in every capitalist country. But the number of unemployed persons was quite small, judged by present-day standards : unemployment was a chronic disease in industrial States, but it never reached calamitous proportions. The cyclical fluctuations in the demand for labour at that time were not very strongly marked.

British statistics provide a picture of the course of unemployment, from year to year, over a century.

TABLE I. — UNEMPLOYMENT IN GREAT BRITAIN FROM 1831 TO 1930

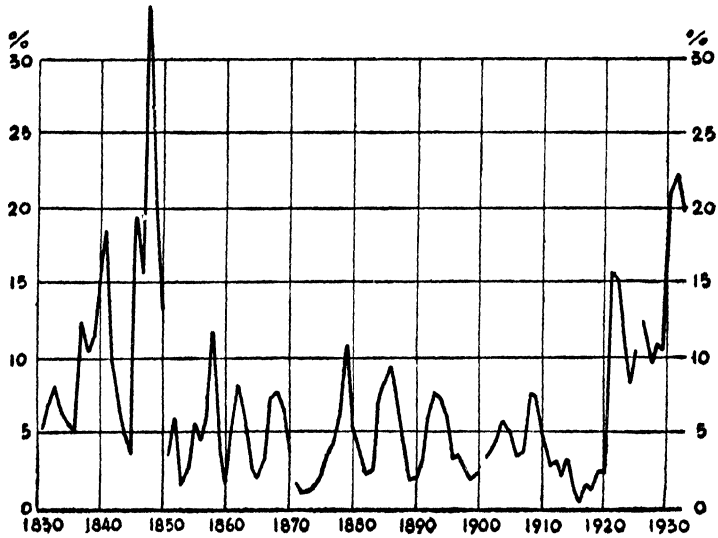
Percentage unemployed among trade union members. [1]

Year	Unemployment	Year	Unemployment	Year	Unemployment	Year	Unemployment	Year	Unemployment
1831	5.2	1851	3.9	1871	1.6	1891	3.4	1911	3.0
1832	7.1	1852	6.0	1872	1.0	1892	6.2	1912	3.2
1833	8.1	1853	1.7	1873	1.1	1893	7.7	1913	2.1
1834	6.2	1854	2.9	1874	1.6	1894	7.2	1914	3.3
1835	5.4	1855	5.4	1875	2.2	1895	6.0	1915	1.1
1836	5.0	1856	4.7	1876	3.4	1896	3.3	1916	0.4
1837	12.4	1857	6.0	1877	4.4	1897	3.4	1917	1.4
1838	10.5	1858	11.9	1878	6.2	1898	2.9	1918	1.2
1839	11.1	1859	3.4	1879	10.7	1899	2.0	1919	2.4
1840	14.8	1860	1.9	1880	5.2	1900	2.4	1920	2.4
1841	18.5	1861	5.2	1881	3.5	1901	3.3	1921	15.3
1842	11.0	1862	8.4	1882	2.4	1902	4.0	1922	15.4
1843	7.4	1863	6.0	1883	2.6	1903	4.7	1923	11.5
1844	5.1	1864	2.7	1884	7.1	1904	6.0	1924	8.2
1845	3.9	1865	2.1	1885	8.5	1905	5.0	1925	10.5
1846	19.3	1866	3.3	1886	9.5	1906	3.6	1926	12.5
1847	15.7	1867	7.4	1887	7.1	1907	3.7	1927	9.7
1848	33.4	1868	7.9	1888	4.1	1908	7.8	1928	10.8
1849	22.3	1869	6.7	1889	2.0	1909	7.7	1929	10.4
1850	13.2	1870	3.9	1890	2.1	1910	4.7	1930	16.1

[1] For 1831-1850 : unemployed among the members of the Union of Ironfounders of England, Ireland and Wales. For 1851-1870 : information concerning all unions (*Statistical Tables and Reports on Trade Unions*, Fourth Report, London, 1891, pp. 523-524). For 1871-1890 : averages for metal working industries and other branches (*Fifteenth Abstract of Labour Statistics of the United Kingdom*, London, 1912, p. 2). For 1901-1925 : average figures for all unions. From 1926 onwards : percentage of insured workpeople unemployed (including temporary stoppage) (*The Ministry of Labour Gazette*).

DIAGRAM III.—UNEMPLOYMENT IN GREAT BRITAIN

Percentage unemployed among trade union members. [1]



[1] *Cf.* table I, p. 19.

The disadvantage of this table is that the further back the statistics go the narrower becomes the circle of persons covered. The data for the years 1831-1850, which refer to a single occupation that is particularly subject to cyclical influences, show excessive fluctuations; these would certainly be considerably less marked if statistics for other occupations were available for the same period. On the other hand, the unemployment insurance figures (1926 onwards) are lower and more balanced than those of the trade unions for the preceding period.

Apart from these defects, diagram III would seem to give a faithful picture of the movement of unemployment in Great Britain from 1831 to 1933. In the forties of last century there was a slump in employment that is almost comparable with that of recent years—with the difference that the disastrous phenomenon was restricted to a limited section of the national economic system and was of only short duration. Nevertheless it left in British history the memory of that period of sensation and unrest that marked the growth of Chartism. After that time unemployment only twice reached 10 per cent.—in 1858 and 1879.

The limit of 8.8 per cent. (an average of one month's unemployment per worker in the year) was passed on only five occasions between 1851 and 1920. Since 1920, on the other hand, the figure has only once fallen as low as 8.2 per cent.

The difference between the period 1851-1920 on the one hand and the forties of last century and the last decade on the other is very striking: over a whole century the balance of the labour market has only twice been disturbed—at the beginning and the end. Between lies a period of 70 years during which the economic and social system remained in a state of equilibrium broken only by slight temporary fluctuations.

The percentage of trade union members who were unemployed throughout this period was as follows :

1851	1861	1871	1881	1891	1901	1911
3.9	5.2	1.6	3.5	3.4	3.3	3.0

There were, it is true, lean years, in which the demand for labour was slight, but they were invariably succeeded by fat years, when employment was plentiful.

The same holds good for other capitalist countries for which more or less reliable unemployment statistics are available. In every case, large-scale unemployment was merely a passing phenomenon occurring approximately every 10 years, in periods of depression. It declined again at the first signs of business recovery, reaching the usual minimum figure during the boom period. How this balance was achieved will now be examined, using as examples Great Britain, the United States and Germany.

Great Britain

It is unfortunately impossible to go back beyond 1861 in a detailed examination of the evolution of the British labour market; there are too many deficiencies in the earlier statistics. The observation period will therefore be the 50 years from 1861 to 1911.

During that period there was a tremendous increase in the population of Great Britain, more especially in the occupied population and most of all in its army of wage earners.

The population of the United Kingdom (in millions) grew as follows :

1861	1871	1881	1891	1901	1911
28.9	31.5	34.9	37.7	41.5	45.2

The size of the occupied population is shown in the statistics from 1881 onwards only. The ratio of the occupied to the total population in each decade rose as follows :

1881	1891	1901	1911
36.5 %	38.5 %	39.3 %	40.5 %

By extrapolation, the ratio of the occupied to the total population may be estimated at 35.5 per cent. in 1871 and 34.5 per cent. in 1861. The growth of the occupied population in Great Britain (in millions) was therefore the following (the figures in brackets being estimates) :

1861	1871	1881	1891	1901	1911
(10.0)	(11.2)	12.7	14.5	16.3	18.3

British statistics do not show the social distribution of the population and the number of wage earners for the period under consideration. But the distribution of the occupied population over the main branches of the economic system is known for England and Wales :

	1881	1891	1901	1911
Occupied population (millions).	11.2	12.8	14.3	16.3
Number of above in industrial production (millions).....	6.4	7.4	8.5	9.6

The percentage of the occupied population claimed by industry was thus :

1881	1891	1901	1911
57.8	58.3	59.0	59.5

The regularity with which the figures in this series rose is so striking that it is quite possible, by extrapolation, to obtain figures for the two preceding decades. The ratio of the industrial to the occupied population may therefore be put at 57.3 per cent. for 1871 and 56.8 per cent. for 1861. If these percentages for England and Wales be taken as holding good for the United Kingdom as a whole, the total occupied population and the total number of persons engaged in industry may be estimated as follows :

Year	Occupied population (millions)	Persons engaged in industry (per cent.)	Persons engaged in industry (millions)
1861	10.0	56.8	5.68
1871	11.2	57.3	6.42
1881	12.7	57.8	7.34
1891	14.5	58.3	8.45
1901	16.3	59.0	9.62
1911	18.3	59.5	10.89
Increase 1861-1911	8.3	—	5.2

It would thus appear that of the increase of 8.3 millions in the occupied population (including independent and wage-earning workers indiscriminately), 5.2 millions, or about 63 per cent. were absorbed by industry. That does not mean that they all found employment in industrial occupations. On the contrary, there was always a fraction of the occupied population—wage earners and independent workers alike—that was unemployed. If this fraction be assumed to be roughly the same as the percentage of unemployed workers among trade union members, and if 3.5 per cent. be added to cover cases of temporary unemployment on account of sickness, etc., the number of members of the occupied population actually in employment in British industry in the census years may be assessed at the following figures (in millions) :

1861	1871	1881	1891	1901	1911
5.19	6.10	6.83	7.88	8.99	10.28

Taking 1861 = 100, it will be found that the number of persons engaged in industrial occupations (without deducting the unemployed, the sick, etc.) must have developed thus :

1861	1871	1881	1891	1901	1911
100	113.0	129.2	148.8	169.4	191.7

The same index numbers may be presumed to be correct for 1860, 1870, 1880, etc., in which case the number of those in employment and those out of employment would be as follows [1] :

	1860	1870	1880	1890	1900	1910
Unemployed (Ch) ..	1.9	4.4	6.7	3.1	4.1	9.0
Wage earners in employment (E).....	98.1	108.6	122.5	145.7	165.3	182.7

Over against this last series of figures must be placed those showing the development of industrial production in Great Britain. According to calculations made by the Berlin Institute for Market Research [2], the growth of industrial production in Britain was as follows :

	1860	1870	1880	1890	1900	1910
1913 = 100	34	44	53	62	79	85
1860 = 100 (V).....	100	129.4	155.9	182.4	232.4	250

This set of figures will be used because no better ones are available, but it must be clearly understood that they are exact

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[1] Cf. table I, p. 19.

[2] *Die Industriewirtschaft*, Special No. 31 of *Vierteljahrshefte zur Konjunkturforschung*, Berlin, 1933, p. 69.

only in so far as they reflect the general rhythm of development; one or other of the terms may easily be too high or too low.

With this reservation, the above figures will now be used to establish index numbers of industrial production per head of those actually in employment (independent workers and wage earners):

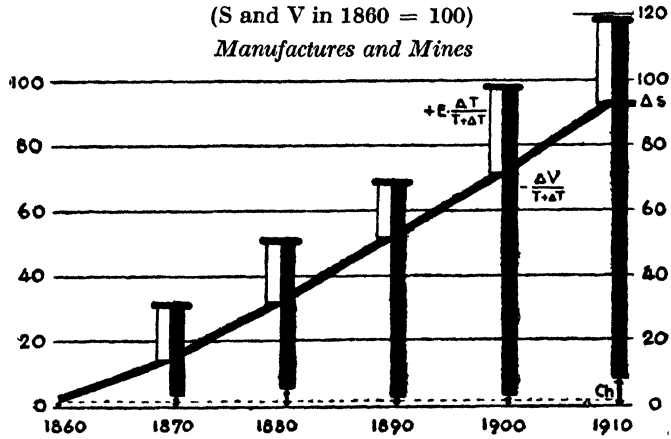
	1860	1870	1880	1890	1900	1910
T =	1.019	1.192	1.273	1.252	1.406	1.368

It is now possible to show in diagrammatic form the interplay of the three factors that determine the course of development on the labour market: the influx of new members to the occupied population; technical progress, which renders a fraction of the hitherto employed workers superfluous; the increase in the volume of production [1].

DIAGRAM IV.—DEVELOPMENT OF UNEMPLOYMENT IN GREAT BRITAIN

(S and V in 1860 = 100)

Manufactures and Mines



The period from 1860 to 1910—or at least up to 1900—was one of continuous industrial expansion in Great Britain, while technical progress advanced but slowly. In the space of these 50 years production rose by 150 per cent. (an annual increase of 1.85 per cent.), whereas the output per head of those in employment (independent and wage-earning workers) during the same period increased by only 34 per cent., representing 0.59 per cent. annually. This figure would be slightly lower still if the output per head were reckoned per head of the wage earners actually in

[1] Cf. Appendix, p. 165.

employment, for the proportion of wage earners among those engaged in industrial occupations would appear to have increased during the period in question.

There are several reasons for the comparatively slow rate of technical progress in British industry. In addition to the conservative tendency that characterises economic organisation in that country, there is the fact that labour productivity declined in coal-mining, which is one of Britain's key industries.

The following survey, although it covers only the period from 1881 to 1911, will show the marked difference between the trend of development in the British mining industry and that in other branches of production, such as the textile and metal industries.

Number of persons in the occupation [1] :

	1881	1891	1901	1911
		(thousands)		
Coal and shale mining	437	599	752	1,021
Metals, machines, etc.	927	1,095	1,447	1,765
Textiles	1,191	1,253	1,169	1,294
	Index numbers (1881 = 100)			
Mining	100	137	172	234
Metals	100	118	156	190
Textiles	100	106	97	109

Production [2] :

	Index numbers (1880 = 100)			
Mining	100	123	148	173
Metals	100	156	202	244
Textiles	100	111	125	139

[1] COMMITTEE ON INDUSTRY AND TRADE : *Survey of Industrial Relations*, 1926, p. 416. The figures are based on the census results and include unemployed persons belonging to the occupations in question.
[2] *Die Industriewirtschaft*, p. 69.

If it be assumed that the last index numbers of production apply to approximately the same occupational groups as are given in the census figures for 1881, 1891, 1901 and 1911, then the following index numbers of output per head of the persons employed in the branches of industry concerned can be calculated :

Output per head (1880-1881=100) :

	1880-1881	1890-1891	1900-1901	1910-1911
Mining	100	90	86	74
Metals	100	132	130	128
Textiles	100	105	129	128

The index of individual output for manufacturing industries alone (excluding mining) would show greater progress than the combined index for manufactures and mining together. In any case, the contrast between the slow increase of the output per

head and the much more rapid growth of the volume of production is characteristic of British economic development as a whole.

Thanks to this relationship between the relative speed of the two processes, unemployment in British industry remained insignificant, although the number of persons in industrial occupations was nearly doubled in 50 years, as is brought out in diagram IV.

No further proof is required of the divergent trends of industrial expansion and technical progress in Great Britain. From 1881 onwards the increase in the number of persons employed in industry (in England and Wales) can be proved from the census returns. Whether it was or was not permissible to assume the same tendency for the period 1860-1880 is immaterial. There can be no doubt that before the war the population of Britain was becoming more and more *industrialised*, i.e., that the number of persons employed in industry increased from decade to decade, not only as an absolute figure but also relatively to the total population. It is obvious that this must have led to an increase in the numbers employed in other occupations (commerce, transport, etc.), for the distribution and transport of the constantly increasing volume of commodities naturally called for the services of a growing number of workers and employees.

Notwithstanding these facts, Great Britain would have suffered from chronic unemployment for several decades before the war if emigration had not provided a safety valve. Table II shows the importance of emigration in the development of population in the United Kingdom.

TABLE II.—MOVEMENT OF POPULATION IN THE UNITED KINGDOM, 1871-1911 [1]

(in millions)

Period	Population at beginning of period	Excess of births over deaths	Net loss by migration	Actual increase
1871-1881.....	31.5	+ 4.3	— 0.9	+ 3.4
1881-1891.....	34.9	+ 4.4	— 1.6	+ 2.8
1891-1901.....	37.7	+ 4.3	— 0.6	+ 3.7
1901-1911.....	41.5	+ 4.8	— 1.1	+ 3.7
1871-1911.....	—	+ 17.8	— 4.2	+ 13.7

[1] " Statistical Abstract for the United Kingdom for each of the fifteen years 1913 and 1919 to 1932 ", London, 1934, p. 8.

But for emigration, Britain would have had to feed, in 1911, not merely 45.2 + 4.2 = 49.4 millions, but a much higher figure, for there would have been the natural increase in the fraction of the population that emigrated; the excess of births over deaths for this group would presumably have been relatively higher than for the population remaining in Britain, which would comprise a larger proportion of children and of aged and infirm persons.

As no comprehensive statistics are available concerning the age of the emigrants, the probable increase in the population of the United Kingdom, had the safety valve of emigration not been operative, can be only roughly estimated :

Year	Actual population (excluding emigrants and their descendants)		Probable population (had emigrants remained at home)	
	Millions	Index numbers	Millions	Index numbers
1861	28.9	100	28.9	100
1871	31.5	108	32.5	113
1881	34.9	121	37.1	129
1891	37.7	130	42.1	145
1901	41.5	144	47.4	164
1911	45.2	156	53.5	186

During this period of fifty years (1861-1911) the population of Great Britain would probably have increased by some 24.6 millions, but 8.3 millions of those (approximately 35 per cent.) were transferred abroad by emigration. The economic system of the country had therefore to absorb only the remaining 16.3 millions, of whom 8.3 belonged to the occupied population. How this was done has been seen above. Whether the problem could have been solved without the help of emigration is questionable. As the majority of those who emigrated were persons of working age, a stoppage of emigration would naturally have raised the ratio of the middle-age groups to the total population. In 1911 the occupied population would have been about 22 or 23 millions instead of the actual figure of 18.3 millions.

What would have happened to the surplus 4 or 5 million workers if they had not found work and a livelihood in America and the British colonies? The inquirer can only conjecture, but there seems to be little doubt that the combined action of the various factors analysed above would have given entirely different results : instead of a constant return to the position of equilibrium the country would certainly have had permanent unemployment.

It is equally certain, too, that the interplay of these factors

would still have had the same result if the excess of births over deaths in the United Kingdom had only been, say, 12 millions instead of 17.9 millions from 1871 to 1911 and if the whole of this increased population had remained in the country. The one factor of decisive importance is the actual net increase in the population, and more especially in the occupied population, the annual growth of which is indicated by the following figures for the period under consideration :

	Per cent.
1861-1871	1.14
1871-1881	1.26
1881-1891	1.33
1891-1901	1.17
1901-1911	1.16
1861-1911	1.21

Germany

The development of the German labour market before the war can be followed with the aid of the occupational censuses of 1882, 1895 and 1907. This period of 25 years was one of rapid expansion for Germany. The years that mark the limits of the period, 1882 and 1907, were both subject to considerable fluctuations in market conditions, coming, as they did, at the turning point from a boom period to a slump. In 1895, on the other hand, the economic situation was satisfactory, although no better than the average for the preceding or succeeding years. It will be remembered that about 1890 was the lowest point in the long-period curve of economic development, which began to drop in the seventies and rose again steadily until the outbreak of war.

Only isolated statistics of unemployment in Germany during this period are available. The most useful are the results of two special enquiries carried out on 14 June and 2 December 1895. The number of unemployed persons (including those who were absent from work at the moment on account of temporary incapacity) was found to be extraordinarily low [1] : on 14 June, 299,000; on 2 December, 771,000.

In so far as these statistics are reliable, then, the number of unemployed persons during the summer of 1895 would appear to have been little more than the usual minimum number of people temporarily out of employment through illness or a change of

[1] *Vierteljahrshefte zur Statistik des Deutschen Reichs*, 1896, supplement to No. 4, pp. 11* and 12*.

job. During the winter the number rose by about 480,000, representing the extent of seasonal unemployment.

In 1882 and 1907 there was little sign of large-scale unemployment either [1]. It may therefore be concluded that during the period under consideration unemployment—apart from temporary fluctuations of which there are no exact records—did not increase, so that $\Delta Ch = 0$ for this 25-year period.

We must now try to discover how the balance of the economic system was maintained in this instance.

Table III shows the movement of population in Germany during the period in question.

TABLE III.—MOVEMENT OF POPULATION IN GERMANY FROM 1882 TO 1907

	1882	1895	1907
Total population :			
In millions	39.8	45.9	55.0
Index (1882 = 100)	100	115.3	138.2
Occupied population :			
As percentage of total population	42.4	43.0	45.7
In millions	16.9	19.8	25.2
Index (1882 = 100)	100	117.2	149.1
Population occupied in industry :			
As percentage of occupied population	33.8	37.7	39.1
In millions	5.7	7.5	9.8
Index (1882 = 100)	100	131.6	171.9

As in Britain, the increase in the occupied population in Germany was more rapid than the growth of the total population, and the ratio of the occupied population in industrial production to the whole occupied population grew with each census. In the space of 25 years the total population increased by 38 per cent., the occupied population by 49 per cent., and the number of persons engaged in industry by 72 per cent. The annual increase was therefore as follows :

For the total population	1.3 per cent.
For the occupied population	1.6 „ „
For those occupied in industrial production	2.2 „ „

[1] The number of unemployed persons among the members of trade unions that compiled unemployment statistics was 1.6 per cent. on the average during 1907.

Of the 8.8 millions that represent the influx of new workers to the German economic system, 4.1 millions were absorbed by industry.

As practically all the available workers in Germany were in employment during the observation period, it may be concluded that at the three census dates the volume of industrial production (V) was equal to the number of available workers (Pa) multiplied by the average productivity of labour (T).

The development of industrial production in Germany is shown in the following index figures :

	1913 = 100	1882 = 100
1882	28.4	100
1895	47.6	167.6
1907	82.9	291.9

In 25 years, then, the increase in industrial production in Germany was relatively greater than it had been in Great Britain over a fifty-year period (1860-1910). Nor is this surprising, for at the beginning of the observation period Germany was a young capitalist country; in other words, it was at the stage where economic expansion proceeds most rapidly—both relatively and absolutely.

A comparison of the index of industrial production with the index for the number of persons engaged in industrial occupations provides the following index figure for individual output in German industry :

1882	1895	1907
100	127.5	169.8

The average annual increase over this period would therefore be :

For industrial production	4.8 per cent.
For individual output	2.1 „ „ [1]

The growth of industrial production in Germany is illustrated by diagram V, which follows the usual formula, but is simplified by the fact that both Ch at the initial date and ΔCh are considered as being nil.

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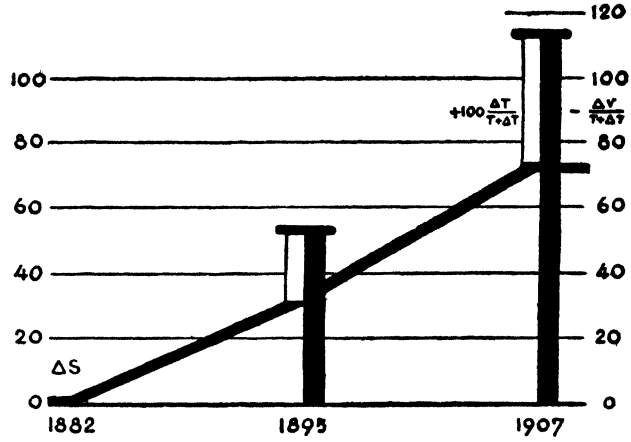
[1] These figures were obtained by the same methods as were used above when dealing with the economic development of Britain. The two sets of results are therefore comparable.

DIAGRAM V.—THE GERMAN LABOUR MARKET

(S and V in 1882 = 100)

Manufactures and Mines



There remains the question of migration. The wave of emigration from Germany had reached its highest point before the period to which the above figures refer. From 1881 to 1885 some 857,000 Germans left the country to seek new homes across the sea. In the succeeding years, which, as was mentioned, were years of industrial expansion in Germany, the tide of emigration ebbed, although the numbers were still quite considerable :

1886-1890	485,000
1891-1895	402,000
1896-1900	127,000
1901-1905	146,000
1906-1910	134,000
Total...	1,294,000

The number of members of the occupied population who left Germany between 1880 and 1910 cannot have fallen far short of 1.5 millions. For Germany, therefore, as for the United Kingdom, the same question arises : but for emigration, how would the country have been able to maintain its economic system in stable equilibrium? Not only would Germany have had to import more of the food and raw materials it lacked; it would also—and this would have been the more serious problem—have had to find fresh markets for its industrial products. Since it is extremely unlikely that the increased pressure of the surplus population would have

acted as a brake on technical progress, it may be concluded that, but for emigration, Germany would long before the war have been face to face with the problem of chronic large-scale unemployment.

United States

The population of the United States rose as follows during the second half of the nineteenth century (in millions) :

1850	1859	1869	1879	1889	1899
23.3	30.7	37.9	49.1	61.8	74.8

A very important factor in this demographic revolution was the tremendous immigration from Europe; the United States received approximately 17 million immigrants during those 50 years.

The occupied population increased certainly more rapidly than the total population. If it be assumed that the ratio of the occupied to the total population developed more or less as it did in most European countries, for instance in Great Britain, then the occupied population in the United States must have risen from about 8 millions in 1850 to 38 millions in 1910.

At the outset the number of persons in industrial occupations represented only a small proportion of the occupied population, but the ratio rose remarkably quick. The American censuses give the number of workers employed in manufactures (excluding mining and construction, but including handicrafts in so far as wage-paid workers are employed) as follows [1] :

	1859	1869	1879	1889	1899
In thousands.....	1,311	2,054	2,733	4,252	5,306
Index	100	157	208	324	405

It is probable that the rise in the total number of persons occupied in manufacturing industries was less spectacularly rapid. But it is certain that the industrial population of the country increased more rapidly during this period than did the occupied population as a whole; in other words, the movement of population was characterised by progressive *industrialisation.*

The volume of industrial production can only be very roughly assessed on the basis of the value of the goods produced, using the

[1] These figures are not comparable with the data given above for Great Britain. They do not include independent workers or members of the family assisting the head of the household (handicrafts and home work); they refer moreover only to manufacturing industries.

wholesale price index as a corrective to allow for changing prices. The method loses still more of its possible claim to accuracy through the fact that the index of wholesale prices, which has to be used, refers to raw materials rather than to manufactured articles. There are other sources of error which need not be mentioned here.

Subject to that reservation, the development of the volume of industrial production in the United States may be estimated as having been (1859 = 100) :

	1859	1869	1879	1889	1899
Value of production...	100	180	285	497	689
Wholesale prices.....	100	113	97	94	84
Volume of production .	100	159	294	529	820

The output per head of the workers in industrial undertakings would thus appear to have doubled during the period under consideration. If 1859 = 100, the output can be expressed thus :

1859	1869	1879	1889	1899
100	102	141	163	202

The position in manufacturing industries in the United States accordingly developed as follows :

	1859	1869	1879	1889	1899
Workers employed (E)	100	157	208	324	405
Volume of production (V)....	100	159	294	529	820
Individual output $\left(T = \frac{V}{E}\right)$	1.00	1.02	1.41	1.63	2.02

The average annual increase over this period of 40 years would therefore be :

	Per cent.
For production	5.40
For the number of workers	3.56
For individual output	1.77

These results would seem to be influenced by the fact that the year 1859 was taken as the starting point for the calculations. The beginning of the observation period thus coincides with the Civil War, which, it is well known, interrupted the economic progress of the United States and even fundamentally altered the economic system of the country. For the period 1869-1899, the average annual increase would be :

	Per cent.
For production	5.63
For the number of workers	3.21
For individual output	2.34

For the following period, from 1899 onwards, a basis is provided by the investigations of the group of American economists that were endeavouring to analyse the recent economic changes in their country in 1929, just before the depression began. The following table showing the development of manufacturing industries in the United States before the war is taken from their report.[1]

TABLE IV.—DEVELOPMENT OF MANUFACTURING INDUSTRY IN THE UNITED STATES, 1899-1913

(1899 = 100)

Year	Persons employed	Volume of production	Output per head
1899	100	100	100
1900	105	101	96.2
1901	110	112	101.8
1902	118	122	103.4
1903	123	124	100.7
1904	117.5	122	104.0
1905	127	144	113.3
1906	135	154	114.0
1907	141	153	108.5
1908	127	129	101.5
1909	145	159	109.6
1910	149	162	108.7
1911	150	155	103.4
1912	156	179	114.6
1913	159	185	116.3

The figures in table IV cannot be compared with those for the earlier period, because they refer to other categories of undertakings and of persons. They do not, for instance, include hand and similar industries and establishments with products valued at less than 500 dollars; on the other hand, salaried employees and workers in the undertakings covered are both included in the figures.

But even if it is not comparable with the results for earlier years, the table is none the less instructive in many other respects. For one thing, it throws light on the mechanism of cyclical fluctuations in production.

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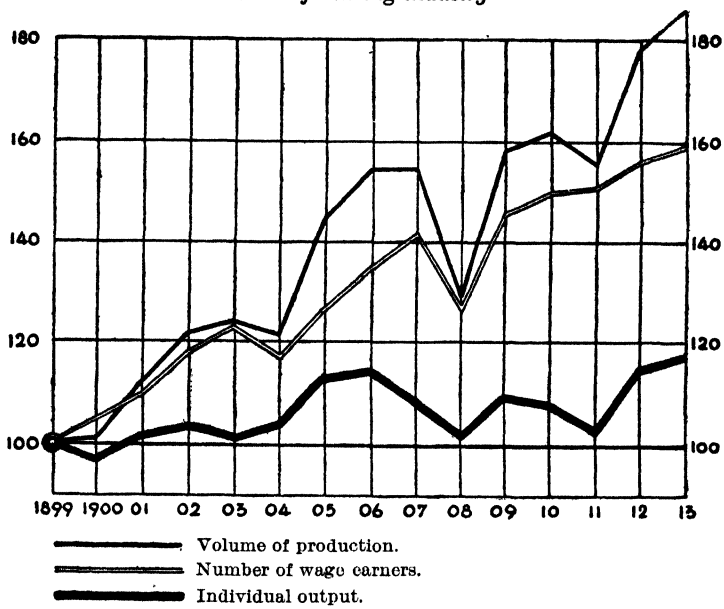
[1] COMMITTEE ON RECENT ECONOMIC CHANGES OF THE PRESIDENT'S CONFERENCE ON UNEMPLOYMENT: *Recent Economic Changes in the United States*, 1929, Vol. II, p. 454.

DIAGRAM VI.—INDUSTRIAL PRODUCTION IN THE UNITED STATES

(1899 = 100)

Manufacturing industry



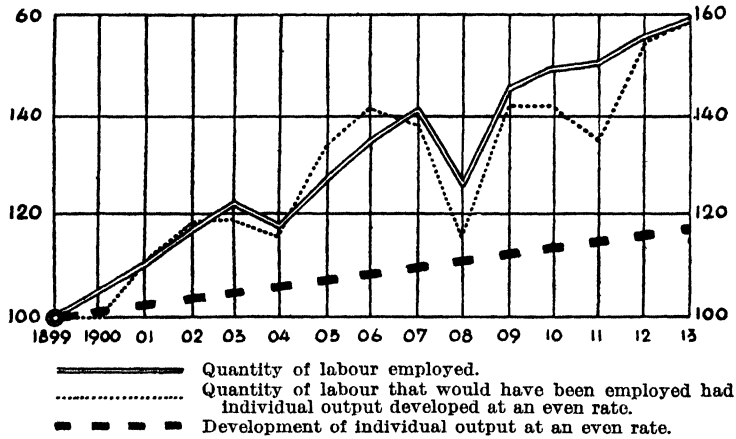
The observation period begins in 1899, when the economic situation was favourable. The boom continued until 1903; in 1904 there was a downward tendency, followed by a further rise in the next year. The year 1908 brought a very severe, but short, slump, and in 1911 there was another drop in the curve, but only for a short period. All these changes are very clearly brought out in diagram VI by the curve of production (V). They are reflected less clearly and on a reduced scale in the curve of persons in employment (E), but the curve of individual output (T) shows an unexpected sensitiveness to cyclical fluctuations.

It is true that some of the minor variations in this last curve may be attributed, especially during the earlier years, to inaccuracies in the statistical methods employed. But these possible sources of error cannot explain away the general rhythm of the curve, which repeats with amazing regularity the movement of the business cycle. In periods of depression, the output per worker falls very considerably, while in periods of prosperity it rises again. This is due mainly to changes in hours of work —overtime during boom periods; short time during bad trade.

The total increase in individual output in the manufacturing industries of the United States from 1899 to 1913 was about 16.8 per cent., being an average of 1.1 per cent. annually over these 14 years. From this one can calculate how violent would have been the fluctuations in employment in industry if the shock had not been absorbed to some extent by the elasticity of working hours. Diagram VII shows how employment would have varied in that case, assuming the volume of production to have been the same.

DIAGRAM VII.—NUMBER OF WAGE EARNERS IN MANUFACTURING ESTABLISHMENTS IN THE UNITED STATES

(1899 = 100)



With regard to the trend of the series of figures given in table IV, the most noteworthy feature is the rapidity with which production grew before the war and the increase in the quantity of labour employed in industrial establishments. In the 14 years, production rose by about 85 per cent., representing an annual average increase of 4.5 per cent., while the number of those employed rose by 59 per cent., or 3.4 per cent. as an annual average. The output per head, on the other hand, increased but slightly—only 16.8 per cent. in the 14 years, as was seen above.

It should also be noted that from 1899 to 1913 the influx of immigrants to the United States was greater than at any earlier date. In the 14 years (from the beginning of 1900 to the end of 1913) the country absorbed more than 12 million immigrants without showing any appreciable increase in unemployment.

This great power of absorption of the American labour market is in keeping with its rate of industrial development. In the 13 to 15 years preceding the war the United States doubled not only the production of their manufactures but also their output of coal and pig iron; in the same period they trebled their output of steel and increased their extraction of petroleum fourfold. It would have been quite impossible to achieve economic expansion on such a scale with the labour available within the country. The liberal immigration policy of the United States was a necessity forced upon the country by the relative rapidity of its demographic, economic and technical progress, the mutual relations of which were described above.

Summary

In the three cases studied—old England, Germany in its period of youthful economic development and the United States in their prodigiously rapid expansion—the economic system was successfully maintained in equilibrium before the war. The additions to the occupied population and those who became available on the labour market as a result of technical progress in these three States were absorbed into the production process, so that unemployment on a large scale had no chance to develop. The reserve of labour that gathered during periods of depression returned to active economic service with the next boom.

But each of the three countries solved the problem of economic balance in its own way. The profound difference in their development is clearly brought out by the following table:

Average annual increase	Great Britain 1861-1911 %	Germany 1882-1907 %	United States 1869-1899 %	United States 1899-1913 %
Total population	+ 0.9	+ 1.3	+ 2.3	+ 3.2
Occupied population	+ 1.2	+ 1.6	—	—
Occupied in industry	+ 1.3	+ 2.2	+ 3.2[1]	+ 3.4[2]
Industrial production	+ 1.85	+ 4.3	+ 5.6	+ 4.5
Individual output	+ 0.59	+ 2.1	+ 2.3	+ 1.1

[1] Workers in manufacturing industries only.
[2] Workers and salaried employees.

Although the rates of increase of the population, of industrial expansion and of technical progress were quite different in the three cases, large-scale unemployment could be avoided in all three because the expansion of production not only kept pace with, but actually outstripped technical progress and therefore provided employment for an ever larger section of the population.

Industrial occupations not only absorbed the natural increase in the families of industrial workers but also provided openings for the sons and daughters of peasants who left the country for the towns. In America, in addition, employment could be offered to millions of immigrants, and this enabled the European countries to dispose of their surplus population.

Taking the world economic system as a whole, one may attribute the equilibrium of the pre-war labour market to two facts :

(a) In industry, the position was always : $\Delta V > E \cdot \Delta T$.

(b) The difference $\frac{\Delta V}{T + \Delta T} - E \cdot \frac{\Delta T}{T + \Delta T}$, which represents the power of industry to absorb fresh elements in the occupied population, was always so large that the relative increase in the number of wage earners employed in industrial undertakings $\frac{\Delta E}{E}$ or the number of wage earners in industrial occupations $\frac{\Delta S}{S}$ remained constantly higher than the relative increase in the total occupied population $\frac{\Delta Pa}{Pa}$.

In other words, *the ratio between the speed of industrial expansion and the rate of technical progress was such as to render possible the progressive industrialisation of the rapidly increasing population.* That is the secret of the balance that was maintained on the labour market of the world before the war.

It is true that neither Germany nor Great Britain could have escaped mass unemployment if they had not been able to send a steady stream of emigrants to America. And this migration was possible just because at that time the population of the United States was becoming industrialised.

The importance of emigration for the labour markets of the European countries before the war is sufficiently well known. The purpose of the above remarks was merely to modify in one respect the current notion of the part played by emigration. It is incorrect to consider that the freedom of movement of labour before the war was the governor in the mechanism of the labour market and that its failure is the cause of the present catastrophic unemployment. International migration could continue to play this part only so long as there were countries in the world whose

native working population was not large enough for their economic development, and these countries were therefore obliged to call in the help of foreign workers. But before the war even the emigration countries were still in a position to absorb in their own economic systems quite a considerable increase in population.

The reasons why Europe, America and Asia are now all unable to absorb in the production process the increase in their population are not to be sought in the stoppage of migration; they lie in deeper disturbances affecting the interplay of economic and demographic factors. These disturbances must be studied separately in each case.

CHAPTER IV

UNEMPLOYMENT AFTER THE WAR

United States

Profound changes took place in the economic system of the United States during the war years.

From the demographic point of view, the first effect of the war on the labour market was a decline in the supply of labour. The influx of immigrants stopped immediately, the net immigration being as follows (in thousands):

1913	1914	1915	1916	1917	1918	1919
890	915	123	169	229	16	18

In five years the aggregate decrease in immigration as compared with the pre-war figure was 3.5 millions, and this meant a considerable relative decline in the supply of labour on the market. From 1917 onwards, this shortage was accentuated by the departure of millions of the best elements in the occupied population on military service. Thus the United States labour market was depleted just at a time when there was a rapid increase in the demand for labour.

The United States suddenly found themselves undisputed masters of foreign markets for which they had long been contending. They supplied the European belligerents with all sorts of raw materials and manufactured articles, and this necessitated the hurried creation of their own war industry, the building of gigantic plant and the constant supply of fleets of vessels to all parts of the world to replace those that were sunk. The potentialities of development of the American economic system and its adaptability were put to a severe test, from which they emerged triumphant.

But at the outset this expansion of industrial production was not accompanied either by technical progress or by the usual selection of the new labour that was engaged. At a time when there was a market for any kind of commodity, any kind of worker was good enough. Hence the characteristic feature in the growth of industry in the United States during the war period is

that the number of persons employed in industry increased more rapidly than did the volume of production, while the individual output fell as if the country had been passing through a depression instead of a boom period. These circumstances helped to pave the way for the sudden, miraculous advance in the technique of production that was to astonish the world a few years later.

The situation continued unchanged through 1919 into 1920. Europe was suffering from a shortage of commodities that her industries could not make good. The United States dominated the world's markets, and their industrial undertakings were packed with workers whose average output per head was far below the 1913 level, being nearer to the state of affairs at the beginning of the century.

In 1921 came the depression: production fell, the surplus labour was paid off, but the output per head—in contrast to what had occurred in earlier depressions [1]—remained about the same. In the United States the 1921 depression was essentially one of rationalisation, and its effects made themselves felt as soon as the economic situation revived, in 1922 and 1923. Individual output shot up rapidly, production expanded enormously, but the number of persons employed rose only to a limited extent.

TABLE V.—DEVELOPMENT OF MANUFACTURING INDUSTRY IN THE UNITED STATES, 1913-1927 [1]

(1899 = 100)

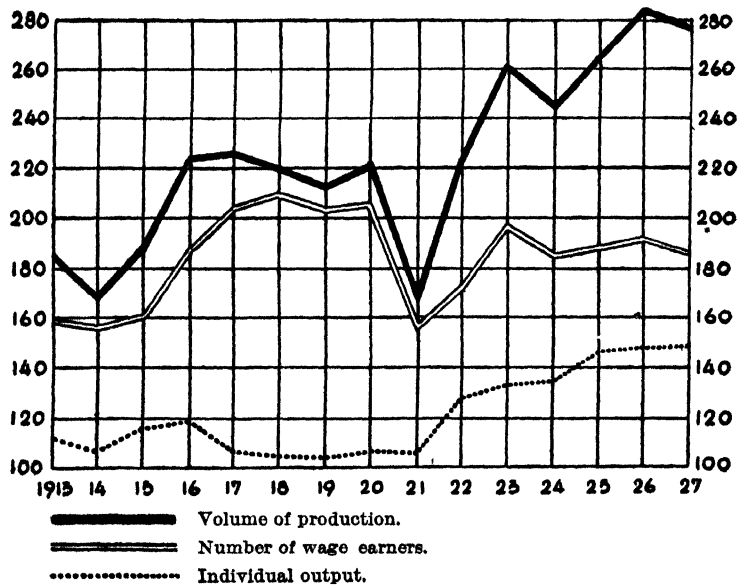
Annual average	Persons employed	Volume of production	Output per head
1913	159.0	185.0	116.3
1914	156.2	169.4	108.5
1915	160.0	188.0	117.4
1916	187.0	223.0	119.2
1917	204.0	224.0	109.8
1918	210.0	220.0	104.7
1919	204.4	213.7	104.5
1920	205.0	221.4	107.9
1921	158.2	169.7	107.3
1922	172.9	222.2	128.5
1923	196.7	260.7	132.5
1924	184.0	244.7	133.0
1925	188.9	274.6	145.4
1926	191.1	284.2	148.7
1927	186.4	278.7	149.5

[1] *Recent Economic Changes*, Vol. II, p. 454.

[1] Cf. above, p. 34 and diagram VI.

The sudden rise in the average output per head from 107.8 in 1921 to 182.5 in 1928—an increase of 25 per cent. in two years—impressed public opinion as being a technical revolution. Since then it has become the habit, in dealing with the latest economic developments in America, to take the year 1920 or 1921 as a basis for comparison. It would be just as correct to take 1917 or 1918 as a standard for comparing the birthrates. The low individual output in the industries of the United States from 1918 to 1921 did not reflect either the technical equipment of the country or the real quality of its workers; it was simply artificially lowered by the peculiar economic conditions arising out of the war. As soon as conditions returned to normal, the index of individual output returned to a level corresponding more or less closely to the general trend of its development.

DIAGRAM VIII.—INDUSTRIAL PRODUCTION
IN THE UNITED STATES
(1899 = 100)



Output per person in industry in 1927 was 28.5 per cent. higher than in 1913, the annual average increase being about 1.8 per cent. This rate of progress is more rapid than that for

the period 1899-1918, but it does not reach the rate of that period of feverish expansion, 1869-1899.

Since the end of the war, however, an important new tendency has manifested itself in the economic and demographic evolution of the United States: industry, notwithstanding its steady expansion, is not absorbing any new workers. This phenomenon, which is not confined to the United States, must now be studied in some detail.

According to *Recent Economic Changes*, the occupied population of the United States was distributed as follows at different dates:

TABLE VI.—GAINFULLY OCCUPIED PERSONS IN THE UNITED STATES [1]

(In thousands)

	1920	1921	1922	1923	1924	1925	1926	1927
Total population.	106,422	108,370	109,742	111,478	113,466	115,004	116,442	117,980
Total gainfully employed	40,008	40,429	40,701	41,313	42,095	42,659	43,218	43,943
Total non-agricultural gainfully employed	31,137	31,681	32,382	33,024	33,909	34,621	36,491	36,372
Total employees attached to non-agricultural pursuits.....	27,558	27,989	28,505	29,293	30,234	30,941	31,808	32,695
Including :								
Mines, quarries, oil wells.....	1,217	1,234	1,250	1,254	1,196	1,182	1,278	1,285
Manufacturing .	11,183	10,754	10,787	10,713	10,487	10,488	10,677	10,598
Construction ..	932	932	1,199	1,277	1,352	1,613	1,594	1,563
Transportation.,	4,235	4,151	4,431	4,691	4,658	4,582	4,744	5,204
Mercantile employees	3,215	3,298	3,694	4,237	4,015	4,297	4,412	4,623
Public employees	2,719	2,689	2,618	2,633	2,674	2,736	2,785	2,819
Miscellaneous groups [2]	4,057	4,931	4,576	4,488	5,852	6,043	6,318	6,603

[1] *Recent Economic Changes*, Vol. II, p. 474. The figures are based on King's estimates and are reproduced here with some minor alterations.

[2] Including banking, the professions, etc.

According to this table, the occupied population of the United States increased by about 4 millions in seven years. At the same time, there was a large influx of workers from agricultural to urban occupations, so that the latter had to absorb in 1927 some

5.2 million more gainfully occupied persons than in 1920. And that number was made up entirely of wage earners.

Yet the number of wage earners in mines and manufacturing industry fell quite appreciably during that period, having been 12,400,000 in 1920 and 11,883,000 in 1927—a decline of 517,000.

Consequently the rest of the non-agricultural occupations received, during the period in question, an influx of 5.7 million new workers, distributed as follows over the main groups :

Construction	630,000
Transportation	970,000
Mercantile employees	1,410,000
Public employees	100,000
Miscellaneous	2,550,000
Total...	5,660,000

During this period, then, the great influx of new workers to the towns in search of employment was accompanied by a sort of "*de-industrialisation*" of the population[1]. Employment in industry had reached saturation point, as had long been the case in agriculture, and industrial occupations, with the exception of the building industry, were closed to the new members of the occupied population.

It must be admitted that the results of the 1930 census do not concord entirely with the conclusions of the authors of *Recent Economic Changes*. For the years 1920-1930 the census shows no absolute decrease in the number of persons occupied in mines and manufactures. But it does provide striking confirmation of the relative decline in this part of the population.

TABLE VII.—CLASSIFICATION OF THE OCCUPIED POPULATION OF THE UNITED STATES BY ECONOMIC BRANCHES [1]

Economic branches	Actual numbers (thousands)			Percentage distribution		
	1910	1920	1930	1910	1920	1930
Agriculture	12,630	10,936	10,722	33.1	26.3	22.0
Mines and manufactures...	11,622	13,922	15,095	30.4	33.4	30.9
Commerce and transport ..	6,363	7,410	9,981	16.7	17.8	20.5
Other occupations	7,552	9,346	13,032	19.8	22.5	26.6
Total...	38,167	41,614	48,830	100	100	100

[1] *Statistical Year-Book of the League of Nations*, 1933-1934, p. 39.

[1] See note 2, p. 32.

The divergence between the estimates made in *Recent Economic Changes* (table VI) and the census results (table VII) can be explained in part by the fact that the latter include building along with industry. Of the 1,173,000 gainfully occupied persons who, according to the census, migrated to industrial occupations, the majority selected some occupation in the building industry. The absolute increase in the number of persons in industrial occupations in the narrower sense was insignificant. It may possibly have occurred during the period 1927-1929, when the revival of industry awakened among many of the unemployed the hope of finding employment in some manufacturing industry.

The disparity between the two sources is therefore less than it appeared at first sight. The important point is that of the 7.2 million new workers added to the occupied population of the United States between 1920 and 1930, only about 5 or 6 per cent. were absorbed by industrial production in the strict sense, which amounts, for all practical purposes, to saying that these occupations were closed.

The estimates given in *Recent Economic Changes* for the years 1920-1927 show that there were considerable fluctuations in employment in various branches of industry and occupational groups, more especially in mining and manufactures.

TABLE VIII.—CLASSIFICATION OF WAGE EARNERS IN EMPLOYMENT IN THE UNITED STATES BY ECONOMIC BRANCHES [1]

(In thousands)

Economic branches	1920	1921	1922	1923	1924	1925	1926	1927
Mining	943	764	730	925	870	874	955	905
Manufacturing	10,696	8,200	8,976	10,281	9,563	9,910	10,125	9,871
Construction	702	684	969	1,057	1,002	1,268	1,314	1,141
Transportation and communication....	4,065	3,553	3,851	4,440	4,318	4,398	4,600	5,052
Public service, mercantile employees, etc.	9,751	10,518	10,538	11,058	12,166	12,716	13,145	13,671
Total...	26,157	23,719	25,064	27,761	27,919	29,166	30,139	30,640

[1] *Recent Economic Changes*, Vol. II, pp. 475, 477, 478.

After the 1921 depression, which led to a sudden drop in employment in manufacturing industries (23 per cent.), mining (20 per cent.), construction (3 per cent.) and commerce (12 per

cent.), employment improved from year to year, so that in 1927 about 4.5 million more workers were in employment than seven years earlier. But this was achieved only at the cost of overcrowding in non-industrial occupations, for the number of those employed in manufacturing industries and in mines had declined by approximately 800,000. This redistribution of the wage-earning population was due in part to new economic trends in the United States. Progress in motor transport had created new occupations and stimulated building activity; the growing interest taken in sport by wide circles of the population after the war accentuated the same tendencies; at the same time, modern commercial methods demanded the employment of ever increasing staffs.

But it is clear that the closing of industrial production to all new workers was bound to create a dangerous situation on the United States labour market : *the country thereby entered the phase of increasing chronic unemployment.*

American economists are not agreed as to the extent of unemployment during the years under consideration. The estimate of the authors of *Recent Economic Changes* are reproduced in table IX.

TABLE IX.—ESTIMATED AVERAGE MINIMUM VOLUME OF UNEMPLOYMENT IN THE UNITED STATES [1]

(In thousands)

Economic branches	1920	1921	1922	1923	1924	1925	1926	1927
Total	1,401	4,270	3,441	1,532	2,315	1,775	1,669	2,055
Including :								
A								
Mines	274	470	520	329	326	308	323	380
Manufacturing	487	2,554	1,761	432	924	578	552	727
Total...	761	3,024	2,281	761	1,250	886	875	1,107
B								
Construction	230	248	230	220	350	345	280	422
Transportation and communications ..	170	598	580	251	340	184	144	152
Public service, mercantile, miscellaneous	240	400	350	300	375	360	370	374
Total...	640	1,246	1,160	771	1,065	889	794	948

[1] *Recent Economic Changes*, Vol. II, p. 478.

No claim to strict accuracy can be made for the figures in the above table; they are merely estimated minimum figures. But even as such they would seem to be misleading in one respect : they give the impression that unemployment developed more or less evenly in every section of the economic system. The figures given can be shown as follows :

	1920	1927 (in thousands)	Increase (per cent.)
Mining and manufacturing .	761	1,107	+ 45
Other occupational groups .	640	948	+ 48

But it is a well-known fact that the various sections of the labour market do not constitute watertight compartments, and in the United States labour is in any case particularly mobile. It is therefore possible that unemployment was not recorded in the occupations in which it actually occurred, but was shown as being in quite different branches, to which the workers from distressed occupations went in search of employment.

Take, for example, the building industry, in so far as tables VI, VIII and IX throw light on the situation. The number of unemployed, in thousands, is shown as :

	1920	1927
Workers in the occupation	932	1,563
Including :		
In employment	702	1,141
Unemployed	230	422

In seven years, 631,000 workers entered this occupational group. Of those, 439,000 found employment, while 192,000 went to swell the army of unemployed. Consequently, the increase in unemployment among building workers is not due to the economic development of this particular industry, but must be explained by the situation in other branches of the economic system which were unable to absorb any new workers during the observation period, reduced the number of workers they employed from year to year and therefore forced those who became unemployed to seek employment in other occupations.

In other words, the one source of unemployment in the United States during this period was *manufacturing* and *mining*.

The development of American industry from 1920 to 1927 can be expressed in terms of the formulæ used above.

In 1920, the occupied population of the United States num-

bered 41.6 millions, of whom 11.2 millions were wage earners in manufacturing industries [1]. In 1930, the occupied population had risen to 48.8 millions. If this increase was evenly distributed over every branch of the economic system, the number of wage earners in manufacturing occupations would have risen by about 1.7 millions in 10 years, or 170,000 annually. If there was to be no unemployment in this branch, the number of persons actually in employment in manufactures would have to evolve more or less as follows :

	1920	1921	1922	1923	1924	1925	1926	1927
S (thousands) =	11,200	11,370	11,540	11,710	11,880	12,050	12,220	12,390
Index =	100	101.46	102.92	104.38	105.84	107.30	108.76	110.22

But in reality the number of wage earners in employment in manufacturing industry in the United States [2] was :

	1920	1921	1922	1923	1924	1925	1926	1927
E (thousands) =	10,700	8,200	8,980	10,280	9,560	9,910	10,120	9,870
Index =	95.5	73.2	80.2	91.8	85.4	88.5	90.4	88.1

Basis : Number of wage earners in 1920 (11,200) = 100.

The volume of industrial production (V) and the ratio of this volume to the number of persons in employment $\left(T = \frac{V}{E}\right)$ fluctuated as follows during the same period :

	1920	1921	1922	1923	1924	1925	1926	1927
V =	100	76	100	117	110	124	128	126
$T = \frac{V}{E}$ =	1,047	1,038	1,247	1,274	1,288	1,401	1,416	1,420

Diagram IX shows the development of unemployment in the manufactures of the United States during this period, which was considered by public opinion as being one of rapidly increasing and untroubled prosperity, whereas in reality profound disturbances were spreading under the surface of the social and the economic system.

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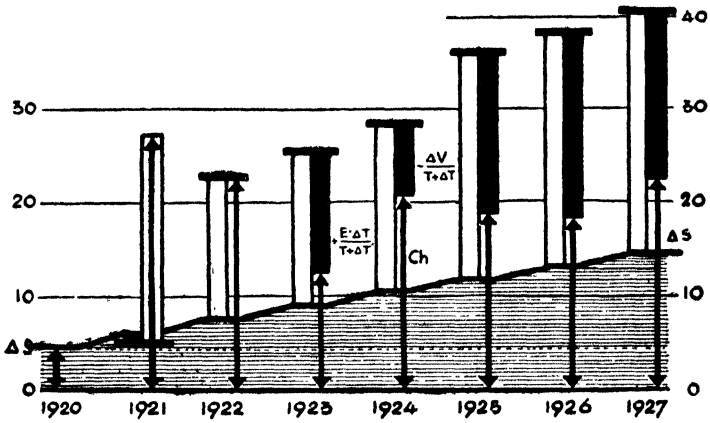
[1] For the occupied population in 1920 and 1930, cf. table VII. The number of wage earners in industrial occupations (in the narrow sense) is taken from table VI.

[2] Cf. table VIII, p. 45.

DIAGRAM IX.—DEVELOPMENT OF UNEMPLOYMENT IN THE MANUFACTURES OF THE UNITED STATES

(S and V for 1920 = 100)



In the years covered by this diagram, the heads of the arrows representing the (theoretical) volume of unemployment in industrial occupations as a percentage of the number of persons in these occupations rise much higher than the gradually ascending curve ΔS. The ordinates of this curve represent the sum of two quantities : (*a*) the number of unemployed at the beginning of the observation period (4.5 per cent. of the number of persons in industrial occupations in 1920) and (*b*) the probable increase in the number of persons in these occupations (approximately 170,000 or 1.46 per cent. annually). In none of these years was industry able to absorb even a fraction of this mass of unemployed persons. On the contrary, industrial undertaking had to dismiss a fraction of their staffs—in 1921 because of the falling off in production, in 1922 because individual output had increased so quickly while production remained stagnant at the 1920 level. It is true that the volume of production rose in the following years, but its increase as compared with 1920 could not keep pace with the march of technical progress.

In other words, *during the years* 1920 *to* 1927, *human labour was crowded out of industrial production in the United States by machinery.* But this statement calls for some further explanation.

The elimination—or the release—of human labour as a result of technical progress is by no means peculiar to very recent times. It is, indeed, one of the essential processes in the course of economic and social development. But for the spread of machinery it would scarcely have been possible to raise the standard of living of the world. The nineteenth century was truly an age of miracles in the realm of technical progress. But so long as the liberation of workers from certain branches of production is more than balanced by the creation of new branches and the expansion of production as a whole, there is no such thing as a problem of technological unemployment. Even if the balance is temporarily disturbed, the results may be considered as part of the price nations have to pay if they wish to progress. The novel feature in the industrial development of the United States after the war was that the counterbalancing mechanism broke down right in the middle of a boom period, and the expansion of production created no extra demand for labour.

The biennial census of production in the United States gives only a faint reflection of this new trend.

TABLE X.—INDUSTRIAL PRODUCTION IN THE UNITED STATES [1]

Establishments with an annual production of not less than $5,000

Year	Number of workers	Number of salaried employees	H.P.	Production
	Absolute figures (thousands)			
1923	8,778	1,269	33,094	—
1925	8,384	1,256	35,773	—
1927	8,350	1,301	38,826	—
1929	8,839	1,359	42,931	—
	Index numbers (1923 = 100)			
1923	100	100	100	100
1925	95.5	99.0	105.0	104
1927	95.1	102.5	117.3	106
1929	100.7	106.4	129.7	119

[1] *Statistical Abstract of the United States*, 1932, p. 730.

According to these figures, industrial undertakings in the United States were employing rather more workers in 1929 than they had six years earlier, the whole of the improvement having taken place in the last two years.

In that case, the development of industry would have been quite favourable. There would, it is true, have been no appreciable increase in the number employed, but at least there would have been no dismissals. The following coefficients would therefore represent the progress of American industry :

	Percentage increase over 6 years	annually
Volume of production	+ 19.0	+ 2.9
Output per person	+ 17.6	+ 2.7
Number of workers employed ..	+ 1.5	+ 0.2

It should be noted, however, that the figure given by the census for the number of those in employment in 1929 was affected by the fact that the peak of the business cycle was reached that summer. Quite a different picture is presented by the current employment statistics of the United States. The figures from that source for the years up to 1927 were given in table V. For the subsequent period the Bureau of Labor Statistics has compiled new series going back as far as 1923.

TABLE XI.—DEVELOPMENT OF MANUFACTURING INDUSTRY IN THE UNITED STATES, 1923-1933 [1]

(1923 = 100)

Average for year	Persons employed	Volume of production	Output per head
1923	100	100	100
1924	90.3	94	104
1925	91.4	105	115
1926	92.0	108	117
1927	88.7	106	120
1928	86.4	112	129
1929	89.8	119	133
1930	78.0	95	122
1931	66.4	80	120
1932	55.4	63	113
1933	59.5	76	128

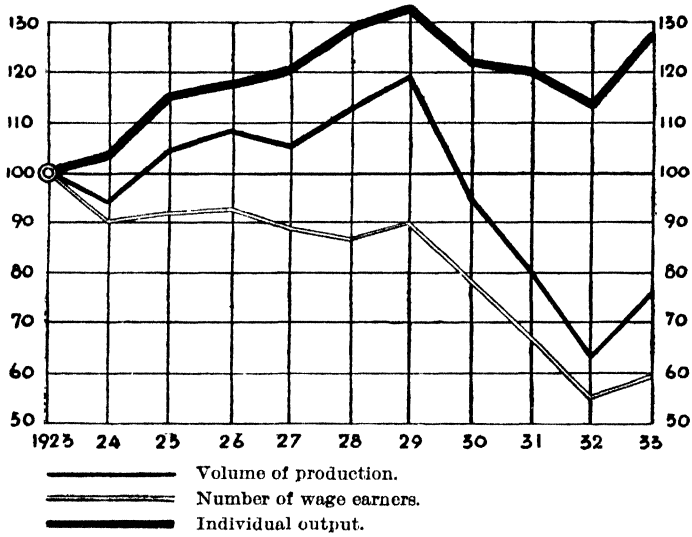
[1] *Monthly Labor Review*, February 1934, p. 381. Cf. diagram X.

A comparison of diagram X, in which these figures are represented graphically, with the corresponding graphs for the pre-war period (diagram VI) is sufficient to show the profound difference between the development of United States industry during these two periods.

DIAGRAM X.—INDUSTRIAL PRODUCTION IN THE UNITED STATES

(1923 = 100)

Manufacturing industry



For the pre-war period, the broad curve marking individual output lay well below the other two curves; in the later period it dominates the upper part of the graph. Leaving out of account for the moment the developments after 1929, it will be well to analyse first the growth that took place from 1923 to 1929.

In that period the volume of production increased on the average by 2.9 per cent. annually. Contrary to what is generally held, this must be considered as very slight progress when compared with that of preceding years. This will appear at once from a comparison with the average rate at which industrial production increased from 1869 to 1889 and from 1899 to 1913 [1]:

1869-1899	5.6 per cent. annually,
1899-1913	4.5 „ „ „

The annual increase in the output per head of the wage earners in the manufacturing establishments on the other hand was:

1869-1899	2.3 per cent.
1899-1913	1.1 „ „
1923-1929	4.8 „ „

[1] Cf. above, p. 37.

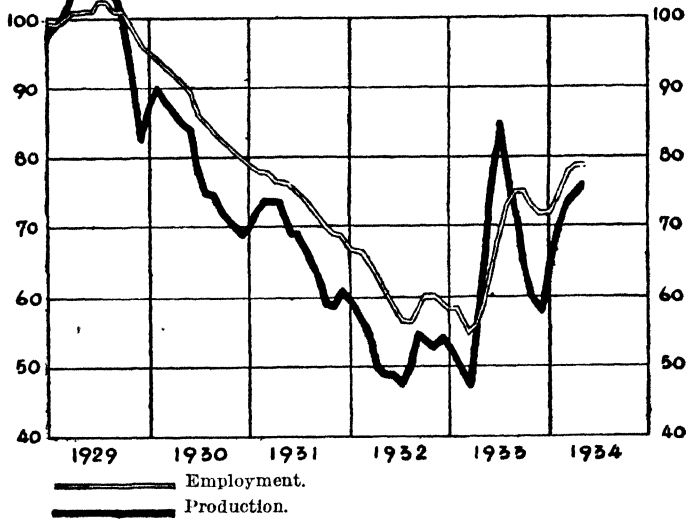
It must be remembered that the first two figures refer to long periods covering several business cycles, whereas the period 1923-1929 covers only the boom section of a cycle. But notwithstanding this reservation an increase of 4.8 per cent. must be considered very high. Yet even this rate of technical progress would not have destroyed the balance of the social system in the United States if the volume of production had continued to rise, as formerly, by 4.5 or 5.6 per cent. annually. The whole danger lay in the ratio between these two rates of development—i.e., in the fact that

$$E \cdot \Delta T > \Delta V$$

and that the increase in production was not sufficient to absorb the workers released by technical progress.

DIAGRAM XI.—THE DEPRESSION IN THE UNITED STATES : PRODUCTION AND EMPLOYMENT IN MANUFACTURING INDUSTRY

(Average for 1929 = 100)



Apart from the summer of 1929, when employment was particularly plentiful, a volume of unemployment (partly invisible) developed in the industries of the United States from 1923 to 1929 that must have been about 2 million : one million representing those who, in accordance with the rate of increase of the population, should have found employment in industry, but were

relegated to other branches of the economic system; the other million representing those who were dismissed from industrial undertakings because of the disproportion between the expansion of production and technical progress.

The depression, which caused a disastrous shrinkage in the volume of production, brought with it further drastic dismissals in industry, and soon afterwards in commerce, transport and other branches. The public services were the only ones to escape the avalanche.

TABLE XII.—THE DEPRESSION IN THE UNITED STATES : PRODUCTION AND EMPLOYMENT IN MANUFACTURING INDUSTRY [1]

(Average for 1929 = 100)

Month	1929	1930	1931	1932	1933	1934
	Production					
January	98	88	70	60	53	64
February	99	90	72	57	51	67
March	101	87	73	54	47	69
April	104	87	73	51	54	71
May	106	85	73	49	65	72
June	108	84	69	49	78	70
July	106	77	69	48	85	62
August	104	75	66	50	76	60
September	103	75	63	55	71	58
October	99	72	59	54	64	60
November	91	71	59	53	59	61
December	82	69	61	54	61	71
	Employment					
January	99	95	79	67	58	72
February	99	94	78	67	58	75
March	100	93	78	66	55	78
April	101	92	77	63	56	79
May	101	91	77	61	59	79
June	101	89	76	59	64	78
July	102	85	75	57	69	76
August	102	84	74	57	73	76
September	101	83	72	59	75	71
October	101	82	70	60	75	74
November	99	81	69	60	73	74
December	96	80	69	59	72	76

[1] Federal Reserve Board index numbers (adjusted for seasonal variations). Compiled from *Survey of Current Business*.

The determining factor on the labour market was the drop in the orders received by manufacturing industry. The decline in sales in these industries reacted on mining on the one hand and

trade and transport on the other, causing a reduction in activity in all three branches.

Table XII gives, in two parallel series, the monthly index numbers of production and employment in manufacturing industry from 1929 to 1934.

There is a striking divergence between the two sets of figures in this table, both during their rise (until the middle of 1929) and during their decline.[1] During the period of economic recovery, the expansion of production was achieved by an increase in individual output rather than in the number of persons employed; during the depression recourse was had to short time, as was already mentioned.[2] During the summer of 1932, and again in March 1933, production was less than 50 per cent. of the 1929 average. But in both cases industry retained about 57 or 58 per cent. of the number of workers employed in 1929. This meant a marked drop in individual output. If the average of individual output for the year 1927 be taken as 100, the level for subsequent years will be :

1927	1928	1929	1930	1931	1932	1933
100	108	111	102	101	95	107

The chief reason for the decline in the output per person after the year 1929 was short time—in other words, it represents invisible unemployment. There may have been other contributory factors. Just as intensive production tends to raise the level of individual output, so a decrease in production leads to part of the plant being left idle, with a consequent decline in the efficiency of labour. Moreover, in times of depression every worker is expecting to be paid off when the order on which he is working has been completed, and this is hardly an incentive to him to increase his output.

For all these reasons the level of individual output in American industry in 1932 fell to about that of 1925-1926. If it were possible to isolate the various phases of an economic process and study them separately, one would be inclined to deny altogether the existence of technological unemployment in the United States during the depression. Productivity in industry at that time was very low; the machines that had crowded human labour out of the factories were themselves scrapped. The fact that it was still

[1] Cf. diagram XI.
[2] Cf. p. 35.

impossible to find employment was, it might be thought, due not to excessive technical progress, but simply to the disorganised economic situation and the shrinkage of sales and production.

But this conclusion would be just as one-sided and erroneous as the view that technical progress is the primary cause of the widespread unemployment of recent years. The technological unemployment that had developed before the crisis was, it is true, completely overshadowed by unemployment caused by the economic depression. But that did not remove the problems arising out of this new trend of economic development in the United States. Surely technological unemployment was one of the factors that undermined the stability and the power of resistance of the economic system during the period of prosperity. Surely the depression was aggravated by the fact that millions of workers had been turned on to the streets before it began, because every occupation in the manufacturing industry was overcrowded. Surely the depression would have developed along quite different lines if the economic system of the country had been healthy and working to capacity, for in that case it could, by having recourse to short time, have survived without very serious difficulty a temporary decline of from 10 to 15 per cent. in production.

The above suggestions are made for the sole purpose of avoiding over-hasty conclusions, such as might be drawn from a one-sided interpretation of the statistical data.

It is difficult to assess the total volume of unemployment in the United States during the depression, for the depression broke down the lines of division between the various occupational and social groups of the population. Former independent workers suddenly appeared as unemployed members of the proletariat, while on the other hand new independent or semi-independent occupations came into being.

A census of unemployed persons in the United States in April 1930 classified them in the following six groups :

A. Persons out of a job, able to work and looking for a job.	2,429,062
B. Persons having jobs but on lay-off without pay, excluding those sick or voluntarily idle	758,585
C. Persons out of a job and unable to work	172,661
D. Persons having jobs but idle on account of sickness or disability	273,588
E. Persons out of a job and not looking for work	87,988
F. Paid though not at work (vacation, etc.)	82,335
Total...	3,804,219

These figures, which, it must be noted, refer only to the first phase of the depression, seem surprisingly low. It is obvious, for instance, that group D cannot include all the wage earners who were idle on account of sickness or temporary disablement, for this group always represents from about 3 to 5 per cent. of the total number of wage earners; in a country like the United States it would fluctuate round about a million. And group C cannot include more than a small fraction of the infirm and permanently disabled population. The figure for group E must also represent only a fraction of the total.

From the point of view of the labour market, only groups A and B have to be considered. Together they make about 3.2 millions. It must be presumed that the term " job " was interpreted very widely in compiling these statistics, and that every casual opportunity of employment that enabled a worker to keep his head above water was taken as being a " job ". On this assumption, the figure probably gives quite a true picture of the real situation.

In April 1930 the number of persons employed in American industry was about 8 per cent. below the annual average for 1929 and 7 per cent. below the 1927 level. [1] The number of those working in manufacturing industries was therefore 700,000 and 800,000 lower than at these two dates. In mining, the reduction in staff was relatively greater, some 150,000 workers being dismissed. On the other hand, the reduction had not yet begun to affect commerce, transport or the liberal professions. At this period the army of the unemployed comprised three groups: (*a*) those unemployed before the depression (about 2 millions); (*b*) those dismissed during the depression (about 1 million); (*c*) the influx of new workers, in so far as the economic system failed to absorb them (scarcely more than half a million). The total is therefore not far from the figure of 3.2 millions given above.

The situation on the United States labour market became really catastrophic in the second half of 1930. By the summer of 1932 the position had become dangerous, and the Hoover Government was obliged to take emergency measures. These explain the fluctuations in the curves of production and employment in diagram XI. After the failure of these measures and the new " depression within the depression " in the spring of 1933 came the Roosevelt experiment.

[1] Cf. tables XI and XII.

It will be well, before going on to discuss this chapter in the history of the United States, to make some attempt to estimate the extent of unemployment in the country when President Roosevelt took office.

The best starting point for this estimate will be the number of persons unemployed in the spring of 1930, which, as has been seen, may be taken as having been about 3.5 millions. To this must be added the influx of new workers, which may be assessed at approximately 800,000 a year. Further, there is the decline in the number of workers employed, which may be reckoned on the basis of the coefficients of employment for various occupational groups, as follows (in thousands) :

	Spring 1930	Spring 1931	Spring 1932	Spring 1933
Total employees (wage earners) attached to non-agricultural pursuits	34,800	35,600	36,400	37,200
Employed :				
Mines, quarries etc.	900	800	700	500
Manufacturing	9,200	7,800	6,400	5,600
Construction	1,200	1,000	800	600
Transportation, etc.	5,600	4,800	4,400	3,900
Trades, etc.	7,200	6,000	5,600	5,100
Public service and miscellaneous	7,200	6,600	6,200	6,000
Total employed	31,300	27,000	24,100	21,700
Unemployed	3,500	8,600	12,300	15,500

This, it must be remembered, is only an estimate, based on figures that are not entirely reliable and are open to criticism on several points. Moreover, no account is taken of the number of workers who were formerly employed in agriculture and deserted it for some urban occupation—and vice versa.

In any case, the final number of unemployed—15.5 millions in the spring of 1933—is an underestimate rather than the reverse.

The next point is to determine the share of the three sources of unemployment in this situation.

The influx of new workers on the American labour market was extremely slight during the period under review. The immigration and emigration figures (in thousands) were :

	Immigrants	Emigrants	Excess of immigrants (+) or of emigrants (—)
1927	314	98	+ 216
1928	290	97	+ 193
1929	269	77	+ 192
1930	184	76	+ 108
1931	42	90	— 48
1932	28	98	— 70

These are indeed eloquent figures.

There can scarcely have been any increase in technological unemployment after 1929, for technical progress (this refers only to the average output per person employed) was at a standstill. The tremendous increase in unemployment was therefore due entirely to the economic factor, to the depression.

In this connection, the development of industrial production and employment since the spring of 1933 are particularly worthy of attention.

Table XII showed that the volume of production rose from 47 in March 1933 to 85 in July—an increase of 80 per cent.—whereas employment improved by only 23 per cent. over the same period. This disproportion is reflected in the intersection of the two curves in diagram XI[1]: the curve of production, which had fallen far below the employment curve during the depression, soared upwards, crossed the employment curve, and then fell again a few months later.

This divergence between the changes in production and those in employment may be attributed largely to fluctuations in hours of work.

As was pointed out above, short time was very common in American industry during the depression. The average hours of work in industrial establishments fell from approximately 44 to 35 in the week. The sudden boom in production in the summer of 1933 was accompanied by a lengthening of hours, so that the recovery did not bring the full improvement in employment that might have been expected. In autumn, when production fell, hours again became shorter. Indeed, one of the main purposes of the Codes was to combine the maintenance of the purchasing power of the workers with the practice of shorter hours. Thanks to this measure, the decline in employment was less than the fall in production.

The average hours of work in industrial undertakings since the beginning of 1933 have been as follows[2]:

1933	Hours	1933	Hours
January	34.9	July	42.9
February	35.2	August	38.2
March	32.2	September	36.3
April	33.8	October	36.1
May	37.4	November	33.8
June	41.2	December	33.8

[1] Cf. p. 53.

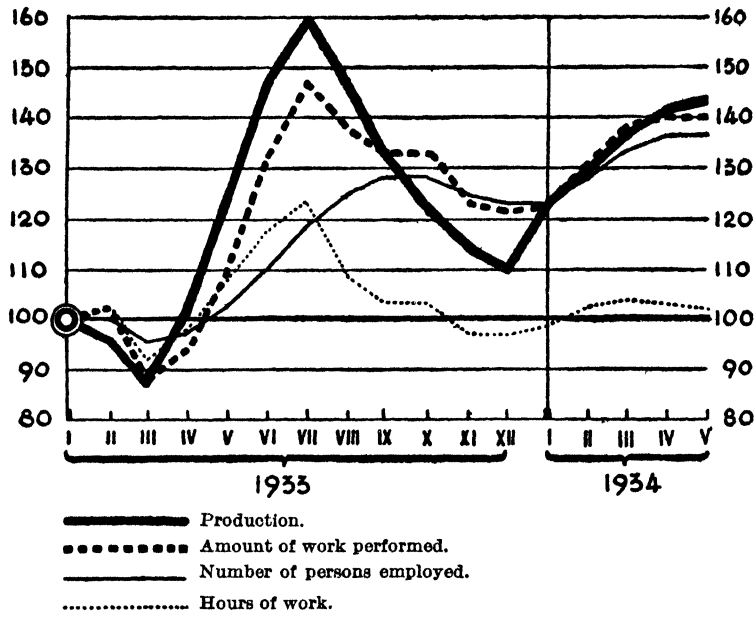
[2] *Survey of Current Business.*

1934	Hours	1934	Hours
January	34.3	July	34.1
February	35.5	August	33.5
March	36.4	September	33.3
April	36.1	October	34.0
May	35.5	November	33.9
June	35.4	December	35.0

From these figures an index of hours of work in American industry can be compiled, taking January 1933 = 100. If this index be combined with the index of the number of wage earners in employment, compiled on the same basis, the result will be an index of the fluctuations in the quantity of labour employed in industry. The curve of this index runs parallel to that of the volume of industrial production.

DIAGRAM XII.—RECENT PHASE OF THE DEPRESSION IN THE UNITED STATES : EMPLOYMENT AND PRODUCTION IN MANUFACTURING INDUSTRIES

(January 1933 = 100)



The total number of wage earners in employment in manufacturing industry rose from 5.6 millions in the spring of 1933 to 7.5 or 8 millions in the summer of 1934. But for the reduction of hours of work—i.e., but for the continuance of the practice

of short time, begun during the depression—the influence of the economic recovery on this section of the labour market would have been only half as marked as it was.

The effects of the New Deal on the other sections of the labour market cannot at the moment be accurately determined. The number of persons employed in mines rose by 100,000 or 200,000; in transport work the increase was insignificant; in commerce, on the other hand, it was very marked (about 500,000 to 600,000). If building and the liberal professions are included, the total increase in the number of those employed, as compared with the worst period in the spring of 1933, may be estimated at some 4 millions. But in the meantime there had been a further influx of new workers on the labour market, and when these are deducted the net increase in the number of unemployed workers may be put at about 3 millions.

This was undoubtedly a sign of success, but only a partial success. Unemployment had certainly fallen, but the economic system was not yet able to absorb all the available labour.

As a transitional measure, the Government launched a scheme of public works on a large scale.[1] The number of persons (in round figures) employed on these works in February 1934 was :

Type of work	
Construction projects	300,000
Civil Works Administration	4,000,000
Emergency conservation work.....	300,000
Public roads	150,000
Total...	4,750,000

In the second half of February, already, some of those employed by the Civil Works Administration were dismissed. During the summer, only from 2.2 to 2.5 million workers were employed on public works. If these were deducted from the number of the unemployed—as is done in the German official statistics—the number of unemployed persons in the narrower sense of the term in the United States must still have been about 10 millions in round figures at that period.

This reveals the magnitude and gravity of the problem that the United States had still to face in the second year of their struggle against unemployment.

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[1] International Labour Office : *Social and Economic Reconstruction in the United States.* Studies and Reports, Series B (Economic Conditions), No. 20, 401 pp., Geneva, 1935.

Great Britain

The United Kingdom owes its very comprehensive statistics of the labour market to its system of unemployment insurance, which is compulsory for all wage earners with a few exceptions. During the period under consideration here, the following were excluded from insurance : young wage earners under the age of 16 years[1], salaried employees in private undertakings with an annual salary exceeding £250, agricultural workers, domestic servants, certain groups of salaried employees in the employment of local authorities or railway companies, etc. Since 2 February 1928, wage earners over the age of 65 are also excluded from insurance. The introduction of this age limit reduced the number of regular wage earners in the country by some 360,000. In 1932 the lists of insured persons were revised and weeded-out, thus further reducing the number of registered unemployed by more than 100,000.

Every insured person receives a book which mentions, *inter alia*, the branch of industry to which he belongs or in which he is seeking employment. As long as he is employed in an insurable occupation, his insurance book is deposited with the management of the undertaking. When he loses his job, he returns the book to the labour exchange. The number of books handed in to the exchanges provides an indication, at any given moment, of the extent of unemployment. Sources of error (cases of death or sickness, or of an insured worker finding employment in a non-insurable occupation) can readily be eliminated.

The number of persons in employment is obtained by subtracting from the total number of insured persons : (1) the number of unemployed persons; (2) the number of workers who are temporarily absent from work on account of sickness; (3) the number of workers engaged in a labour dispute and, therefore, strictly speaking, neither unemployed nor among the number of workers in employment.[2]

The British statistics, then, determine unemployment according

[1] Since 3 September 1934, young persons between the ages of 14 and 16 years have been eligible for unemployment insurance, but they are reckoned separately and are not shown among the number of persons employed nor among the unemployed in the general statistics of the labour market.

[2] Cf. diagram XIII, p. 64.

to the number of insurance books with the employment exchanges. The number of those absent through sickness is assumed to be 3.5 per cent. of the number of wage earners (after deducting the unemployed). Separate statistics give the number of workers involved in labour disputes [1]. The total number of insured persons is ascertained once a year, in November; it is based on the results of the renewal of insurance books, which takes place early in July.

Insured persons—men and women separately—are classified in 25 branches of economic activity, with over 100 sub-groups. The monthly unemployment statistics show the actual number and the percentage of unemployed persons in each of these sub-groups.

The percentages are obtained by comparing the actual number of unemployed persons with the last recorded number of insured persons. Thus, for the months from November 1932 to October 1933, the number of unemployed persons is shown as a percentage of the number of insured workers in July 1932, while the number of insured workers in July 1933 serves as denominator for the percentages from November 1933 to October 1934, and so on.

TABLE XIII.—ESTIMATED TOTAL NUMBERS OF PERSONS AGED 16-64 INSURED AGAINST UNEMPLOYMENT IN GREAT BRITAIN [1]

(In thousands)

Year	1st quarter	2nd quarter	3rd quarter	4th quarter
1924	11,006	11,048	11,092	11,146
1925	11,200	11,254	11,300	11,336
1926	11,372	11,409	11,443	11,468
1927	11,493	11,518	11,541	11,565
1928	11,599	11,624	11,694	11,750
1929	11,786	11,822	11,870	11,923
1930	11,995	12,115	12,197	12,290
1931	12,380	12,467	12,550	12,620
1932	12,572	12,545	12,556	12,576
1933	12,595	12,613	12,631	12,648
1934	12,663	12,682	12,700	12,715

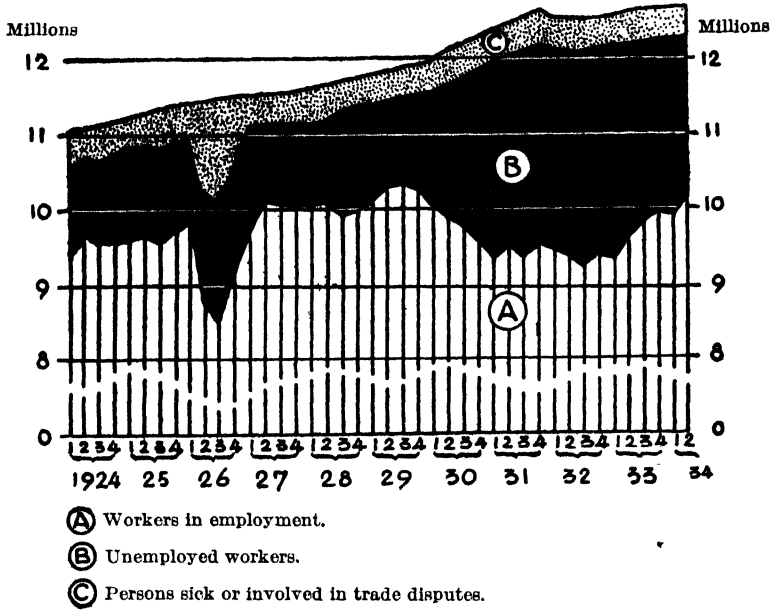
[1] Supplement to the *Ministry of Labour Gazette* for February 1935. The figures do not include Northern Ireland.

[1] This group was unusually large in 1926, on account of the coal strike. In the other years it was of little importance.

Mention should also be made of the official quarterly estimates of the number of persons employed in the various insurable occupations [1]. These estimates will be taken as a starting point for this general survey of the results of the British employment and unemployment statistics.

The total number of wage earners in insurable occupations thus rose by 1.6 millions in ten years. This is represented by the top curve in diagram XIII.

DIAGRAM XIII.—NUMBER OF INSURED WORKERS AND VOLUME OF EMPLOYMENT IN GREAT BRITAIN



The increase was comparatively steady (1.3 per cent. annually) from 1923 to 1929, after which it continued more rapidly. From the middle of 1931 onwards there was a decline in the influx of new workers on the labour market, due mainly to stricter supervision, but partly also to the lower birthrate of the years 1915-1917.

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[1] The monthly figures for the number of workers in employment are also compiled retrospectively.

The following figures (in thousands) illustrate this decline :

Year	Adult workers	Young workers	Increase or decrease from preceding year: Adult workers	Young workers
1929	11,048	1,046	—	—
1930	11,341	1,065	+ 293	+ 19
1931	11,733	1,037	+ 392	— 28
1932	11,806	1,002	+ 73	— 35
1933	11,966	916	+ 160	— 86

Table XIV shows the distribution of the insured workers in the United Kingdom by industries; it reveals the changes that have taken place in the economic structure of the country.

TABLE XIV.—ESTIMATED NUMBER OF WORKPEOPLE INSURED AGAINST UNEMPLOYMENT IN GREAT BRITAIN AND NORTHERN IRELAND (MALES AND FEMALES)

A.—1923-1927

Persons aged 16 years and over (in thousands)

Industry	July 1923	July 1924	July 1925	July 1926	July 1927
Fishing	25	26	27	27	28
Mining	1,389	1,405	1,391	1,382	1,356
Brick, pottery, glass, etc. ...	177	189	197	201	203
Chemicals	214	214	213	211	213
Metal manufacturing and engineering	1,177	1,147	1,141	1,125	1,108
Vehicles	271	281	296	302	310
Shipbuilding	270	254	242	224	216
Metal trades	481	489	505	524	519
Textile trades	1,311	1,327	1,339	1,343	1,328
Leather, etc.....	70	71	69	67	68
Clothing trades.....	579	579	583	582	584
Food, drink and tobacco ...	500	512	522	524	523
Sawmilling, furniture, etc. ..	192	195	198	204	211
Printing and paper trades ..	348	361	365	376	379
Other manufacturing industries	127	132	138	144	146
Total : mining and manufacture	7,106	7,156	7,199	7,209	7,165
Building.....	844	860	903	965	1,017
Gas, water and electricity..	173	171	179	185	171
Transport and communication	792	787	788	791	798
Distributive trades	1,254	1,355	1,458	1,511	1,581
Commerce, banking, etc....	227	226	220	220	223
Miscellaneous	1,065	1,083	1,120	1,132	1,148
Grand total...	11,486	11,664	11,892	12,041	12,131

B.—1927-1934

Persons aged 16 to 64 inclusive (in thousands)

Industry	July 1927	July 1928	July 1929	July 1930	July 1931	July 1932	July 1933	July 1934
Fishing	27	28	28	28	31	31	32	32
Mining.....	1,313	1,266	1,230	1,226	1,203	1,200	1,176	1,135
Brick, pottery, glass, etc.	194	194	201	209	213	208	213	219
Chemicals	205	215	218	218	214	216	221	217
Metal manufacturing and engineering	1,056	1,065	1,082	1,097	1,064	1,030	995	996
Vehicles	302	311	319	320	321	319	324	332
Shipbuilding.....	196	202	204	205	195	182	169	159
Metal trades.....	503	510	528	555	569	575	591	616
Textile trades.....	1,210	1,312	1,315	1,339	1,318	1,268	1,245	1,218
Leather, etc.	67	67	67	66	66	68	70	73
Clothing trades	552	577	581	587	606	605	617	613
Food, drink and tobacco	500	507	512	525	535	536	555	554
Sawmilling, furniture, etc.	200	208	215	219	224	229	227	233
Printing and paper trades	365	374	387	399	411	418	422	421
Other manufacturing industries	141	149	157	158	157	154	161	160
Total : mining and manufacture.....	6,804	6,960	7,018	7,123	7,098	7,010	6,985	6,947
Building	951	977	990	1,019	1,129	1,147	1,161	1,200
Gas, water and electricity	161	163	162	166	174	174	183	195
Transport and communication	760	786	807	821	872	874	859	869
Distributive trades.	1,523	1,614	1,679	1,764	1,875	1,950	1,992	2,005
Commerce, banking, etc.	218	222	229	232	236	243	246	257
Miscellaneous	1,089	1,134	1,181	1,251	1,355	1,378	1,426	1,457
Grand total...	11,533	11,881	12,094	12,406	12,770	12,808	12,883	12,961

Industry (including mines) constitutes the most important section of the British labour market. Before the reform of 2 February 1928—i.e., before the introduction of an upper age limit—the number of workers in this section moved as follows (in thousands):

1923	1924	1925	1926	1927
7,106	7,156	7,199	7,209	7,165

After the reform, when the age limit came into force, the figures were :

1927	1928	1929	1930	1931	1932	1933	1934
6,804	6,960	7,018	7,123	7,098	7,010	6,985	6,947

From the point of view of the labour market, therefore, industrial occupations proved incapable of development; they remained closed to the additional members of the occupied population [1]. The industrialisation of the population, which had been the characteristic feature of the development of Great Britain before the war and had enabled it to maintain its social and economic equilibrium, seemed to have been stopped dead by some invisible barrier. In Britain, as in America, the number of persons in employment continued to show an increase in the following occupations only : commerce and transport, the liberal professions and, to some extent, building.

In the six years from 1927 to 1933 the number of insured workers in non-industrial occupations rose from 4.7 to 5.9 millions (by 25 per cent.), while the number in industrial occupations remained unchanged. The centre of gravity of the labour market was thus transferred to the non-industrial occupations.

The *Ministry of Labour Gazette* gives the following percentages that illustrate the redistribution of the working population of the country over a period of ten years [2] :

	Percentage of total number insured	
	at July 1923	at July 1933
Shipping and fishing	1.3	1.5
Mining	11.9	8.8
Manufacturing	48.1	43.1
Building	8.1	10.0
Distributive trades, commerce, banking, etc.	12.9	17.4
Other industries and services....	17.7	19.2
Total...	100	100

In ten years the fraction of the entire insured population belonging to industrial occupations fell from 60 to 51.9 per cent.

But to belong to an occupation does not necessarily mean that one can find employment in it. Before the depression, the

[1] For the sake of simplicity, the term " additional members of the occupied population " is used to denote the net influx of persons in search of employment, no attention being paid to the constant renewal of the insured population.

[2] November 1933, p. 398.

proportion of unemployed among the insured population fluctuated between about 10 and 12 per cent.; during the depression it exceeded 20 per cent. The situation will be clearer from the following table and diagram :

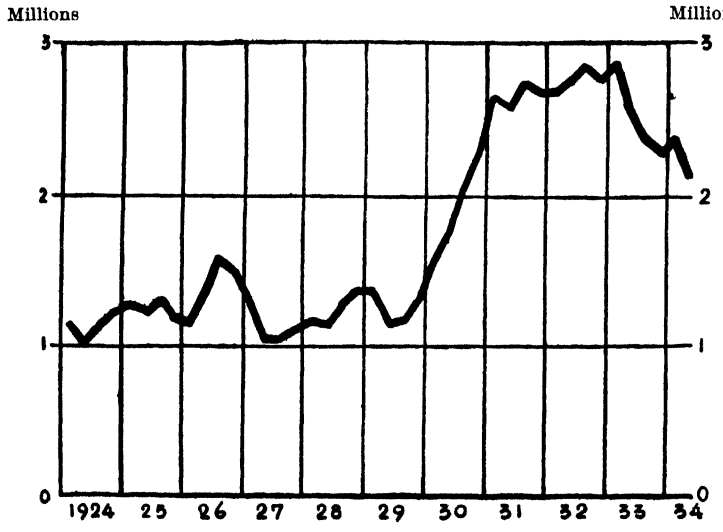
TABLE XV.—NUMBER OF INSURED PERSONS RECORDED AS UNEMPLOYED IN GREAT BRITAIN [1]

Wholly Unemployed and Temporarily Stopped
(in thousands)

Year	1st quarter	2nd quarter	3rd quarter	4th quarter
1924	1,178	1,030	1,112	1,204
1925	1,240	1,225	1,294	1,197
1926	1,140	1,390	1,584	1,493
1927	1,259	1,031	1,050	1,107
1928	1,149	1,119	1,288	1,355
1929	1,353	1,133	1,152	1,281
1930	1,543	1,762	2,045	2,297
1931	2,622	2,574	2,734	2,668
1932	2,666	2,714	2,843	2,757
1933	2,845	2,573	2,397	2,268
1934	2,303	2,110	2,115	2,109

[1] Supplement to the *Ministry of Labour Gazette*, February 1935.

DIAGRAM XIV.—UNEMPLOYMENT IN GREAT BRITAIN: NUMBER OF INSURED PERSONS RECORDED AS UNEMPLOYED



Except in the year 1926, which was marked by a long stoppage of work among coal-miners, the number of unemployed persons in Britain varied very slightly up to 1929, fluctuating between 1 and 1½ millions. This fraction of surplus labour was well designated as "structural" unemployment, to distinguish it from cyclical unemployment. In the spring of 1930 the number of unemployed persons rose sharply. Between the second quarter of 1931 and the second quarter of 1933 it fluctuated between 2.5 and 3 millions; since the beginning of 1933 it has tended to fall.

Table XVI shows the distribution of unemployment in Great Britain over the various main occupational groups.

The number of unemployed persons before the depression can be summarised as follows (in thousands):

	In mines	In manufactures [1]	In other branches
November 1923...	46	811	468
July 1924.....	98	640	397
„ 1925.....	199	731	397
„ 1926.....	144	1,117	476
„ 1927.....	270	511	333
„ 1928.....	339	632	406
„ 1929.....	215	559	404

[1] Not including building.

When considering these figures, one must make allowance for the fact that the total number of persons insured during the period under consideration increased by 610,000 [1], that the number of persons belonging to industrial occupations fell by about 90,000, and that there was an increase of 700,000 in the number of insured wage earners in other branches of the economic system. The relatively high unemployment figures for commerce and transport, building and the liberal professions can be accounted for by the large number of workers who came seeking employment in these branches. Manufacturing industries and mines, on the other hand, were not merely closed to any fresh influx of workers, but had even to turn out a certain fraction of the persons belonging to these occupations and turn over the natural increase in their families to find employment in other branches. The economic troubles of the country had thus their roots in the mining and manufacturing industries.

During the period of the depression, from July 1929 to July 1932, and for two years thereafter the number of unemployed

[1] Cf. table XIV, A and B, pp. 65 and 66.

TABLE XVI.—NUMBER OF INSURED PERSONS RECORDED AS UNEMPLOYED (INCLUDING TEMPORARILY STOPPED) IN GREAT BRITAIN AND NORTHERN IRELAND

(in thousands)

Industry	Nov. 1923 [1]	July 1924	July 1925	July 1926	July 1927	July 1928	July 1929	July 1930	July 1931	July 1932	July 1933	July 1934
Fishing	3	3	3	5	3	3	2	3	4	6	6	6
Mining	46	98	199	144	270	339	215	327	425	475	433	350
Brick, pottery, glass, etc.	20	19	24	71	22	27	22	39	55	56	42	44
Chemicals	20	18	17	24	13	13	13	23	32	30	27	22
Metal manufacturing and engineering	216	175	165	306	126	131	116	210	330	354	273	169
Vehicles	28	22	20	36	23	30	24	49	73	72	57	38
Shipbuilding	112	72	84	93	48	57	47	65	112	116	102	76
Metal trades	64	44	51	73	47	50	41	88	129	124	99	71
Textile trades	180	158	212	341	122	187	174	456	491	375	261	274
Leather, etc.	8	7	8	9	5	5	6	9	13	12	8	9
Clothing trades	64	38	61	55	38	57	42	68	95	95	80	90
Food, drink and tobacco	45	40	40	43	30	35	34	53	72	66	63	58
Sawmilling, furniture, etc.	19	17	16	21	13	15	15	27	43	50	42	34
Printing and paper trades	22	19	18	23	16	16	15	27	45	43	38	32
Other manufacturing industries	13	11	11	22	8	9	11	19	29	29	22	18
Total : mining and manufacture	857	738	930	1,261	781	971	774	1,460	1,944	1,897	1,547	1,285
Building	121	93	82	106	85	114	103	161	235	352	302	274
Gas, water and electricity	12	10	10	11	9	9	9	12	15	19	19	19
Transport and communication	119	108	118	149	79	111	105	138	181	189	175	153
Distributive trades	81	77	84	100	70	84	91	146	206	225	225	203
Commerce, banking, etc.	7	6	5	7	5	5	6	8	12	13	12	11
Miscellaneous	125	101	96	97	84	82	88	139	198	221	223	212
Grand total...	1,325	1,135	1,327	1,737	1,114	1,377	1,178	2,066	2,795	2,921	2,508	2,162

[1] It was in November 1923 that this classification of unemployed persons was first used. The total number unemployed in that month was the same as in July 1923.

persons in Great Britain and Northern Ireland fluctuated as follows (in thousands):

	In mines	In manufactures	In other branches
July 1929.....	215	559	404
„ 1930.....	327	1,133	606
„ 1931.....	425	1,519	851
„ 1932.....	475	1,422	1,024
„ 1933.....	433	1,114	961
„ 1934.....	350	935	877

Here again it will be noticed that the wave of growing unemployment reached manufactures and mining first and did not spread to other branches until later. A comparison of the unemployment figures for the summer of 1932 with those for July 1929 might lead one to conclude that unemployment had increased to about the same extent in the two branches of the economic system. But that impression would be erroneous. During these three years, more than 700,000 new wage earners poured into non-industrial occupations, and employment was found for some 100,000 of them in spite of the depression. The increase in unemployment in commerce, transport, etc., was thus not due to any reductions in staff, but to a slackening in their rate of increase; in industry, on the other hand, staffs were drastically cut down. The same difference can be observed during the following period, when Great Britain began, not without a considerable measure of success, to combat the depression and the widespread unemployment it had brought. It was mainly in industry that the improvement first showed itself.

Table XVII reproduces the official estimates of the number of insured persons in employment at various dates[1] (excluding persons unemployed, sick or directly involved in trade disputes).

With the exception of the year 1926, the total number of wage earners in employment rose steadily from 1924 to 1929. In these five years it increased from 9.6 to 10.3 millions (in round figures). This would have been sufficient to give the country a sense of returning equilibrium but for the influx of new workers into the occupied population. During these five years the number of insured persons between the ages of 16 and 64 years increased by 800,000—i.e., 1.4 per cent. annually. This is higher than the percentage for the average of the years 1861-1911 (1.2 per cent.). Employment also increased with equal rapidity,

[1] Cf. diagram XIII, p. 64.

yet the number of workers who were unemployed in 1923, at the beginning of the observation period, had not fallen.

TABLE XVII.—ESTIMATED NUMBER OF INSURED PERSONS IN EMPLOYMENT IN GREAT BRITAIN [1]

(in thousands)

Year	1st quarter	2nd quarter	3rd quarter	4th quarter
1924	9,368	9,629	9,545	9,572
1925	9,574	9,624	9,524	9,720
1926	9,812	8,900	8,473	9,064
1927	9,851	10,094	10,076	10,038
1928	10,028	10,073	9,978	9,997
1929	10,048	10,277	10,309	10,245
1930	10,033	9,880	9,724	9,552
1931	9,320	9,487	9,353	9,525
1932	9,421	9,375	9,200	9,396
1933	9,332	9,621	9,807	9,966
1934	9,961	10,170	10,190	10,222

[1] Supplement to the *Ministry of Labour Gazette*, February 1935.

The next point to be considered is the distribution of those employed persons over the various branches of the economic system. Table XVIII shows how different the course of evolution was in these branches.

The number of wage earners in employment in the United Kingdom therefore fluctuated as follows :

	In thousands			Index numbers (1923 = 100)		
Year	Mines and manufactures[1]	Other occupations	Total	Mines and manufactures[1]	Other occupations	Total
1923	6,030	3,775	9,805	100	100	100
1924	6,193	3,967	10,160	102.6	105.1	103.6
1925	6,050	4,146	10,195	100.3	109.8	103.8
1926	5,740	4,205	9,945	95.8	111.6	101.7
1927	5,812	4,242	10,054	96.4	112.4	102.5
1928	5,779	4,357	10,136	95.8	115.4	103.4
1929	6,025	4,509	10,534	99.9	119.4	107.4
1930	5,465	4,513	9,978	90.6	119.5	101.8
1931	4,974	4,652	9,626	82.5	123.2	98.2
1932	4,934	4,607	9,541	81.8	122.3	97.3
1933	5,248	4,764	10,012	87.0	126.1	102.1
1934	5,464	4,957	10,421	90.6	131.3	106.3

[1] Excluding building.

These three sets of figures are represented graphically in diagram XV, p. 74.

TABLE XVIII.—ESTIMATED NUMBER OF WORKERS IN EMPLOYMENT IN VARIOUS ECONOMIC BRANCHES IN GREAT BRITAIN AND NORTHERN IRELAND [1]

(in thousands)

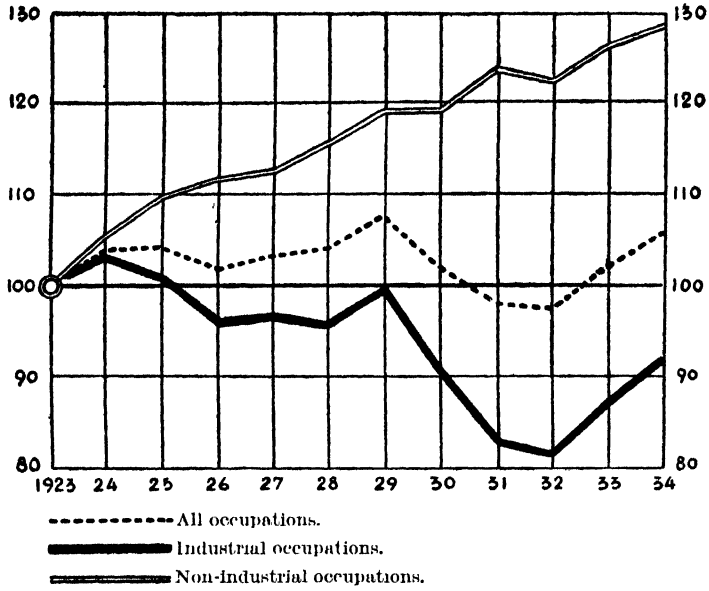
Industry	1923 [2]	July 1924	July 1925	July 1926	July 1927	July 1928	July 1929	July 1930	July 1931	July 1932	July 1933	July 1934
Fishing	21	22	23	21	23	24	25	26	26	24	25	25
Mining	1,296	1,261	1,150	1,195	1,006	895	979	868	751	700	717	757
Brick, pottery, glass, etc.	152	164	167	125	166	161	173	164	152	147	165	169
Chemicals	187	189	189	180	185	195	198	188	176	179	187	188
Metal manufacturing and engineering	927	938	942	790	897	901	932	856	708	652	697	798
Vehicles	234	250	266	257	269	271	285	262	239	238	258	284
Shipbuilding	152	176	152	126	143	140	152	135	80	64	65	80
Metal trades	402	429	438	435	440	444	470	451	425	435	475	526
Textile trades	1,091	1,128	1,088	967	1,050	1,086	1,101	852	798	862	950	911
Leather, etc.	60	62	59	56	60	60	59	55	51	54	60	62
Clothing trades	497	522	504	509	496	502	520	501	493	492	518	505
Food, drink and tobacco	439	455	465	464	454	455	461	455	447	454	475	479
Sawmilling, furniture, etc.	167	172	176	177	180	186	193	185	175	173	179	192
Printing and paper trades	315	330	335	341	337	345	359	359	353	362	371	375
Other manufacturing industries	110	117	123	118	128	135	141	134	124	121	134	137
Total : mining and manufacture	6,030	6,193	6,050	5,740	5,812	5,779	6,025	5,465	4,974	4,934	5,248	5,464
Building	698	740	792	829	836	833	856	828	863	767	829	894
Gas, water and electricity	155	155	163	168	148	149	148	149	153	150	158	170
Transport and communication	648	655	647	621	657	651	677	659	667	661	660	691
Distributive trades	1,132	1,233	1,326	1,362	1,402	1,476	1,532	1,561	1,611	1,665	1,705	1,739
Commerce, banking, etc.	212	212	208	206	206	209	215	216	216	222	226	238
Miscellaneous	907	948	988	999	970	1,013	1,055	1,073	1,117	1,117	1,160	1,201
Grand total	9,805	10,160	10,195	9,945	10,054	10,136	10,534	9,978	9,626	9,541	10,012	10,421

[1] The figures in table XVIII were obtained as follows : the difference between the insured population (table XIV, since July 1927, persons aged 16 to 64 years) and the number of unemployed persons (table XVI) was calculated separately for each economic branch. From this difference, 3.5 per cent. was deducted to allow for cases of sickness and temporary disablement. The number of persons involved in trade disputes was ignored.

[2] The number of insured persons in each group refers to the month of July. But the number of unemployed persons, classified by these groups, is not available for that month; these statistics were compiled only from November 1923 onwards (Cf. footnote to table XVI). The figures in this column are therefore based on the hypothesis that the distribution of the unemployed over the various groups was the same in July 1923 as in November 1923.

DIAGRAM XV.—INDEX NUMBERS OF EMPLOYMENT IN GREAT BRITAIN

(1923 = 100)



It will be seen that the index of employment in industry points to quite different conclusions from those suggested by the general index for all occupations.

It is only the curve of employment in industry that clearly reflects the economic fluctuations that took place. In other branches of the economic system these fluctuations were neutralised by the structural increase in employment; they appear only in an attenuated form in the general curve of employment.

By taking the index of employment in industry (E) in conjunction with the index of industrial production (V), one can obtain the index of individual output in industry (T). But as the official British index number of production begins with the year 1927 and is based on the volume of industrial production in 1924 (= 100), the index number of employment must be recalculated on the same basis before the two can be combined. The volume of production is taken from the quarterly figures of the Board of Trade, the average of the second and third quarters being used,

so as to have both indices referring to the same period (the middle of the year). One source of error must also be mentioned : the number of wage earners in employment includes persons involved in trade disputes; but this error is quite negligible compared with certain others that cannot be eliminated [1].

Middle of the year	Industrial production (V)	Number of wage earners employed in industry (E)	Individual output $\left(T = \frac{V}{E}\right)$
1924	100	100	100
1925	—	(97.7)	—
1926	—	(93.4)	—
1927	106.8	93.9	113.5
1928	101.9	93.4	109.3
1929	111.3	97.3	114.4
1930	101.3	88.3	114.7
1931	90.7	80.4	112.8
1932	90.8	79.6	114.1
1933	96.5	84.7	113.9
1934	104.5	88.3	118.4

The evolution of the British labour market can now be summed up by means of the usual formula.

It is assumed at the outset that in view of the annual increase of 1.4 per cent. in the wage-earning population, industry should have increased to some extent the number of persons it employed. In so far as this increase did not take place, it follows that unemployment developed in that branch of the economic system, although that unemployment may have been absorbed, in whole or in part, by increased employment in other branches.

The year 1924 will be taken as a starting point, and the number of insured workers in industrial occupations in July 1924 (S = 7,156,000) will be considered as = 100.

As there were at that date 738,000 unemployed persons in industry, the index number of wage earners in employment (E) must be put at 89.8 (there is no need, in this case, to allow for absence through sickness, etc.). The increase that should have taken place in the number of those employed in industrial occupations will be put at the minimum rate of 0.5 per cent. of the 1924 figure annually.

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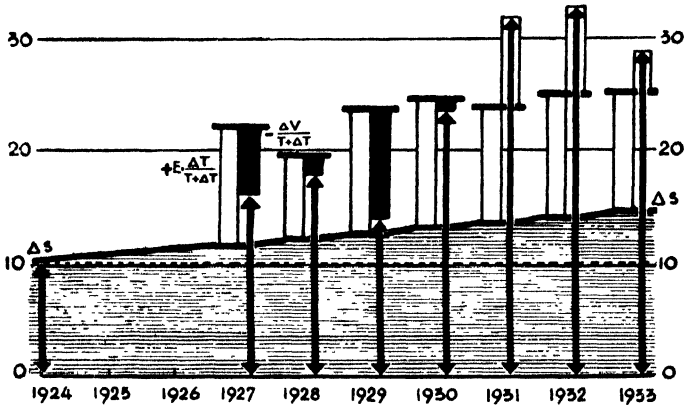
[1] It is of importance, however, for the year 1926 (coal strike), but that year has been omitted from the following table.

The following diagram will then represent the development of unemployment in British industry from 1924 to 1934.

DIAGRAM XVI.—DEVELOPMENT OF UNEMPLOYMENT IN BRITISH INDUSTRY

(S and V for 1924 = 100)



This diagram brings out the fact that the volume of production rose more slowly than the level of technical progress from 1924 to 1929. In so far as technical progress is represented by the individual output of those in employment, it was much more rapid than before the war. The increase of 14.4 per cent. in 5 years means an annual rise of 2.7 per cent., as against 0.52 per cent. for the period 1861-1911. The increase in the volume of production, on the other hand, was not much more rapid than before the war : 2.2 per cent. as against 1.85 per cent.

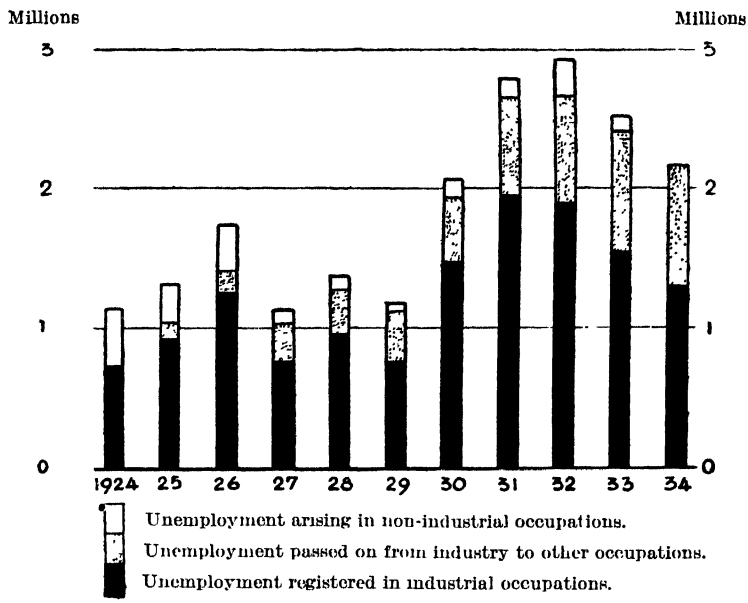
There is perhaps a close connection between these two trends. It is possible that it was the difficulties of industrial expansion that forced British industry to improve its plant and its technical processes and bring them up to date. This created a situation in which, notwithstanding the steady improvement in business, unemployment continued to spread in industrial occupations, although its growth was, for a time, obscured by the displacement of labour towards other branches of the economic system.

The situation became still worse during the depression. Capital investment came practically to a standstill, and as the undertakings had no longer any reason to replace their workers by machines, individual output has not risen at all since the

depression began. It has even fallen slightly—perhaps as a result of shorter working hours. However that may be, the decline in production was alone responsible for the decrease in employment in industry from 1930 to 1932, and the two decreases followed almost parallel courses.

During this period labour continued to flow from industry to other branches of the economic system, and this influx soon made itself felt. The effects of this displacement and the distribution of unemployment over the two main branches of the labour market are shown in diagram XVII.

DIAGRAM XVII.—DISTRIBUTION OF UNEMPLOYMENT IN GREAT BRITAIN



When industry revived in 1933 the situation gradually improved, but in July 1934 the number of unemployed persons in Great Britain and Northern Ireland was still 2.1 millions, of whom 1.2 millions were in industrial occupations. If unemployment was to be brought back to what was considered the "normal" pre-war level, the number of persons employed in industry would have to be raised by about 17 per cent. on the average above the 1934 summer figure. But that would require

some considerable time, and in the meanwhile neither the increase of the occupied population nor the march of technical progress could be held up. Consequently, if Great Britain wishes to restore its economic equilibrium it will have to increase production by between 20 and 25 per cent., or else reduce hours of work in the same proportion, or combine these two measures. Theoretically, each of the three solutions is possible, but in practice the only one of real importance is the last one, which can, of course, be varied in countless ways.

There is little hope of success for any attempt to restore the balance of the labour market by transferring the "surplus" workers from industry to non-industrial occupations. Commerce and transport may not so far be overcrowded occupations in Britain, but the time will inevitably come when the mechanism of distribution will have to be rationalised. And then hundreds of thousands or even millions of commercial employees and workers will be thrown out of employment.

Germany

The first post-war years in Germany were marked by great economic activity. The demand for commodities was so strong that the industries for consumers' goods had no difficulty in marketing their products, while the industries for producers' goods worked feverishly to provide new industrial plant. Inflation stimulated capital investment, which rapidly degenerated into unbridled company promotion. Consequently, and more especially in view of the low level of wages, German employers could afford to employ an ample quantity of labour.

The demobilisation of the army and the reintegration of ex-service men into economic life passed off without much friction. In 1919, 1920 and 1921, unemployment among trade union members fluctuated round about an annual average of 4 per cent. In 1922, when inflation was at its height, the number of unemployed persons actually fell below 1 per cent.

There is no means of knowing the exact number of wage earners or even the size of the occupied industrial population in general during these years. But as unemployment was practically non-existent at that period and all the available workers were

fully employed, the total amount of work performed cannot have fluctuated much or increased greatly from year to year. The growth of industrial production is therefore all the more striking. On the basis of 1913 = 100, the volume of production was as follows :

1919	1920	1921	1922
37	54	65	70

The rise in the level of individual output was more or less parallel. This was no "miracle of technical progress" but simply the process of reconstruction : the economic system had been thrown completely out of gear and was now gradually returning to normal. In 1922 individual output had not yet returned to its pre-war level. The daily output per person was still about 20 or 30 per cent. lower than in 1913. This was partly the result of the reduction of working hours—from 9.5 to 8 hours a day on the average. But even the hourly output in 1922 still fell short of the normal figure.

The corollary of this low level of output was an unusually low standard of living. Real wages were brought still lower by the fact that a large fraction of the yield of German industry was devoted to capital expenditure on a large scale; this was the more easily financed because of the continued inflation.

The stabilisation of the currency was followed by a brief but violent depression. The unemployment figure soared upwards at the end of 1923, and short time suddenly became extremely widespread. But the spring of 1924 brought recovery with it. From that date the German labour market entered on a new and chequered phase of its history.

In view of the marked seasonal fluctuations that are characteristic of employment conditions in Germany, and in view of the curious fluctuations in the market situation from 1924 to 1934, it will be advisable to study the development of unemployment during that period from month to month and not merely from year to year.

Table XIX shows the number of unemployed persons registered with the employment exchanges at the end of each month from 1925 to 1934.

The question of the reliability and completeness of the employment exchange statistics may be ignored for the moment, while the general trend indicated by these figures is examined.

TABLE XIX.—UNEMPLOYMENT IN GERMANY [1]

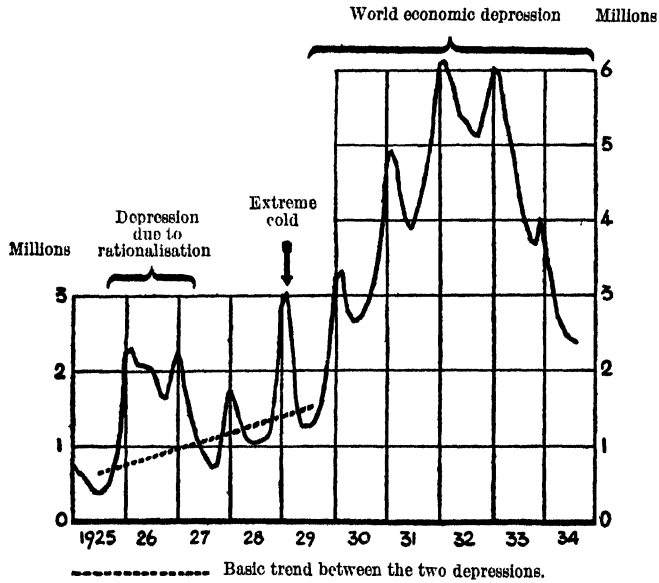
(Number of unemployed persons registered)

(In thousands)

End of month	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934
January .	800	2,221	2,257	1,791	2,850	3,218	4,887	6,042	6,014	3,773
February	731	2,269	2,167	1,718	3,050	3,366	4,972	6,128	6,001	3,373
March ...	648	2,243	1,708	1,489	2,484	3,041	4,744	6,034	5,599	2,798
April	523	2,113	1,462	1,234	1,712	2,787	4,358	5,739	5,331	2,609
May	431	2,090	1,213	1,112	1,350	2,635	4,053	5,583	5,039	2,529
June	401	2,081	1,061	1,075	1,260	2,641	3,954	5,476	4,857	2,481
July	406	2,004	927	1,028	1,252	2,765	3,990	5,392	4,464 [2]	2,426
August ..	459	1,911	841	1,034	1,272	2,883	4,215	5,224	4,124	2,398
September	503	1,781	772	1,030	1,324	3,004	4,355	5,103	3,849	2,282
October .	636	1,709	787	1,164	1,557	3,252	4,623	5,109	3,745	2,268
November	997	1,786	1,117	1,569	2,036	3,699	5,060	5,355	3,715	2,353
December	1,712	2,127	1,714	2,265	2,851	4,384	5,668	5,773	4,059	2,604
Annual average	687	2,028	1,336	1,376	1,916	3,140	4,573	5,575	4,804	2,658

[1] From reports of the employment exchanges.
[2] From July 1933 onwards the figures do not include persons employed in the Labour Service (150,000 in July 1933).

DIAGRAM XVIII.—UNEMPLOYMENT IN GERMANY [1]



[1] From employment exchange reports.

If seasonal fluctuations (which reach their peak in January or February and their lowest point in summer) are left out of account, it will be seen that the curve of unemployment in Germany for the period 1925-1934 reflects two unequal waves : the first began to rise towards the end of 1925, falling again in the spring of 1927; the second rose from the winter of 1929, reaching its peak in 1932 and falling gradually in 1933 and 1934. Between these two waves the basic trend of the curve is not horizontal, but would seem to betray a tendency to rise.

It is not difficult to determine the relative significance of these fluctuations, which are in part superimposed on each other. The peaks in the winter months reflect the usual dismissal of about a million workers (mostly from the building trade). The peak is particularly high in the winter of 1928-1929, which was exceptionally cold in the whole of Central Europe, and especially in Germany. During the depression, on the other hand, winter unemployment was relatively less marked on account of the slackness in building even in summer.

The extent of the first wave of unemployment—the so-called " rationalisation unemployment " of 1926—may be estimated at about 1.5 or 1.6 million persons. During the recent depression, the increase in the number of unemployed workers during the summer months exceeded 4 millions. During the recovery period between the two depressions the annual increase in the number of unemployed persons registered with the employment exchanges may be put at 200,000 or 300,000.

The same trend of the labour market is shown by the unemployment statistics compiled by the trade unions[1]. These figures have the advantage of eliminating the sudden winter variations by making a distinction between occupations in the " seasonal " and the " cyclical groups " [2].

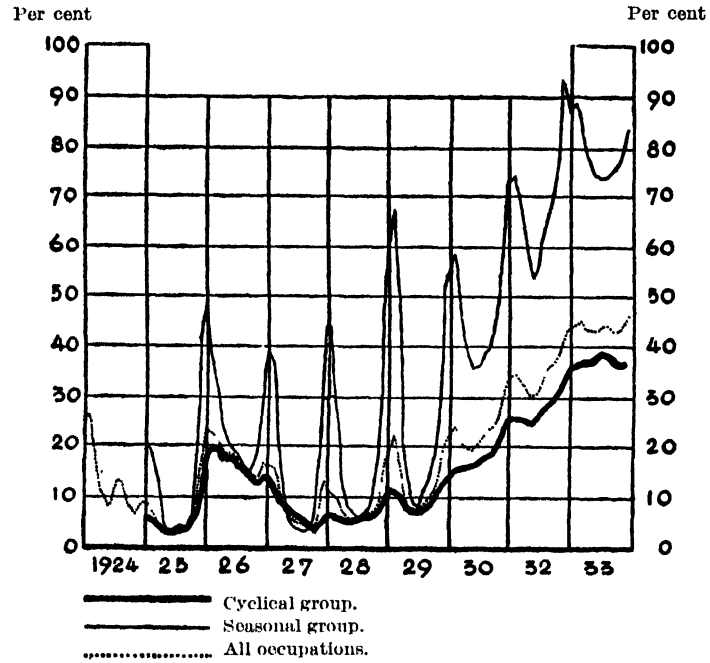
The dotted curve in diagram XIX shows the same peaks as the curve in diagram XVIII; every winter, between 5 and 8 per cent. of the members of trade unions were thrown out of employment by the stoppage of building activity; this proportion rose in the winter of 1928-1929, but fell during the depression. The

[1] Cf. Table XX, p. 83.

[2] The " seasonal " group comprises building occupations, brickworks and horticulture; the " cyclical " group includes all other occupations. Cf. Wl. Woytinsky : " Konjunktur und Saison " in *Arbeit*, 1929, No. 2, Berlin, and *Der deutsche Arbeitsmarkt*, published by the Allgemeiner Deutscher Gewerkschaftsbund, 1930, Berlin. Cf. diagram XIX, p. 82.

curve for the seasonal group reveals whence these peaks come, whereas the curve for the other group reflects the cyclical fluctuations over the same period: a brief wave of unemployment resulting from rationalisation, a gradually rising curve for the years 1927-1929 and then a rapid rise from the beginning of the world depression.

DIAGRAM XIX.—UNEMPLOYMENT AMONG TRADE UNION MEMBERS IN GERMANY



The development of the labour market during the "rationalisation depression" may be taken as a typical example of *successful* rationalisation, since a certain quantity of labour was temporarily displaced but was immediately provided with fresh employment as a result of the extension of production [1].

There is one serious source of error in table XXI. The production figures refer to "industrial" production in the widest sense, whereas the employment figures include "all groups" of wage earners indiscriminately—not only those in industry, but also

[1] Cf. table XXI, p. 84 and diagram XX, p. 85.

TABLE XX.—PERCENTAGE UNEMPLOYED AMONG TRADE UNION MEMBERS IN GERMANY[1]

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	All Occupations											
1924.....	26.5	25.1	16.6	10.4	8.6	10.5	12.5	10.5	8.4	7.3	8.1	13.1
1925.....	8.1	7.3	5.8	4.3	3.6	3.5	3.7	4.3	4.5	5.8	10.7	19.4
1926.....	22.6	22.1	21.6	18.7	18.3	18.3	17.9	17.0	15.6	14.5	14.5	17.2
1927.....	16.9	15.9	11.8	9.0	7.1	6.4	5.6	5.1	4.7	4.6	7.5	12.9
1928.....	11.4	10.5	9.3	6.9	6.3	6.2	6.3	6.5	6.6	7.3	9.4	16.7
1929.....	19.4	22.3	16.8	11.1	9.1	8.6	8.6	9.0	9.6	11.0	13.8	20.3
1930.....	22.2	23.7	21.9	20.5	19.8	19.8	20.8	22.0	22.8	24.0	26.3	31.8
1931.....	34.5	34.8	34.0	32.3	30.4	30.2	31.6	34.1	35.5	37.2	39.5	42.8
1932.....	44.3	44.9	45.2	44.5	43.9	43.6	44.4	44.5	44.1	43.4	43.8	45.6
	Cyclical Group											
1925.....	6.0	5.4	4.7	4.3	3.7	3.5	3.7	4.2	4.5	5.7	8.2	14.7
1926.....	18.2	19.1	19.7	17.6	17.8	18.0	17.9	17.1	15.6	14.0	13.1	13.3
1927.....	12.4	11.7	10.0	8.5	7.3	6.7	6.0	5.4	4.8	4.3	4.7	6.2
1928.....	6.4	6.2	5.9	5.8	5.9	6.0	6.3	6.5	6.4	6.5	7.3	9.5
1929.....	10.3	11.4	10.6	9.2	8.6	8.4	8.6	8.6	8.9	9.2	10.2	12.8
1930.....	14.2	15.0	15.1	15.2	15.4	16.0	17.0	18.2	18.8	19.4	20.6	24.3
1931.....	25.8	25.8	25.6	25.2	24.7	24.8	26.1	27.8	28.8	29.7	31.1	33.9
1932.....	35.2	35.7	36.4	36.7	36.8	37.0	38.0	38.1	37.6	36.4	36.4	36.6
	Seasonal Group											
1925.....	21.1	18.7	12.0	5.0	3.1	2.8	3.3	4.7	4.7	6.8	25.4	42.8
1926.....	48.4	38.9	32.0	24.9	21.1	19.8	18.2	16.5	15.6	16.8	21.0	35.6
1927.....	39.4	37.3	20.8	11.9	6.4	4.9	3.9	3.7	3.9	5.5	20.6	44.0
1928.....	34.1	30.1	24.6	12.0	8.1	7.0	6.0	6.5	7.4	10.3	18.5	46.7
1929.....	58.4	68.1	43.3	19.2	11.0	9.2	8.9	10.4	12.8	17.7	28.6	51.1
1930.....	55.5	59.5	50.2	42.9	38.1	36.4	36.8	38.1	39.7	43.3	51.1	64.3
1931.....	72.8	74.7	71.4	63.7	55.5	54.1	55.8	62.4	66.4	71.1	78.2	94.2
1932.....	87.0	88.4	86.3	81.4	77.1	75.0	74.5	74.8	75.0	76.8	79.4	83.8

[1] *Jahrbuch des Allgemeinen Deutschen Gewerkschaftsbundes, 1931, Statistischer Anhang*, p. 2.

those in agriculture, commerce and transport, the liberal professions, domestic service, etc. But it is a well-known fact that in 1926 rationalisation meant, in Germany, the technical and administrative reorganisation of industrial undertakings only. Consequently the employment figures in table XXI contain two

TABLE XXI.—THE " RATIONALISATION " DEPRESSION IN GERMANY [1]

(Average for 1925 = 100)

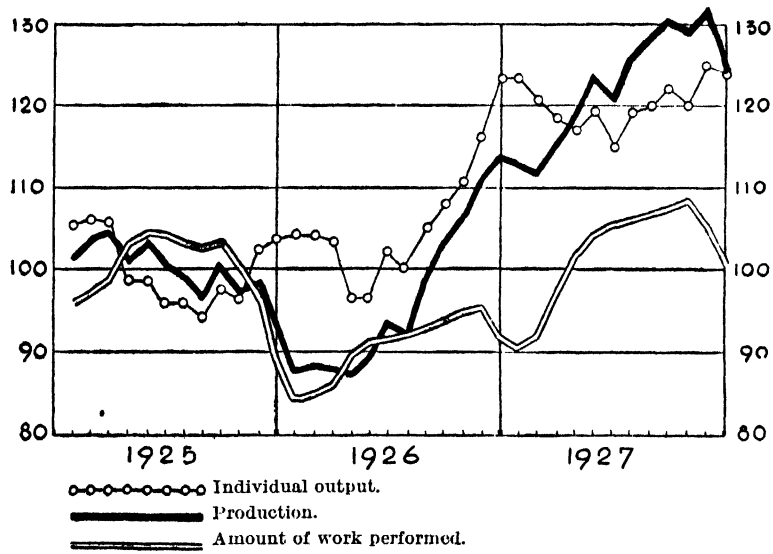
Year and month	Number of wage earners employed	Amount of work performed	Industrial production	Individual output
1925				
January	95.7	96.3	101.2	105.1
February	96.7	97.4	103.7	106.4
March	98.2	98.8	104.6	105.9
April	102.0	102.8	101.1	98.3
May	104.1	104.9	103.3	98.4
June	104.1	104.8	100.6	96.0
July	103.0	103.6	99.4	96.0
August	102.5	102.8	96.5	93.9
September	103.0	102.9	100.1	97.3
October	101.5	100.4	97.5	97.1
November	98.2	96.2	98.5	102.3
December	91.4	88.9	92.2	103.7
1926				
January	88.3	84.8	88.2	104
February	88.3	85.0	88.4	104
March	89.3	86.0	88.1	103
April	92.5	89.9	87.5	97
May	93.4	91.2	88.9	97
June	93.5	91.4	93.2	102
July	94.1	92.1	92.1	100
August	94.6	93.0	98.0	105
September	95.1	94.1	102.5	108
October	95.6	95.2	106.3	111
November	95.6	95.6	111.1	117
December	91.5	91.7	113.0	123
1927				
January	90.5	90.9	112.4	123
February	91.5	92.1	111.2	121
March	96.7	97.6	115.5	118
April	100.4	101.5	118.8	117
May	103.5	104.8	123.5	119
June	104.5	105.9	120.8	115
July	105.1	106.5	125.4	119
August	105.6	106.9	127.5	120
September	106.1	107.5	130.1	122
October	106.6	108.1	128.8	120
November	104.1	105.6	131.1	125
December	98.8	100.7	124.4	124

[1] The index of the number of wage earners in employment is calculated on the basis of the reports of the sickness insurance funds (cf. *Wirtschaftszahlen 1925 bis 1931*, published by the " Institut für Konjunkturforschung ", Berlin, 1932). The index of the amount of work performed is calculated with the help of the index of wage earners in employment, taking into account the average hours of work. The index of the volume of production is that of the " Institut für Konjunkturforschung ". The index of individual output is obtained by dividing the index of production by the index of the amount of work performed.

elements, one of which was directly influenced by the depression, while the other was not affected to any appreciable extent. The sickness insurance fund statistics that were used in calculating the index of employment do not permit of a distinction being made between these two elements. If it were possible to work out the index of employment for mines and manufactures only it would certainly show much more marked fluctuations than those in the general employment index given in table XXI. With this one reservation the table may be taken as giving a satisfactory general picture of the economic development of Germany from 1925 to 1927.

DIAGRAM XX.—THE "RATIONALISATION" DEPRESSION IN GERMANY

(Average for 1925 = 100)



In the second quarter of 1925 it will be noticed that the volume of industrial production in Germany fell from month to month, although the number of wage earners in employment tended to rise. The output per head of those employed must therefore have been falling steadily. It fell from 106 in February and March 1925 to 94 in August of the same year.

Then came the rationalisation of production, with, as its first

consequence, the better organisation of work in industrial undertakings and the dismissal of superfluous workers. After allowing for winter unemployment, it will be found that the number of wage earners dismissed was about 2.5 millions in round figures, or between 12 and 13 per cent. of the total number employed [1]. At the same time the amount of work performed declined to an even greater extent because of the reduction of hours of work. It is true that these phenomena were accompanied by a decrease in the volume of production, but this decrease fell far short of the fall in the amount of work performed. Between the third quarter of 1925 and the month of April 1926 the index of industrial production fell by about 11 per cent., while the amount of work performed fell by 13 per cent. When it is remembered that some 6 or 7 million wage earners in non-industrial occupations were not affected by the depression, whereas the number of those employed in mining and manufacturing was cut down from 13 to 11 millions, it will be seen that the decrease in the amount of work performed in industry may be assessed at 20 per cent.

But the increase in individual output enabled industry to expand its sales and production beyond the previous level. In the summer of 1926 the number of persons in employment began to rise again. A year later their number was half a million higher than it had been before the depression. As a result of the reorganisation of industry, the output per head of those employed had risen by 24 per cent.

One special feature in the development of the " rationalisation depression " in German industry is worthy of note. When the depression began, recourse was had to shorter working hours before the dismissal of workers began. It would appear that the industrialists considered the decline in the amount of work as a temporary phenomenon, and therefore decided to distribute the available work over their existing staffs [2].

It will be seen in diagram XXI that the curve of short time rose a few months before the curve of complete unemployment in 1925. The two phenomena occurred in the same order within

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[1] The process of " weeding out " must therefore have been much more complete than might be imagined from the reports of the employment exchanges, which recorded an increase in unemployment of from 1.5 to 1.6 millions. The main reason for the difference between the two sets of figures is the fact that some of those who were temporarily thrown out of employment did not register with the employment exchanges.

[2] Cf. table XXII and diagram XXI, p. 87.

the various groups of occupations and branches of the economic system during this depression brought about by rationalisation [1].

TABLE XXII.—PERCENTAGE OF WORKERS ON SHORT TIME AMONG TRADE UNION MEMBERS IN GERMANY [1]

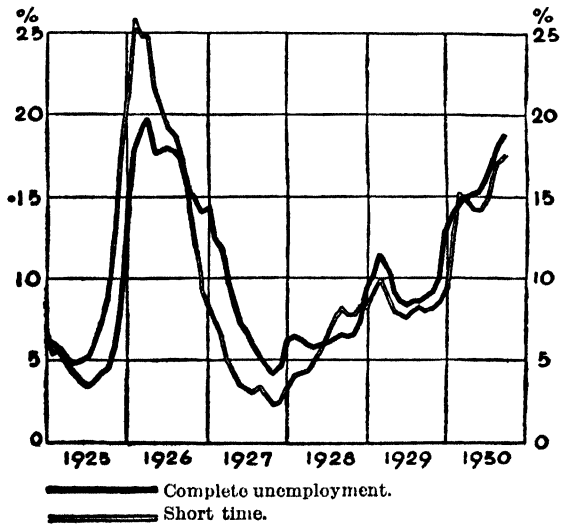
Cyclical group

Year	At the end of the month of :											
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1925	5.6	5.4	5.1	4.9	5.0	5.2	5.9	7.1	8.9	12.9	17.8	21.5
1926	25.8	24.9	24.9	21.4	20.4	19.2	18.8	17.2	14.5	11.6	9.5	8.3
1927	7.5	6.6	5.0	4.3	3.4	3.2	3.1	3.4	2.9	2.4	2.5	3.5
1928	4.1	4.2	4.3	5.0	5.8	6.8	7.5	8.1	7.7	7.7	8.2	8.1
1929	9.3	10.0	9.1	8.0	7.8	7.6	8.0	8.2	8.0	8.1	8.6	9.4
1930	12.6	15.1	14.7	14.3	14.1	14.8	16.3	17.1	17.5	17.8	18.5	19.5
1931	22.6	23.1	22.4	21.5	20.9	20.9	22.7	25.1	26.0	25.7	25.5	26.3
1932	26.7	26.5	26.6	25.8	26.1	26.1	26.7	26.9	26.3	26.1	25.6	26.4

[1] *Jahrbuch des Allgemeinen Deutschen Gewerkschaftsbundes*, 1931, *Statistischer Anhang*, p. 3. Only the figures for the "cyclical" group are given. In the "seasonal" group the amount of short time is negligible.

DIAGRAM XXI.—COMPLETE UNEMPLOYMENT AND SHORT TIME AMONG TRADE UNION MEMBERS IN GERMANY

Cyclical Group



[1] Cf. Wl. WOYTINSKY : "Arbeitslosigkeit und Kurzarbeit" in *Jahrbücher für Nationalökonomie und Statistik*, Series III, vol 79 (1931), pp. 13 *et seq.*

In 1929, on the other hand, the reduction in hours of work tended to come after the reduction in staff; the first reaction was to cut down staff, and it was only later that the idea of distributing the work over those who were still kept on was put into practice. The reason for this would seem to be that the heads of undertakings took quite a different view of the situation in 1929 from that taken in 1925.

It has since been asserted in many quarters that the rationalisation movement in German industry was of doubtful economic value; it has been described as "irrational rationalisation". It is true that the reorganisation and modernisation of production was the latest fashion in 1925-1926, and there is no doubt that some individual industrialists and some whole branches of production went too far in their efforts to be up-to-date. On the whole, however, the rationalisation movement achieved its aim, and by 1927 the German economic system had regained its equilibrium[1].

This conclusion is not invalidated by the fact that unemployment increased in Germany, as was mentioned above, from 1927 to 1929. This tendency existed before rationalisation brought on the depression. The average number of unemployed persons registered with the employment exchanges during the third quarter of the year (when seasonal unemployment is at its lowest) was as follows (in thousands):

1925	1926	1927	1928	1929	increase 1925-1929
458	(depression)	847	1,031	1,283	825

But during these four years there had been an influx of 1,433,000 new workers on the labour market, representing an increase of 350,000, or 1.8 per cent., annually. This rate was, it is true, more or less the same as before the war[2]. But conditions had changed, and the capacity of the German economic system to expand could not be the same as it had been at the beginning of the century, for example. It was able to absorb just over 600,000 of the new wage earners representing the younger generation; the remaining 800,000 went to swell the reserve army of labour.

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[1] There is no foundation for the view that Germany was able to overcome the depression in 1927 only by a lucky accident—the British coal strike. The field of industrial expansion after rationalisation was in production for the home market far more than in production for export.

[2] Cf. above, p. 29.

It is interesting to consider whither the further development of economic life in Germany might have led if its course had not been interrupted by the depression in the autumn of 1929. If it is assumed that nothing happened to check its normal course, it must follow that the demand for labour would have increased so as to provide employment for about 150,000 persons annually. For a country like Germany, that is a low figure, but it would, in a few years, have proved sufficient to relieve considerably the overcrowding on the labour market. It must be remembered that the small contingents of young persons born during the war years were just then reaching working age [1].

The German National Statistical Office had calculated the probable number of workers for the years 1929 to 1933 as follows (in thousands at the beginning of each year) :

1929	1930	1931	1932	1933
20,993	21,127	21,094	20,963	20,832

The labour force of the country was therefore expected to remain stationary, after having increased rapidly during the preceding period. As the supply of labour was therefore constant and the demand for labour was increasing, unemployment should have dwindled from year to year. On this assumption it may be calculated that the number of unemployed persons registered with the employment exchanges would have moved as follows (in thousands for the third quarter of each year) :

1929	1930	1931	1932	1933
1,283	1,270	1,100	830	550

But the depression upset all these calculations.

A study of employment in large and medium-sized industrial undertakings confirms the impression that the structural development of the German economic system before the depression had on the whole been healthy. The number of workers and salaried employees in employment in undertakings with five or more workpeople fluctuated as follows from 1926 to 1930 (in thousands):

	Industry [1]	Commerce and transport	Theatre, education, public health	Total
1926	7,583	1,134	166	8,883
1927	8,892	1,330	169	10,391
1928	9,099	1,425	185	10,709
1929	8,877	1,515	205	10,597
1930	7,523	1,470	213	9,206

[1] Including mining, manufactures, building and water, gas and electricity services.

[1] Cf. diagram I, p. 8.

Of the increase of 1,500,000 persons employed in large and medium-sized industrial undertakings from 1926 to 1927, industry in the wide sense absorbed 1,300,000, including 230,000 in the building trade. The following year the number of those in employment rose again by about 320,000. Then came a decline in 1929, marking the beginning of the depression.

It is of interest to consider the ratio of the volume of industrial production to the number of persons employed in these large and medium industrial undertakings. If 1928 = 100, the index numbers for the annual averages will be as follows :

	1926	1927	1928	1929
Persons employed in large and medium industrial undertakings (E)	83.3	97.7	100	97.5
Volume of industrial production (V)	80.8	101.1	100	100.4
Individual output $\left(100\frac{V}{E}\right)$	97.0	103.5	100	103.0

The period of intensive rationalisation had thus been followed by one of less rapid technical progress. If production had continued to expand steadily by 3 or 4 per cent. annually, the undertakings would have had to increase their staffs every year. It may therefore be concluded that the collapse of the German labour market cannot be attributed to the use of machinery; it was due to a decline in sales and in production.

The statistics of the employment exchanges (table XIX, p. 80) give only a faint impression of the extent of this collapse. According to them, the number of unemployed persons during the depression was only about 4.2 millions more than in 1928-1929. But in reality the situation was more serious, as can easily be seen from the fluctuations, from the beginning of 1929 onwards, in the number of wage earners in employment, as recorded by the sickness insurance funds. (Cf. table XXIII, 91.)

According to these statistics, the number of wage earners in employment fell from 18,638,000 in June 1929 to 12,779,000 in June 1932. As the total number of wage earners in Germany remained unchanged during this period, the only possible conclusion is that the number of unemployed persons increased by more than 5.8 millions, and not merely by 4.2 millions. The difference can be explained by the *invisible unemployment* that developed during the depression.

The lists compiled by the employment exchanges contain only the unemployed workers who have reported to the exchanges. So long as it pays the unemployed to report, and so long as they

have some prospect of obtaining work through the exchanges, the lists may be presumed to be more or less complete[1]. But the depression entirely disorganised both the labour market and the statistics of the employment exchanges. Unemployment benefit was reduced; relief was refused altogether to certain groups; the unemployed gradually lost all hope of finding jobs through the exchanges, and they came to feel that they must rely on their own efforts and trust to casual jobs to keep them alive. They therefore deserted the employment exchanges, and the number of unemployed persons who were not registered with the exchanges increased rapidly.

TABLE XXIII.—NUMBER OF WAGE EARNERS IN EMPLOYMENT IN GERMANY[1]

(In thousands)

Month	1929	1930	1931	1932	1933	1934
January	15,849	16,159	13,970	12,085	11,487	13,518
February	15,473	15,934	13,765	11,928	11,533	13,967
March	16,669	16,293	14,092	11,974	12,193	14,687
April	18,061	16,794	14,813	12,535	12,698	15,322
May	18,490	17,120	15,197	12,744	13,180	15,560
June	18,638	17,033	15,253	12,779	13,307	15,530
July	18,539	16,843	15,020	12,756	13,436	15,533
August	18,538	16,687	14,618	12,755	13,716	15,599
September	18,427	16,540	14,370	12,834	13,921	15,621
October	18,232	16,230	13,978	12,915	14,062	15,636
November	17,714	15,693	13,433	12,699	14,020	15,476
December	16,535	14,617	12,440	11,983	13,287	14,772

[1] From the statistics of the sickness insurance funds.

The only way to determine the real extent of unemployment in Germany is to apply the British method of calculation to the German statistics of the labour market. In British statistics the number of workers in employment is determined by calculating the difference between the total number of workers and the number of those who are unemployed or incapacitated by sickness. For Germany, it is possible to determine the number of unem-

[1] Complete agreement between the statistics of unemployment and those of workers in employment is possible only when, as in Great Britain, the two sets are compiled by the same organisations, which can thus from the outset adapt the various figures so as to ensure correspondence. Failing this, divergences are bound to arise, if only through differences in the interpretation of such terms as " wage earners ", " wage earners in employment ", " unemployed persons ", etc.

ployed persons by deducting from the total number of workers the number of those who were in employment or absent through sickness [1].

Table XXIV gives the results of this calculation for each quarter of the years under consideration.

TABLE XXIV.—VISIBLE AND INVISIBLE UNEMPLOYMENT IN GERMANY

(In thousands)

Dates	Number of wage earners	Distributed as follows			
		Absent through sickness or child birth	In employment	Unemployed	
				Registered with exchanges	Not registered with exchanges
1929					
January	20,993	1,197	15,849	2,933	1,014
April	21,026	778	18,061	1,712	475
July	21,060	779	18,539	1,251	491
October	21,093	802	18,232	1,557	502
1930					
January	21,127	887	16,159	3,218	863
April	21,119	718	16,794	2,787	820
July	21,111	718	16,843	2,765	785
October	21,103	654	16,230	3,252	967
1931					
January	21,094	1,007	13,970	4,887	1,230
April	21,061	674	14,813	4,358	1,216
July	21,028	631	15,020	3,990	1,387
October	20,995	609	13,978	4,623	1,785
1932					
January	20,963	712	12,085	6,042	2,124
April	20,930	586	12,535	5,739	2,070
July	20,897	522	12,756	5,392	2,227
October	20,864	540	12,915	5,109	2,298

But there is another form of invisible unemployment—short time. The German official statistics of employment and unemployment give no indications on this point, but they are supplemented in this respect by the trade union statistics, which show every month the percentage of trade union members in employment who are working short time. By applying this same percentage to the total number of wage earners in employment,

[1] Cf. Wl. Woytinsky: "Der deutsche Arbeitsmarkt in der Krise" in *Schmollers Jahrbuch*, 1933, pp. 415 *et seq.*

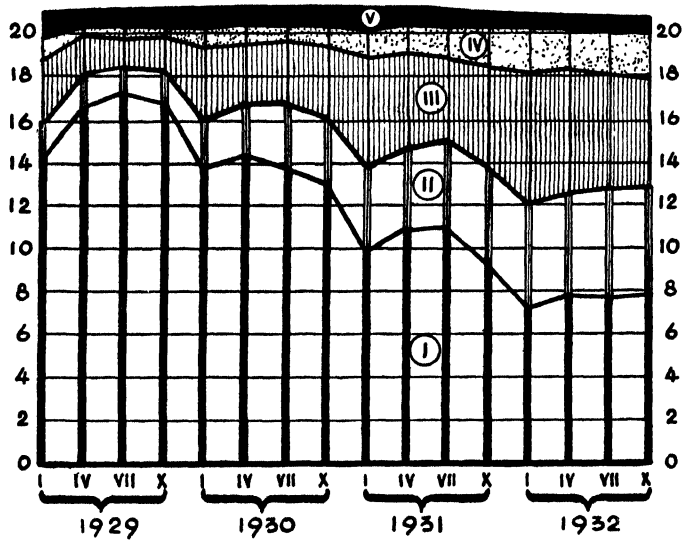
one can divide the latter into "full-time employed" and "workers on short time". In order to determine the total decrease in employment during the depression, all that remains to be done is to convert the short time figures into the corresponding number of full-time employed and unemployed wage-earners[1], and to place the number of completely unemployed persons thus obtained over against the total number of wage earners. The results of these calculations are given in table XXV. (Cf. diagram XXII, p. 94.)

TABLE XXV.—THE DECREASE IN EMPLOYMENT IN GERMANY DURING THE DEPRESSION

Dates	Unemployed	The workers in employment included (in thousands)		Conversion of short-time to complete unemployment gives (in thousands)	
		Full-time workers	Short-time workers	Full-time workers	Completely unemployed
1929					
January	3,947	14,232	1,617	15,445	4,351
April	2,187	16,724	1,337	17,713	2,535
July	1,742	17,223	1,316	18,171	2,110
October	2,059	16,865	1,367	17,863	2,428
1930					
January	4,081	13,961	2,198	15,588	4,652
April	3,607	14,308	2,486	16,098	4,303
July	3,550	13,980	2,863	16,303	4,090
October	4,219	13,065	3,165	15,387	5,064
1931					
January	6,117	9,961	4,009	12,767	7,320
April	5,574	10,873	3,940	13,749	6,638
July	5,377	10,905	4,115	13,868	6,529
October	6,408	9,198	4,780	12,640	7,746
1932					
January	8,166	7,263	4,822	10,632	9,619
April	7,809	7,684	4,851	11,080	9,264
July	7,619	7,641	5,115	11,252	9,123
October	7,407	7,871	5,055	11,579	8,754

[1] The method employed in this operation is the following: the trade union statistics of unemployment classify short-time workers according to their hours of work: less than 24 hours a week; from 24 to 32 hours; from 32 to 40 hours; from 40 to 48 hours a week. From this it is possible to calculate the average decrease in working hours per short-time worker (as a percentage of the normal 48-hour week: 6 hours = 12.5; 9.6 hours = 20, etc.). If the average decrease in working hours per short-time worker is 20 per cent., it may be concluded that 100 short-time workers = 80 full-time workers + 20 completely unemployed persons.

DIAGRAM XXII.—THE GERMAN LABOUR MARKET DURING THE DEPRESSION



I. Full-time workers.
II. Workers on short time.
III. Unemployed registered with exchanges.
IV. Invisible unemployment.
V. Temporarily incapacitated.

In this way, the total visible and invisible unemployment in the summer of 1932 is found to have been about 9 million completely unemployed persons (as against 2.1 millions in July 1929).

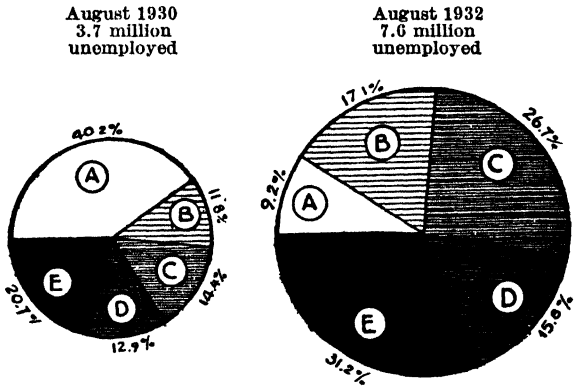
If the average for the year 1929 be taken as a basis (17,300,000 = 100), the index of employment during the depression will be found to have fluctuated as follows :

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average for year
1929..	90	87	94	103	105	106	105	105	105	103	100	93	100
1930..	91	89	91	93	95	94	94	92	91	89	79	79	90
1931..	74	73	75	80	82	82	80	77	75	73	64	64	76
1932..	62	61	61	64	65	66	65	65	66	67	62	62	64

As unemployment spread, the scope of the benefit paid by the State became, as was mentioned, more and more restricted. In August 1930, 40.2 per cent. of the unemployed were in receipt of benefit at the full statutory rate ("Alu"), 11.8 per cent. were in receipt of reduced emergency relief ("Kru"), and 14.4 per cent. had to depend on welfare offices ("Wc"). In August 1932, the proportion in receipt of ("Alu") benefits was only 9.2 per cent.;

("Kru") relief, 17.1 per cent.; assistance from welfare offices, 26.7 per cent. There was 47 per cent. of the unemployed who received no official relief of any kind.

DIAGRAM XXIII.—CLASSIFICATION OF UNEMPLOYED PERSONS IN GERMANY



A : Alu. B : Kru. C : We.
D : Unemployed persons registered with exchanges but not in receipt of relief.
E : Unemployed persons not registered with exchanges.

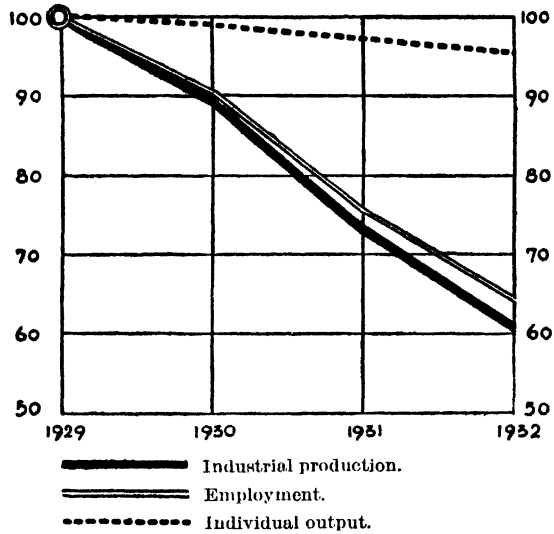
The index numbers of employment given above include not only wage earners and employees in industrial undertakings, but also those in commerce and transport, domestic service and the liberal professions. But in Germany as in other countries the real seat of the depression was in mines and manufactures, whereas in other branches the decline in employment had been but slight. It will therefore be clear that the index of employment in industry would fall even lower than that for the economic system as a whole.

Therein lies the explanation of the divergence between the index of employment and the index of production. During the depression the decline in German industrial production was more marked than the fall in the index number of employment as calculated above. But the divergence between the two is not really so very great; if the average for 1929 = 100, the index numbers will be as follows :

	1929	1930	1931	1932
Employment (E)	100	90.3	75.8	64.3
Industrial production (V)	100	89.7	73.3	61.0
Individual output $\left(100 \frac{V}{E}\right)$	100	99	97	95

DIAGRAM XXIV.—THE DEPRESSION IN GERMANY: EMPLOYMENT AND INDUSTRIAL PRODUCTION

(1929 = 100)



German statistics offer yet another means of determining the decrease in employment during the depression: the figures of the Reports on Industry *(Industrieberichterstattung)*, which are published monthly and indicate, for a series of typical undertakings and branches of industry, the number of workers actually employed as a percentage of the employment capacity of the undertaking or branch, and the number of hours actually worked as a percentage of the possible hours [1]. This method shows an even greater decline in employment than was estimated above. The hours actually worked, as a percentage of the possible hours, are given as being:

			Annual average	
	1929	1930	1931	1932
Percentage of employment	67.4	56.2	44.5	35.7
Index number (1929 = 100)	100	83.4	68.1	53.0

It should be noted that these statistics of the utilisation of plant are no substitute for direct statistics of the employment of labour. But they would appear to be really instructive for the period under consideration here, for one is entitled to assume

[1] " Employment capacity " is used here in a technical and not in an economic sense; it means the normal number of posts in the works. The number of " possible hours " is obtained by multiplying the normal number of posts by 48 (the normal working week).

that the *capacity* of the undertakings remained unchanged over this period. But one reservation must be made: these figures are based on selected specimen undertakings, and such a method is very unreliable in a period of flux. For the purpose of the present study, therefore, the index of employment calculated above will be preferred.

The apparent decline in individual output (from 100 to 95) is due in this case not so much to the disorganisation of production as to the fact that in a period of depression commercial and transport undertakings generally do not reduce their staffs to the same extent as industrial concerns.

The conclusion to be drawn from diagram XXIV is that *the decrease in employment in Germany was due to the decline in industrial production.*

Obviously this conclusion does not explain the phenomenon, for it merely substitutes one unknown (the cause of the economic depression) for another (the cause of the widespread unemployment). But it seems nevertheless to be an interesting conclusion.

The collapse of the German labour market occurred in quite a different way from the corresponding phenomenon in Great Britain and the United States. The way was not paved for it by a steady increase in structural or technological unemployment. Its causes were of a purely economic character [1].

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[1] The author has shown elsewhere (*Die 40-Stunden Woche*, Berlin, 1931, p. 218) that the army of unemployed persons in Germany in the spring of 1931 could be classified as follows:

Wage earners in search of work, registered with the employment exchanges	5,000,000
Unemployment concealed by short time	1,000,000
Total...	6,000,000

This total could be subdivided:

Normal unemployment, about	400,000
Seasonal „	800,000
Structural „	800,000
Cyclical „	4,000,000

No account has been taken here of invisible unemployment. The same calculation for the summer of 1932 would give these figures:

Unemployed persons registered with exchanges...	5,700,000
„ „ not registered with exchanges.	2,100,000
Persons working short time (converted to complete unemployment)	1,500,000
Total...	9,300,000

This total could be subdivided:

Normal unemployment, about	400,000
Structural „	800,000
Cyclical „	8,100,000

In both cases the estimate for structural unemployment is a maximum; no account has been taken of the absorption of this unemployment as a result of the decrease of the population.

About the middle of 1932 there was a revival of activity, and the number of unemployed persons began to fall steadily, while the number of wage earners in employment increased[1]. According to the official statistics, the situation developed as follows (in thousands):

	Wage earners in employment	Wage earners registered with employment exchanges
June 1932.....	12,779	5,476
„ 1933.....	13,307	4,857
„ 1934.....	15,530	2,481
Increase or decrease from June 1932 to June 1934	+ 2,751	— 2,995

In two years, the unemployment figure had fallen by practically 3 millions, but the number of wage earners in employment had risen by only 2 $^3/_4$ millions. The difference between these two figures proves either that invisible unemployment had increased by a quarter of a million during this period or that the total number of workers had decreased.

It is true that the increase in the number of wage earners in employment is due in part to a change in the method of compilation.

Since Germany began to feel the depression, the normal opportunities of employment in public or private undertakings have been supplemented by various forms of subsidiary employment offered to unemployed persons by the State or the local authorities in lieu of unemployment benefits. During 1929 and 1930, this subsidiary employment was not of very great importance : a few tens of thousands of unemployed persons were helped in this way during the summer months. As the work in question was in the building trade and did not differ from other work in that industry except that it was subsidised by the State, the workers employed on it were reckoned as wage earners in employment. In 1932, the voluntary labour service for young persons was introduced, but those who enrolled for such service were not counted as wage earners in employment. The total number of unemployed persons engaged in subsidiary employment in autumn 1932 was 440,000, of whom only 70,000 were shown in the monthly statistics of the insurance funds as being employed wage earners. In 1933 the labour service was greatly extended and was supplemented by a new form of subsidiary employment, hundreds of thousands

[1] Cf. tables XIX, p. 80, and XXIII, p. 91.

of unemployed persons being sent to the villages to help in agricultural work. According to the rule adhered to earlier, all these people should have been considered as unemployed. But this practice was abandoned in July 1933.

The following figures (in thousands) show how the consequent error can be eliminated [1] :

	Wage earners in regular employment	Wage earners in subsidiary employment	Officially counted as wage earners in employment
June 1929.....	18,810	100	18,910
„ 1930.....	17,100	40	17,140
„ 1931.....	15,180	130	15,250
„ 1932.....	12,730	180	12,780
„ 1933.....	13,100	530	13,310
„ 1934.....	15,010	800	15,530

The number of wage earners in regular normal employment increased, it will be seen, by 2,280,000 (or 17 per cent.) and not by 2,751,000 during the last two years of that period.

The proportion in which staffs were increased varied greatly from one branch of the economic system to another, being highest in industry. According to the *Industrieberichterstattung*, the number of workers in employment, expressed as a percentage of the employment capacity of the undertakings, developed as follows :

	Workers	Salaried employees
June 1932.....	41.8	61.2
„ 1933.....	46.5	60.3
„ 1934.....	59.6	68.6

These figures indicate an increase of 40 per cent. in the number of workers in employment, and 12 per cent. in the number of salaried employees. The average hours of work also rose :

June 1932.....	6.94 hours per day
„ 1933.....	7.26 „ „ „
„ 1934.....	7.46 „ „ „

The total amount of work performed must therefore have risen by more than 40 per cent. The degree of activity in industrial undertakings is shown to have improved to a still greater

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[1] *Wochenbericht des Instituts für Konjunkturforschung*, 1934, No. 36, p. 166. Berlin.

extent by the official index number of production, which rose as follows (average for 1928 = 100) :

August 1932 (lowest point)	June-July 1933	June-July 1934
58.5	70.0	89.1

In other words, production would appear to have increased by 52 per cent.

The discrepancy between these two percentages can hardly be attributed to an increase in the rate of individual output. It is due rather to certain inaccuracies in the figures used. The German economic system is undergoing a transformation, and the various branches are developing very unevenly during the transition period.

Under such conditions, great caution must be exercised in using index numbers that are based more or less on estimates or on a certain number of random samples.

France

France is one of the few countries in which the population has scarcely increased at all for several decades. The number of inhabitants was as follows :

1880	37.7	millions
1890	38.3	„
1900	39.0	„
1910	39.6	„
Increase from 1880 to 1910 ...	+ 1.9	millions

This insignificant increase of 0.17 per cent. annually on the average was due in part to immigration from abroad.

After the war the working population in France declined (in thousands) [1] :

	Men	Women	Total
1921	13,114.5	8,606.1	21,720.6
1926	13,556.3	7,837.8	21,394.1

[1] The decline in the number of women in the occupied population is a reaction after the war years. Many women who had not formerly held jobs were drawn into occupational activity during the war. After the war, some of these women returned to domestic tasks.

The number of foreigners who immigrated into France or who left the country again during this period was as follows (in thousands) :

	Foreign immigrants	Foreign emigrants
1921	80.1	62.5
1922	193.1	50.3
1923	273.5	60.0
1924	265.4	47.8
1925	176.3	54.4
1926	162.9	48.7
1921-1926	1,151.3	323.7

For five years, from the middle of 1921 to the middle of 1926, the excess of immigrants over emigrants was more than 700,000. Most of these went to swell the occupied population, being mainly workers in mines or in the building trades and especially agricultural workers from Italy and Poland. But for this influx of foreign workers, the occupied population of France would have fallen by about two million during these five years.

The number of persons employed in agriculture fell during the same period, in actual figures and relatively, whereas the number in industrial occupations (including mines) rose rapidly. On the eve of the depression, the population of France differed from those of the United States and Great Britain in that it was in course of rapid industrialisation.

TABLE XXVI.—CLASSIFICATION OF THE OCCUPIED POPULATION IN FRANCE BY ECONOMIC BRANCHES

Year	Total occupied population	Agriculture	Mines	Industry	Commerce and transport	Other occupations
	In thousands					
1921	21,721	9,024	318	6,181	3,592	2,606
1926	21,394	8,199	434	6,681	3,641	2,439
	In percentages					
1921	100.0	41.5	1.5	28.4	16.6	12.0
1926	100.0	38.3	2.0	31.2	17.1	11.4

This was the effect of the rapid expansion of French industry. The official index number of production in manufactures and mines moved as follows (1921 = 100) :

	1921	1922	1923	1924	1925	1926
Mines	100	114	136	160	178	194
Manufacturing industries	100	143	160	198	195	228

Individual output made great strides during the same period. On the basis of 1921 = 100, the index of output per head of occupied workers in 1926 was :

In mines	145
In manufacturing industries	211

It is true that this increase is due in the main to the reconstruction of the economic system, which had been disorganised by the war. But the return to normal conditions was accompanied by the rationalisation and bringing up to date of industrial undertakings. This is clearly brought out by the fact that the total volume of industrial production, including mining, in France in 1921 (within the present frontiers) was 45 per cent. below the 1913 level, whereas in 1926 it was 26 per cent. above that level.

But it must not be forgotten that in 1926 France was passing through a feverish period of inflation. In the following year there was a reaction (depression accompanying stabilisation), changing to a fresh upward trend in 1928.

In 1929 and into 1930, the country experienced great prosperity. In the second half of 1930 there was a slackening of activity in some branches of industry, but on the whole the economic situation was still very satisfactory, so that France was an oasis of prosperity in the desert of world depression. It was not until 1931 that it began to lose this favoured position. On the basis of 1913 = 100, the volume of industrial production (including mines) developed as follows from 1924 onwards :

1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934
109	108	126	110	127	140	140	124	96	107	99

In its years of prosperity, the French economic system had, as was mentioned above, to obtain the assistance of foreign labour. When the situation became worse, some of these foreign workers were sent out of the country—a method of protecting the national labour market that had proved very effective in dealing with the

depression incidental to stabilisation in 1927. The number of foreigners arriving in France in search of work since that time or leaving the country has varied as follows (thousands) :

	Immigrants	Emigrants
1927	64.3	90.0
1928	97.7	53.8
1929	179.3	38.9
1930	221.6	43.8
1931	102.3	92.9
1932	69.4	108.5
1933	74.6	49.0

The fact of using foreign labour during years of prosperity gives France considerable advantages in times of depression : as its reserve army of workers is kept outside the country, it can draw on it to the extent of its requirements at any given moment, without being responsible for the maintenance of the reserves it does not require—an appreciable relief in periods of depression. This accounts for the relatively small extent of unemployment in France.

French unemployment statistics show : *(a)* the number of unemployed persons in receipt of relief; *(b)* the number of applicants for employment for whom the communal employment exchanges could find no job. But as France has no unemployment insurance and does not make it compulsory to register with the exchanges, both sets of figures may contain serious lacunæ.

The relief provided by the communes and departments is governed by the Act of 19 April 1918 and its several amendments. The system is highly decentralised : the communes may, out of their own resources, supplement the prescribed rates of relief. They follow the principles laid down by the central authorities as regards the categories of persons entitled to relief, but they do not always interpret these principles uniformly. As unemployed workers must register with the employment exchanges in order to qualify for relief, the number of unplaced applicants for employment is always higher than the number of those in receipt of relief. But the relatively small difference between the two figures proves that unemployed persons who are not entitled to relief rarely register with the exchanges in the hope of finding a job. It also happens quite frequently that unemployed persons who could claim relief under the Act do not apply to the exchanges because they feel that a certain social humiliation attaches to the acceptance of relief.

For all these reasons, the official statistics can indicate the general trend of the development of unemployment in France, but not its exact extent.

TABLE XXVII.—UNEMPLOYMENT IN FRANCE

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
A. *Unplaced applicants* [1] *(in thousands)*												
1926	13	12	11	10	9	9	8	9	10	12	15	21
1927	36	93	89	73	56	37	30	29	28	26	27	28
1928	32	30	25	20	15	10	8	9	10	11	12	10
1929	12	13	11	10	9	9	9	8	9	11	12	11
1930	13	14	13	12	12	10	10	11	12	15	18	21
1931	37	56	68	70	61	54	50	53	57	68	107	165
1932	255	321	352	346	328	305	295	301	298	290	292	303
1933	353	370	350	345	308	282	270	264	252	261	287	345
1934	370	383	379	369	352	345	350	358	357	382	417	455
B. *Unemployed in receipt of relief* [2] (in thousands)												
1926	0.5	0.8	0.6	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.5	13
1927	56	81	75	58	40	24	17	15	13	8.6	10	13
1928	18	15	10	7.2	3.7	1.7	1.1	1.0	0.6	0.5	0.5	0.9
1929	1.7	3.5	1.1	0.7	0.6	0.4	0.4	0.4	0.4	0.4	0.6	0.8
1930	1.5	1.7	1.6	1.2	0.9	1.0	0.9	1.0	1.0	1.7	4.9	12
1931	29	41	51	50	41	36	36	38	39	56	92	147
1932	241	293	303	282	262	232	262	263	260	248	255	277
1933	316	332	314	310	277	252	240	234	227	233	258	313
1934	336	349	346	335	318	311	320	326	323	348	375	419

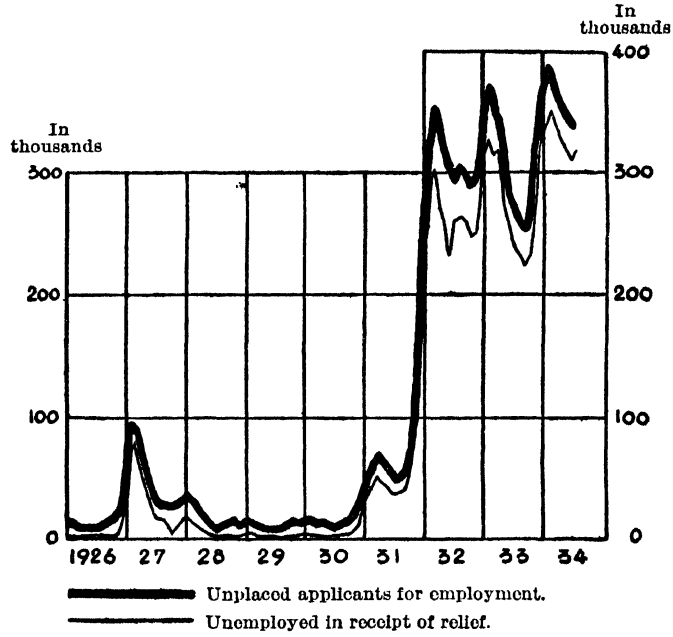
[1] Applicants for whom no employment was found within a week. From February 1927 onwards, these figures include unemployed persons in receipt of relief.
[2] Excluding those receiving relief from welfare offices.

The curve of unemployment in France [1] shows two unequal waves in the period 1926-1934 : the first, and shorter, one during the stabilisation depression of 1927, and the second, the longer one, beginning in 1931, rising rapidly in 1932, falling in the second half of 1933 and rising once more in 1934.

In comparison with the United States, Great Britain and Germany, France would appear to have suffered only moderately

[1] Cf. diagram XXV, p. 105.

DIAGRAM XXV.—UNEMPLOYMENT IN FRANCE



from unemployment. During the depression caused by stabilisation there were never more than 100,000 unplaced applicants for employment, and during recent years the figure only once (in winter 1934-1935) exceeded 500,000. When one thinks of the fluctuations in industrial production during the same period, these figures seem extraordinarily low. It was found above that the index of production for 1927 (average over the year) was 13 per cent. lower than the index for the preceding year. This fall in production should have meant a decline of from 500,000 to 600,000 in the number of wage earners employed in industrial undertakings, and the expulsion of some tens of thousands of foreign workers from France could scarcely make good this decrease. Notwithstanding this situation, the average number of registered applications for employment over the year was barely 35,000.

The figures for the last depression are still more surprising. The fall in the index of production from 140 on the average for the years 1929-1930 to 96 on the average for 1932 (1913 = 100)

should have been accompanied by a reduction of about 1.7 millions in the number of wage earners in employment. The decline in employment in non-industrial occupations should have further increased the number of those in search of work. It is of course true that the growth of unemployment was restricted by two facts : (1) the decline in immigration from 1931 onwards and the expulsion of foreign workers; (2) the arrival at working age of those born during the war years, when the birth rate was low. These two factors possibly reduced the number of applicants for employment by some 400,000 or 500,000. Even allowing for that correction, however, the divergence between the official unemployment statistics and the increase one would normally expect is too great.

An explanation of this discrepancy may be sought for in other statistics, more especially the statistics of employment compiled by the factory inspection service since 1931. They cover all establishments employing 100 persons or over in mining, manufacturing industry, commerce and transport. At the beginning of the depression these establishments employed about 2.5 million wage earners, of whom almost 90 per cent. were in mines and manufacturing industries. The statistics show, monthly : (1) the ratio of the number of wage earners in the various occupational groups to the corresponding number for the same month a year previously; (2) the percentage distribution of those in employment according to their hours of work.

The disadvantage of the employment figures of the factory inspection service is that the basis of comparison changes from month to month. For example, the number of wage earners employed in June 1932 was 86.6 per cent. of the number in employment in June 1931, and the number in September 1932 was 87.7 per cent. of the figure for September 1931. But that does not show whether employment increased or decreased from June to September 1932. To know that, one has to refer to the figures for the previous year. In this particular case, the figure for June 1931 was 93.5, and that for September 91.1. But 86.6 per cent. of 93.5 = 81.0, and 87.7 per cent. of 91.1 = 79.9. Thus employment fell from June to September 1932 as compared with 1930, but it is still impossible to state whether the employment figure in September 1930 was higher or lower than in June 1930. It is thus rather difficult to make use of these figures, but they can be simplified by reducing them all to a single basis of

comparison[1]. The level of employment for the corresponding month in 1930 has been selected as a base.

TABLE XXVIII.—INDEX NUMBER OF WAGE EARNERS EMPLOYED IN LARGE ESTABLISHMENTS IN FRANCE

(Number of wage earners for the corresponding month in 1930 = 100)

Beginning of month of :	1931	1932	1933	1934
January	96.3	83.0	78.3	77.7
February	95.3	81.3	77.9	77.3
March	94.6	80.9	78.3	77.0
April	94.1	80.1	78.7	76.7
May	94.0	80.8	78.9	76.8
June	93.5	81.0	79.1	77.1
July	92.8	82.0	80.9	78.4
August	92.2	80.5	80.1	77.0
September	91.1	79.9	79.5	76.2
October	90.5	78.6	78.5	75.1
November	88.9	80.3	79.9	76.1
December	87.4	80.5	79.5	75.0

The bases of comparison for the figures in table XXVIII are the various months of 1930. But unfortunately this is not a sufficiently sound basis, for there was a slight depression in French industry in the second half of that year, and industrial activity declined during that period as compared with the first half of the year. If the average for 1930 = 100, the index numbers of production throughout the year will be :

January	102.6	May	102.6	September	97.6
February	102.6	June	101.8	October	96.9
March	102.6	July	100.4	November	96.2
April	102.6	August	99.0	December	95.5

If it be assumed that employment in large establishments varied in more or less the same proportions as the volume of industrial production and that it was therefore about 7 per cent. lower at the end of the year than in spring, the index number of employment can be corrected as follows.

[1] All that has to be done is to multiply by each other the original figures for each month in successive years.

TABLE XXIX.—CORRECTED INDEX NUMBER OF WAGE EARNERS EMPLOYED IN LARGE ESTABLISHMENTS IN FRANCE

(Average for 1930 = 100)

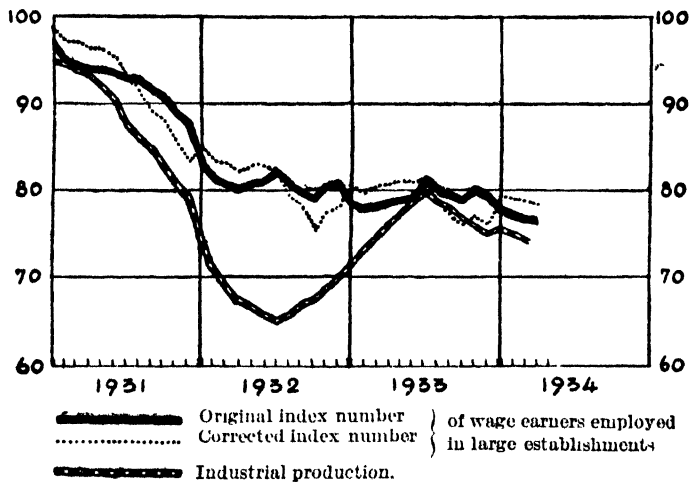
Beginning of month of :	1930 [1]	1931	1932	1933	1934
January	102.6	98.9	85.2	80.3	79.8
February	102.6	97.8	83.5	79.9	79.3
March	102.6	97.2	83.2	80.3	79.0
April	102.6	96.6	82.2	80.7	78.7
May	102.6	96.5	82.1	80.9	78.8
June	101.8	95.3	82.5	80.6	78.6
July	100.4	93.2	82.4	81.3	78.8
August	99.0	91.3	79.7	79.3	76.2
September	97.6	89.0	78.0	77.6	74.3
October	96.9	88.3	75.8	76.1	72.7
November	96.2	85.6	77.3	76.9	73.1
December	95.5	83.5	77.9	76.0	71.5

[1] Movement of industrial production.

Diagram XXVI shows the fluctuations in the two index numbers of employment calculated above (tables XXVIII and XXIX) together with the variations in industrial production over the same period.

DIAGRAM XXVI.—INDEX NUMBERS OF WAGE EARNERS EMPLOYED IN LARGE ESTABLISHMENTS AND OF THE VOLUME OF INDUSTRIAL PRODUCTION IN FRANCE

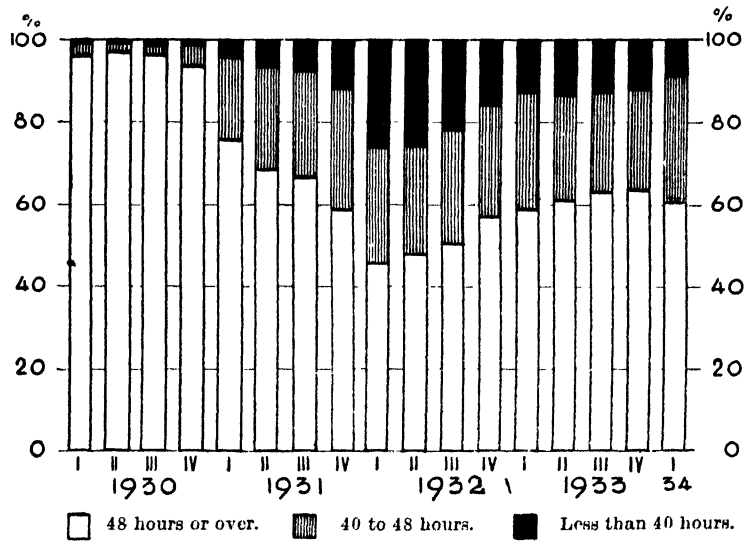
(Average for 1930 = 100)



The discrepancy between the corrected and the original index numbers is very slight, but the former does give a clearer idea of the change that took place in the second half of 1932. The difference between the two employment curves on the one hand and the production curve on the other is very significant. During 1931 and the first half of 1932 production dropped to a far greater extent, proportionally, than the number of wage earners employed; the increase in production in the second half of 1932 and the first half of 1933, on the other hand, did not bring with it any appreciable improvement in employment.

This divergence cannot be explained away by a possible error arising out of the difference in the methods of calculation employed or the fact that the field of observation was not exactly the same in the two cases. This is another example of the phenomenon already noted in the case of Germany and the United States : the spread-over of employment.

DIAGRAM XXVII.—CLASSIFICATION OF PERSONS EMPLOYED IN LARGE ESTABLISHMENTS IN FRANCE BY HOURS OF WORK



It is interesting, in this connection, to note the information collected by the factory inspection service concerning the extent of short time (Cf. table XXX, p. 110, and diagram XXVII above).

TABLE XXX.—SHORT TIME IN LARGE ESTABLISHMENTS IN FRANCE

Quarter	Percentage of wage earners working			Index number of average hours of work [1]		Index of amount of work performed[1]
	48 h. or over	40 to 48 h.	Less than 40 h.	48 h. = 100	Average for 1930 = 100	Average for 1930 = 100
1930						
I	96.5	3.3	0.2	99.6	100.0	102.6
II	97.0	2.8	0.2	99.7	100.1	102.4
III	96.6	2.9	0.5	99.6	100.0	99.0
IV	94.5	5.0	0.5	99.4	99.8	96.0
1931						
I	75.7	20.0	4.3	96.7	97.1	95.0
II	68.8	25.1	6.1	95.7	96.1	92.3
III	66.7	26.0	7.3	95.2	95.6	87.2
IV	58.8	29.5	11.7	93.5	93.9	80.6
1932						
I	45.3	28.9	25.8	89.4	89.8	75.4
II	47.8	26.9	25.3	89.8	90.2	74.4
III	50.5	27.7	21.8	90.7	91.1	72.9
IV	57.3	27.3	15.4	92.6	93.0	71.8
1933						
I	59.3	28.1	12.6	93.4	93.8	75.2
II	61.0	26.0	13.0	93.5	93.9	75.8
III	63.6	23.6	12.8	93.8	94.2	74.8
IV	63.6	24.5	11.9	94.0	94.4	72.2
1934						
I	60.1	31.2	8.7	93.8	94.2	74.8
II	58.3	28.2	13.5	92.5	93.2	73.3
III	55.1	29.4	15.5	91.7	92.1	70.4
IV	53.5	30.6	15.9	91.5	91.9	66.5

[1] Calculated by the author.

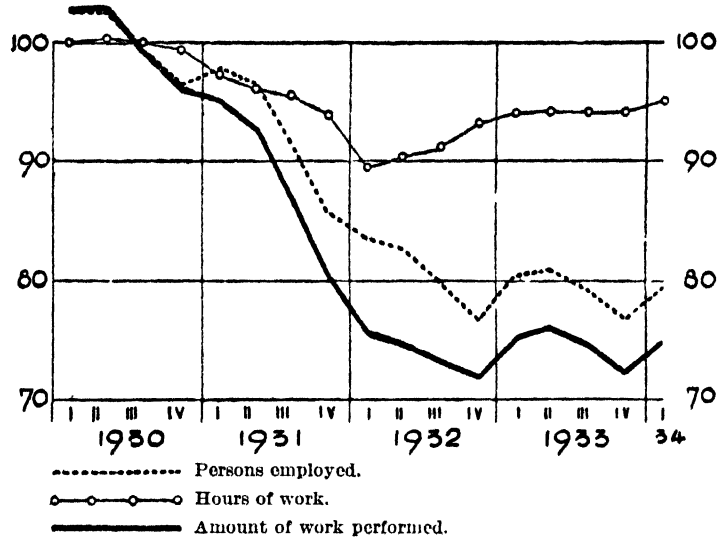
As a result of the extension of short time, the average hours of work in the first quarter of 1932 was 10 per cent. below the average for 1930. As the number of wage earners in employment at that time had fallen by about 16 per cent., the total decrease in the amount of work performed may be estimated at 25 per cent.

But in the second half of 1932, with the first signs of a revival in economic activity, hours of work became longer again, so that in the spring of 1933 the undertakings were able to increase

production without adding to their reduced staffs. The curves in diagram XXVIII show the simultaneous fluctuations in the numbers of persons employed and in hours of work.

DIAGRAM XXVIII.—EMPLOYMENT IN LARGE ESTABLISHMENTS IN FRANCE : INDEX NUMBERS OF PERSONS EMPLOYED, HOURS OF WORK AND AMOUNT OF WORK PERFORMED

(Average for 1930 = 100)

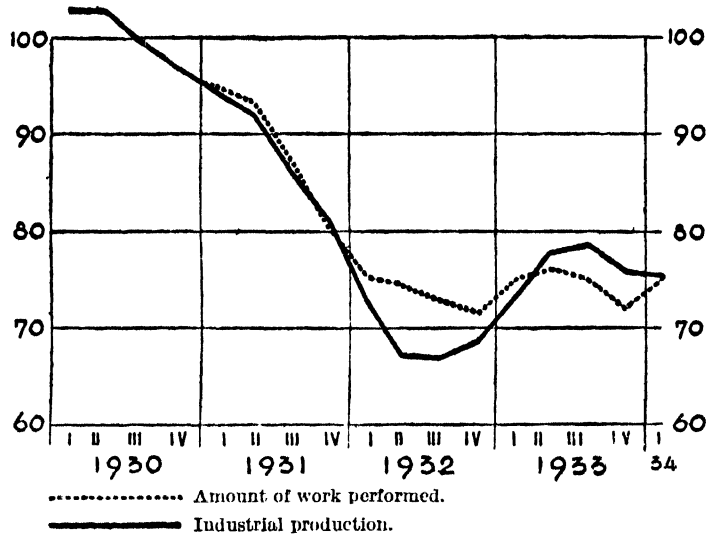


The index number of the amount of work performed agrees on the whole with the index of production. The only notable divergence is in 1932, when the decrease in the amount of work as compared with 1930 was 27 per cent. (average for the year), whereas industrial production had fallen by 31 per cent. This difference is due in part to the fact that the figures compiled by the factory inspectorate include commerce and transport, in which market fluctuations are less acutely felt than in industry. The average fall in the amount of work performed over the year 1932 was only about 10 per cent. in commerce and transport as against 29 per cent. in industry. In the later phase of the depression, industry employed more workers, while commercial and transport undertakings continued to reduce staff. The gap between production and employment figures therefore narrowed, so that the curves of the two index numbers meet in the first

quarter of 1934 at a point 25 per cent. below the average level for 1930. It may be concluded that the hourly output per person did not vary during the period under consideration.

DIAGRAM XXIX.—INDUSTRIAL PRODUCTION IN FRANCE: INDEX NUMBERS OF PRODUCTION AND OF THE AMOUNT OF WORK PERFORMED IN LARGE ESTABLISHMENTS

(Average for 1930 = 100)



From what has been said above, two conclusions can be drawn concerning the origin of unemployment in France:

(1) Neither during recent years nor earlier was there any real overcrowding on the French labour market as a result of the influx of new members to the occupied population.

(2) Machinery did not supplant human labour. During the most prosperous periods, when the output per head was rising extremely rapidly, the demand for labour exceeded the supply; industrial expansion forced the country to depend to an increasing extent on foreign labour. Unemployment on a large scale developed only at a time when technical progress was at a standstill.

Unemployment in France is therefore due to one single cause : *the slackening of production as a result of the decline in sales.*

One point remains to be considered : the absolute extent of unemployment in France. The results of the 1926 census may be taken as a basis for estimating this.

That census showed that there were in France 12 1/4 million workers and salaried employees in all, distributed over various groups as follows [1] (in thousands) :

	Men	Women	Total
Agriculture, fishing, forestry	1,712	669	2,381
Mining and manufacturing industry.	3,916	1,392	5,308
Commerce and transport	1,483	514	1,997
Liberal professions	167	194	361
Personal and domestic service	128	667	795
Public services	949	216	1,165
Total ...	8,355	3,652	12,007
Unemployed	169	74	243
Grand total...	8,524	3,726	12,250

In 1926, when the official statistics showed about 10,000 unplaced applicants for employment, there were 240,000 unemployed wage earners in France. This is probably the normal level of " invisible " unemployment in that country.

On the eve of the depression the number of wage earners was practically the same as in 1926 : 5.3 to 5.4 millions in industry and about 2 millions in commerce and transport. These were the two groups of wage earners that suffered most severely from the decline in employment.

The fall of over 31 per cent. in production should, as has just been seen, have led to the dismissal of 1.7 million workers, but the extension of short time proved a substitute for some of this reduction of staff [2]. The reduction in the average hours of work, saved some 500,000 workers from dismissal.

In commerce and transport, on the other hand, there was scarcely any recourse to short time, but the decline in employment was less marked than in industrial occupations : staffs were cut down by about 10 per cent. only, representing the dismissal

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[1] *Annuaire statistique 1933*, Paris, 1934, p. 138.

[2] There were at that time in France between 3.5 and 4 million workers on short time, as against about 3 million full-time wage earners.

of some 200,000 wage earners. To this must be added the dismissals from other branches of the economic system, but they were not very numerous.

But for the various factors that restricted its extent, unemployment would probably have reached the figure of 2.2 millions in 1932, distributed as follows :

Normal unemployment before the depression	240,000
Decrease in employment in industry	1,700,000
,, ,, ,, in commerce and transport	200,000
,, ,, ,, in other occupations	60,000
Total...	2,200,000

The reduction in hours of work enabled 500,000 of these workers to be kept on; the total number of wage earners fell at the same time by about 400,000 or 500,000. There would therefore be 1.3 million wage earners actually unemployed.

In 1932, then, " visible " unemployment represented only a fraction of the whole drop in employment. During the following phase of the depression the situation changed somewhat, and the comparative number of officially registered unemployed persons increased.

Italy

Before the war Italy was in the forefront of the countries that suffered from a surplus population and were obliged to send their sons abroad. The number of emigrants (in thousands) was :

1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	Total 1904-1913 :
252	447	512	416	239	399	403	263	405	560	3,896

These figures, it must be remembered, include the seasonal workers who went every summer to work abroad, returning home for the winter. But there were also large numbers of emigrants who left Italy for good, thus relieving the labour market of the country to a very appreciable extent.

During the war emigration ceased, but this did not cause an excessive supply of labour, since more than 5 million persons had been mobilised. Subsequently, Italy's war losses—500,000

killed and a million wounded—counterbalanced the stoppage of emigration, so that when peace came there was no overcrowding on the labour markets.

Demobilisation in Italy was accomplished as easily as in the other belligerent countries, but the economic system of the country required some little time to adapt itself to the new post-war conditions. The severe slump of 1921-1922 was followed by a boom period that continued until 1926. Progress slackened off before the approach of the depression, which, however, was not felt in Italy until some little time later than in Germany and the United States.

The growth of unemployment has been a feature of Italian economic development since the war.

TABLE XXXI.—UNEMPLOYMENT IN ITALY: UNPLACED APPLICANTS FOR EMPLOYMENT [1]

(In thousands)

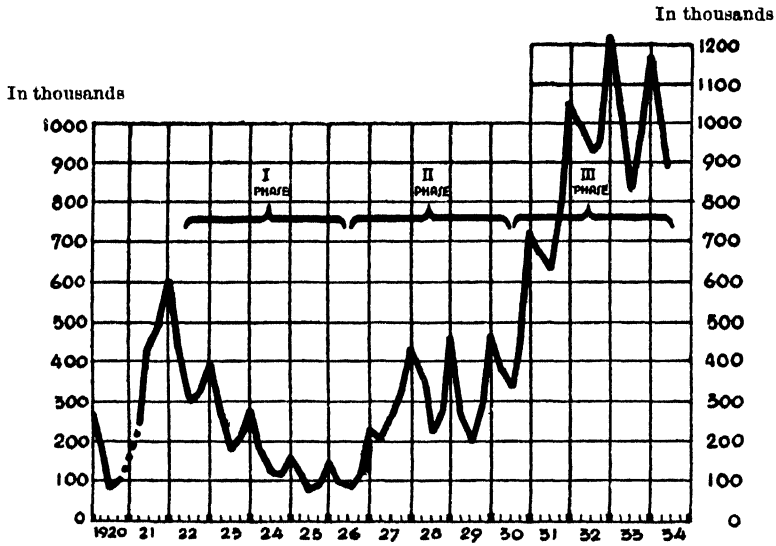
Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
920	270	262	235	202	115	106	88	93	116	101	107	102
921	—	—	—	250	—	389	435	471	473	492	512	542
922	607	576	499	432	410	372	304	318	313	321	354	382
923	392	328	281	270	244	216	183	179	181	200	225	259
924	281	259	219	177	156	131	118	119	116	117	136	150
925	156	157	143	127	101	86	80	72	83	86	112	122
926	156	126	109	98	98	83	80	83	89	113	149	181
927	225	259	228	215	216	215	263	292	306	332	376	414
928	439	413	412	357	307	247	234	248	269	282	321	364
929	462	489	293	258	228	193	202	217	229	297	333	409
930	466	457	385	372	367	322	342	376	395	446	534	642
931	723	765	707	670	635	574	638	693	748	800	878	982
932	1,051	1,148	1,053	1,000	968	905	931	946	949	956	1,039	1,130
933	1,225	1,229	1,082	1,026	1,000	884	824	889	907	963	1,066	1,132
934	1,158	1,104	1,057	996	941	831	887	867	887	905	970	962

The figures in table XXXI are taken from the official estimates, compiled from various sources. The hods of calculation have varied many times during the period under consideration, and the figures different years are therefore not on a uniform basis. When the powers of the communal employment hanges were limited in 1922 and 1923, the figure compiled by them fell, and the number of unemployed sons for the years 1924-1926 is therefore underestimated as compared with the preceding years. Again, figures for recent years do not include all the unemployed persons in the country. Indeed it may be nitted that, for a variety of reasons, a certain number of permanently unemployed persons have not istered with the employment exchanges during this period. Subject to these reservations, there can no doubt that the Italian statistics reflect faithfully the general course of employment in the country.

In the curve in diagram XXX—based, for the sake of simplicity, on the quarterly and not on the monthly figures in

table XXXI [1]—it is possible to distinguish three successive phases in the evolution of the Italian labour market since 1921.

DIAGRAM XXX.—UNEMPLOYMENT IN ITALY : UNPLACED APPLICANTS FOR EMPLOYMENT



1st phase (1922-1926) : Economic recovery; unemployment falls.
2nd phase (1926-1930) : Expansion stops; unemployment increases slowly.
3rd phase (1930-1934) : Depression; widespread unemployment.

Before going on to study these three phases more closely, it should be noted that, quite apart from the inexactitudes resulting from changes in methods of calculation or compilation, the Italian statistics do not cover all the unemployed workers. The data concerning unemployment in agriculture are particularly defective. It is generally difficult to register such unemployment accurately in statistics, and the task is made still more difficult in Italy because there are hundreds of thousands of small peasant proprietors who also work as wage earners on the estates of large landowners. The sources of error in the official unemployment statistics may be reduced by excluding agriculture and separating the unemployed in industry from those in other occupations.

[1] Taking the first month of each quarter.

TABLE XXXII.—UNEMPLOYED IN ITALY
BY OCCUPATIONAL GROUPS [1]

(In thousands)

Year	Total number of unemployed persons [2]	Agriculture	Industry	Other occupations [3]
1921	376.0	92.8	241.3	41.9
1922	455.3	121.6	279.4	54.3
1923	285.3	62.3	175.6	47.4
1924	198.2	50.1	110.1	38.0
1925	110.3	20.6	62.1	27.6
1926	113.9	24.4	64.9	24.5
1927	278.5	75.6	172.3	30.6
1928	324.4	80.3	209.2	34.9
1929	300.8	89.5	177.4	33.9
1930	425.4	103.5	267.3	54.6
1931	734.5	165.8	479.2	89.5
1932	1,006.4	201.9	679.4	125.1
1933	1,019.0	213.4	702.6	103.0
1934	963.7	187.0	669.5	107.2

[1] *Annuario Statistico Italiano*, 1927-1933. Sindacato e Corporazione, Vols. LVIII and LXIII.
[2] For the years 1921, 1922, 1923 and 1924, the figures represent the average of the two months in which unemployment was at its highest and its lowest in each of these years. These figures are generally slightly higher than the average for the years in question.
[3] Public services, commercial establishments and private transport undertakings.

The development of unemployment must now be compared with the growth of the population during the same period.

The population of Italy increased from 38.7 millions in 1921 to 41.2 millions in 1931—an increase of 6.5 per cent. The rate of growth is about the same as before the war. The population of working age increased more rapidly than the total population. The number of persons between the ages of 15 and 65 years in Italy rose as follows (in thousands):

	1921	1931	Increase
Men	10,904	11,772	+ 8.0 %
Women	11,559	12,708	+ 9.9 %
Total...	22,463	24,480	+ 9.0 %

One might expect the occupied population to increase more rapidly than the total population but less rapidly than the middle age groups [1]. On this point the results of the Italian

[1] It was to be expected that the number of women in employment would rise more slowly or even that the number would fall, since the proportion of women in employment in 1921 must be considered unduly high (a relic of the war years).

census of 1931 are surprising. The number of persons found to be engaged in occupational activity was (in thousands):

	1921	1931	Increase or decrease
Men	13,154	13,369	+ 1.6 %
Women	5,276	3,903	— 26 %
Total...	18,431	17,272	— 6.3 %

Cf. table XXXIII.

The results of the two censuses as regards agriculture are not comparable, as they obviously rest on different interpretations of the term " occupation ". But the development of the non-agricultural population of Italy during this period is sufficiently clearly brought out by the census figures. The number of persons occupied in industry (including mines) rose by 14.6 per cent., and the number of those in commerce and transport by 16.9 per cent.

TABLE XXXIII.—DISTRIBUTION OF THE OCCUPIED POPULATION IN ITALY [1]

(In thousands)

Year	Total	Agriculture, hunting, fishing	Mines and manufactures	Transport, commerce, finance	Public services, liberal professions, etc.
1921					
Men	13,154	7,147	3,309	1 647	1,051
Women	5,276	3,117	1,250	250	659
Total...	18,431	10,264	4,560	1,897	1,710
1931					
Men	13,369	6,630	3,972	1,897	870
Women	3,903	1,539	1,252	320	792
Total...	17,272	8,169	5,224	2,217	1,662

[1] *Annuario Statistico Italiano*, 1927, p. 27, and 1934, p. 13.

The natural increase in the occupied population exceeded the power of absorption of the urban labour markets, and a considerable fraction of the new members of the occupied population had to seek work abroad.

TABLE XXXIV.—ITALIAN EMIGRATION AND IMMIGRATION

(In thousands)

Year	Emigration			Immigration			Excess of emigration
	Intercontinental migration	Continental migration	Total	Intercontinental migration	Continental migration	Total	
1921..	117	84	201	94	30	124	77
1922..	126	156	282	55	56	111	171
1923..	185	205	390	40	79	119	271
1924..	125	239	364	65	107	172	192
1925..	102	178	280	67	122	189	91
1926..	122	141	263	71	106	177	86
1927..	136	92	228	73	67	140	88
1928[1].	71	80	151	50	49	99	52
1929..	62	88	150	44	65	109	41
1930..	59	221	280	47	82	129	151
1931..	41	125	166	43	64	107	59
1932..	25	59	83	34	39	73	10
1933..	22	61	83	26	40	66	17
1934..	26	42	68	21	29	50	18

[1] From 1928 onwards the figures include only persons emigrating in search of employment abroad.

During the ten years from 1921 to 1930 the excess of emigration from Italy was 1,220,000 persons—a figure that is higher than the whole increase, from one census to another, in the number of persons engaged in urban occupations. It is true that up to 1927 the emigration figures include persons not engaged in any occupational activity, but even when allowance is made for that fact the excess of emigration over immigration may be estimated at about a million of the occupied population. But for the safety valve of emigration and for the crisis, the increase in the number of persons trying to earn a living in urban occupations would probably have been not $1\frac{1}{4}$ but $2\frac{1}{4}$ millions (30 per cent.).

The development of the occupied population in Italy (apart from agriculture) may therefore be considered as the resultant of two forces acting in opposite directions :

(1) The influx of new members to the occupied population as a result of the natural increase in population, together with the drift of workers from the country to the towns in search of work : altogether $2\frac{1}{4}$ million persons in ten years;

(2) Emigration, which removed a million persons during the same period.

The first of these factors was more or less steady (+ 230,000 persons annually); the second fluctuated from year to year.

The proportion of the occupied population (excluding agriculture) belonging to industrial occupations was practically the same at the two census dates : 56 per cent. in 1921 and 57 per cent. in 1931; it may therefore be presumed that it did not vary much in the interval. The development of the occupied industrial population of Italy may therefore be estimated as follows :

TABLE XXXV.—ESTIMATED OCCUPIED POPULATION OF ITALY [1]

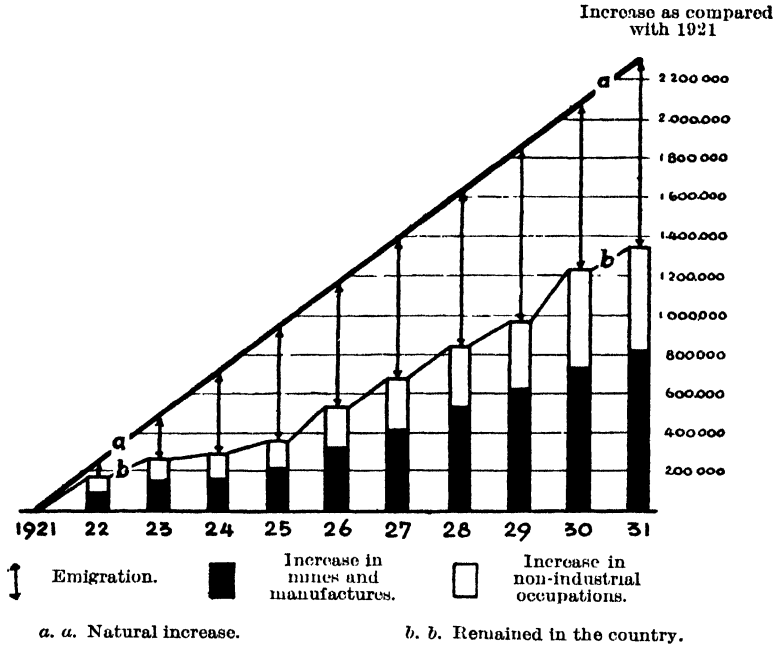
(In thousands)

Year	Total occupied population, excluding agriculture	Occupied population in mines and manufactures
1921	8,020	4,490
1922	8,190	4,590
1923	8,270	4,640
1924	8,250	4,650
1925	8,310	4,700
1926	8,470	4,800
1927	8,630	4,900
1928	8,790	5,000
1929	8,990	5,120
1930	9,200	5,240
1931	9,300	5,310

[1] Cf. diagram XXXI, p. 121.

But allowance must be made for the fact that these figures include, in addition to wage earners, employers and independent craftsmen, who are of no account from the point of view of the labour market. It would therefore be necessary to know the proportion of wage earners in the total occupied industrial population of Italy in 1921 and succeeding years. The 1931 census puts the proportion of workers (including apprentices) in the occupied industrial population at 75.6 per cent. This ratio seems higher than would have been expected from the statistics of other countries. It may possibly be a consequence of the depression. In any case, the figure must be accepted.

DIAGRAM XXXI.—GROWTH OF THE OCCUPIED POPULATION IN ITALY (EXCLUDING AGRICULTURE)



If that ratio is applied to the figures in table XXXV it becomes possible to assess the number of dependent persons available for employment in Italian industry each year. By deducting from these figures the number of unemployed and temporarily incapacitated persons [1] in industrial occupations, one is left with the number of those actually employed in industry [2].

It is obvious that employment figures calculated in this way cannot claim to be completely accurate. They are probably rather high. More exact figures could be obtained by making allowance for the inevitable gaps in the unemployment estimates and increasing the official statistics in question by a certain

[1] In accordance with the British method, the number of persons temporarily incapacitated by sickness is taken as being 4 per cent. of the number of wage earners who are not recorded as being unemployed.

[2] Cf. table XXXVI, p. 122.

percentage. In table XXXVI it is assumed that the official statistics register about 80 per cent. of the unemployed persons in industrial occupations.

TABLE XXXVI.—ESTIMATED NUMBER OF WAGE EARNERS IN EMPLOYMENT IN ITALIAN INDUSTRY

(In thousands)

Year	Total number of wage earners (S)	Unemployed persons (Ch)	Temporarily incapacitated by sickness	Wage earners in employment (E)
1921	3,394	304	108	2,982
1922	3,470	352	109	3,009
1923	3,508	222	115	3,171
1924	3,515	139	118	3,258
1925	3,553	78	122	3,353
1926	3,629	82	124	3,423
1927	3,704	217	122	3,365
1928	3,780	255	123	3,402
1929	3,871	223	128	3,520
1930	3,961	336	127	3,498
1931	4,014	607	119	3,288

The margin of error in these calculations can be considerably reduced by using index numbers in place of the absolute figures. These index numbers can then be compared with the index of production so as to determine, by the usual formula, the development of individual output.

Year	Number of wage earners in industry [1] (S)	Number of wage earners in employment [2] (E)	Volume of production [3] (V)	Individual output $100\ T = 100\frac{V}{E}$
1921	100	90.8	100	110.1
1922	102.3	91.5	111	121.3
1923	103.3	96.5	118	122.3
1924	103.4	99.2	134	135.1
1925	104.4	102.0	150	147.1
1926	106.7	104.5	167	159.8
1927	108.9	102.4	156	152.3
1928	111.3	103.5	166	160.4
1929	114.0	107.1	180	168.1
1930	116.7	106.4	167	157.0
1931	118.5	100.0	141	141.0

[1] Not including those absent through sickness.
[2] S = 100 for 1921.
[3] Index number of the "Institut für Konjunkturforschung", Berlin.

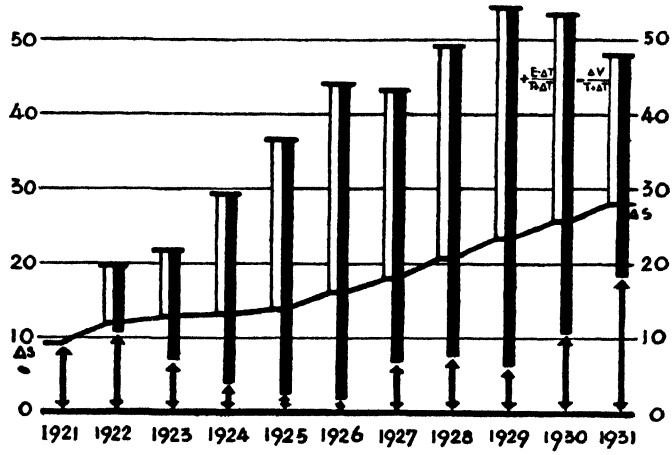
It will thus be seen that the number of wage earners in Italian industry and their output per head both rose rapidly and steadily.

But the economic expansion of Italy during these years must not be considered merely as post-war reconstruction. Italy had not suffered very severely economically during the war, and its situation at the beginning of the observation period was comparatively favourable [1]. As early as 1922, industrial production in Italy was above the 1913 figure, and in 1923 the output per head of the population was also higher than before the war.

But this period of prosperity was of short duration. In 1927, as was mentioned above, the increase in unemployment foreshadowed the coming of the depression [2]. There was a slight improvement in 1929, but in the following year unemployment again spread rapidly.

DIAGRAM XXXII.—DEVELOPMENT OF UNEMPLOYMENT IN ITALIAN INDUSTRY

(S and V for 1920 = 100)



One of the outstanding traits of Italian economic development after 1926 was the considerable fluctuations in the volume of industrial production, accompanied by parallel fluctuations in individual output (spreadover of employment, overtime to meet rushes of orders, short time in slack periods). During this time

[1] In 1921, industrial production was 33 per cent. below the 1913 level in Germany, 32 per cent. in Great Britain and 46 per cent. in France, whereas in Italy it had fallen by only 3 per cent.

[2] Cf. table XXXI, p. 115 and diagram XXX, p. 116.

dismissals of workmen on account of machinery were not particularly frequent, but industry, which had lost its power of expansion, was no longer able to absorb the additions to the occupied population.

With regard to the evolution of the Italian labour market in more recent years, official statistics show that unemployment reached its peak in the spring of 1933, when about 1.2 million workers were unemployed. The average for 1932 was slightly lower—about 1 million as against 300,000 in 1929. The number of unemployed persons had increased by 500,000 in industrial occupations, by 110,000 in agriculture and by 90,000 in urban non industrial-occupations [1].

At first sight these figures appear very low, and it will be well to check them by reference to other statistical sources of information.

Emigration from Italy practically ceased after 1930, and the influx of new persons in search of employment from that time onwards was determined solely by the natural growth of the population. During the depression the influence of the war years on population began to be felt : the decline of some 400,000 in the annual number of births during the war meant a decrease of almost 200,000 in the number of persons entering occupational life every year from 1931 to 1934.

The stream of workers from the country to the towns also dried up during the same period. Perhaps there was even—partly under the pressure of administrative measures—a return movement of unemployed persons towards the villages. In any case, the number of wage earners in industrial occupations did not increase during the depression, but would seem rather to have declined.

During this period some of those who were previously in employment must have been dismissed in consequence of the fall in production. Their number may be determined with the aid of the index numbers of employment, of which two exist in Italy : the first, compiled by the Ministry of Corporations, covers some 6,500 large establishments that employed about a million wage earners in 1926; the second, compiled by the General Fascist Confederation of Industry, has the advantage of including all industrial undertakings.

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[1] Cf. table XXXII, p. 117.

On the basis of 1929 = 100, the number of wage earners in employment in Italian industry varied as follows [1]:

Average for year	Index of Ministry of Corporations	Index of Confederation of Industry
1929	100	100
1930	93.0	97.3
1931	81.2	88.6
1932	70.5	78.5
1933	71.4	79.4

The difference between the two series proves that large-scale industry felt the influence of market fluctuations more keenly than did industry as a whole. In trying to estimate the actual number of unemployed persons, therefore, it is preferable to use as a basis the index of the Confederation of Industry,

The data published by the Confederation of Industry also show to what extent the total amount of work performed decreased as a result of reductions of staff, the abolition of overtime and the extension of short time. The number of hours worked in industrial undertakings is shown by the following index:

1929	1930	1931	1932	1933
100	94.2	83.8	72.4	73.9

This corresponds quite closely to the fall in the volume of production. Two commonly used index numbers of industrial production in Italy are given below:

	Ministry of Corporations [1]	Institut für Konjunkturforschung, Berlin [2]
1929	100	100
1930	92	92
1931	78	83
1932	67	74
1933	74	78

[1] Thirty-two series of figures, including 9 for the textile industry, 11 for the heavy metal industry, 6 for mechanical engineering, etc.

[2] Forty-six series of figures, including 15 for mines, 6 for food and drink trades, 8 for the heavy metal industry, 5 for the textile industry, 14 for the chemical industry, etc. (*Cf. Vierteljahrshefte zur Konjunkturforschung*, special number 31.)

The figures of the Confederation of Industry for the hours actually worked fall, as will be noticed, between the two index numbers of production; this confirms their accuracy. Moreover, the fact that the number of those employed in industrial under-

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[1] *Bollettino Mensile di Statistica dell' Istituto Centrale di Statistica del Regno d'Italia.*

takings fell by 21.6 per cent. from 1929 to 1932 means that nearly 800,000 wage earners must have been dismissed.

This figure is only 300,000 higher than the increase in the number of unemployed persons in industrial occupations as given by the official unemployment statistics [1]. The divergence can be explained in part by the fact that a certain number of unemployed persons have left industrial occupations altogether. Therefore, while there is no doubt that there is "invisible" unemployment in Italy, not registered by the official statistics, its comparative extent would not appear to have increased appreciably during the depression.

In view of what has been said, there is no need to dwell at length on the causes of Italian unemployment in recent years. Widespread unemployment developed in spite of the almost complete cessation of technical progress as reflected in the output per head of those employed in factories, and in spite of the relatively small afflux of workers on the market as a result of the natural increase in population. The source of the evil is to be found in the slower rate of industrial expansion first of all (1926-1929) and subsequently in the decline in production (1929-1933).

Czechoslovakia

The spread of unemployment in Czechoslovakia since the war is shown by the curve in diagram XXXIII, which covers the period 1921-1934 and is based on the number of unplaced applicants for employment at the end of each quarter [2].

The increase in the number of unemployed persons in the second half of 1922 was due to the decline in economic activity consequent upon the stabilisation of the currency. Although Czechoslovakia did not officially stabilise its currency until October 1929, it put a stop to inflation as early as the autumn of 1922 and considerably raised the value of the crown at that time [3].

---

[1] Cf. table XXXII, p. 117.

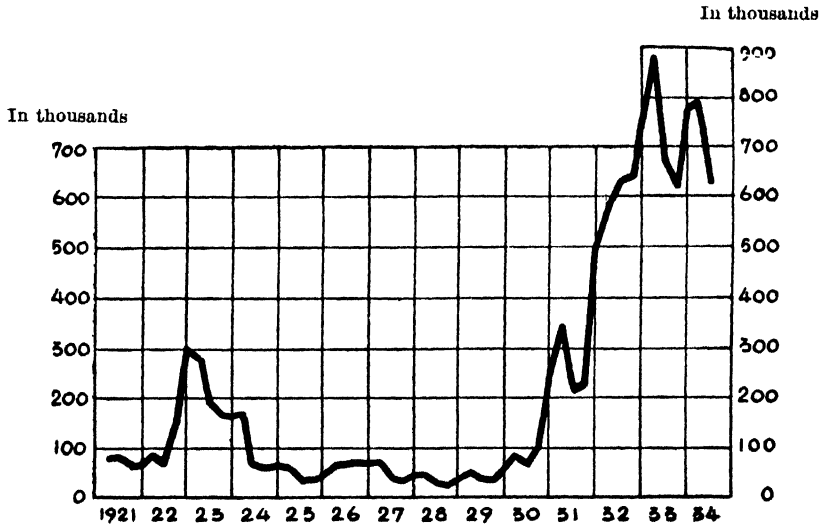
[2] This is the only series of figures covering the whole period in question and giving a complete general picture (Cf. *Statistische Übersicht der Tschechoslowakischen Republik*, 1930, pp. 221-222, Prague).

[3] The dollar rate in Prague was (parity = 100) :

Mar. 1922	June 1922	Sept. 1922	Dec. 1922	Mar. 1923	June 1923	Sept. 1923	Dec. 1923
1,171	1,053	627	653	682	677	677	692

The new parity was fixed at 684.

DIAGRAM XXXIII.—UNEMPLOYMENT IN CZECHOSLOVAKIA : UNPLACED APPLICANTS FOR EMPLOYMENT AT THE END OF EACH QUARTER



The depression in Czechoslovakia in 1922-1923 was therefore one of stabilisation, such as inevitably came to every country that practised inflation for a more or less lengthy period.

The very low unemployment figure from summer 1924 to summer 1930 shows that the country had been able to restore its economic equilibrium. Notwithstanding the exceptionally difficult conditions with which the country had to contend in its economic reconstruction, it did not suffer from chronic unemployment on a large scale until the beginning of the world economic depression.

Table XXXVII shows the development of the occupied population in Czechoslovakia during the period under consideration. In just under ten years (February 1921 to December 1930) the occupied population increased by more than 10 per cent., but the increase was limited to urban occupations : the number of persons in those occupations rose from 3,554,000 to 4,249,000, or by about 20 per cent., whereas the number of persons occupied in agriculture fell by 7 1/2 per cent.

TABLE XXXVII.—DISTRIBUTION OF THE OCCUPIED POPULATION OF CZECHOSLOVAKIA BY OCCUPATIONAL GROUPS [1]

(In thousands)

Occupational Groups	1921	1930	Increase (+) or decrease (—)
	Occupied population		
Agriculture	1,809	1,673	— 136
Mines and manufactures	2,169	2,502	+ 333
Commerce and transport	585	805	+ 220
Other occupational groups	800	942	+ 142
Total...	5,363	5,922	+ 559
	Wage earners [2]		
Agriculture	974	786	— 188
Mines and manufactures	1,866	2,189	+ 323
Commerce and transport	416	580	+ 164
Other occupational groups	396	691	+ 295
Total...	3,652	4,246	+ 594

[1] *Manuel statistique de la République tchécoslovaque*, IV. Prague, 1932, p. 16; *Annuaire statistique de la République tchécoslovaque*. Prague, 1934, p. 15.
[2] Workers, salaried employees, apprentices and domestic servants.

During this period the development of the country was marked by increasing industrialisation and "proletarisation". The number of wage earners in the towns rose in ten years from 2,678,000 to 3,460,000—an increase of 29 per cent.

Emigration from Czechoslovakia has been slight since the war. The excess of emigrants over immigrants for the decade 1921-1930 was 200,000 at most, and this number was more or less evenly distributed over the whole period. In estimating the afflux of new members to the occupied population, therefore, it will be assumed that there was no appreciable variation from year to year.

This hypothesis is admissible both for all wage earners outside agriculture and for workers and salaried employees in industry,

taken alone, but it cannot be assumed that the afflux was the same after 1930. The year 1931 saw the first of the generations from the war years entering the labour market, and the decline in the birth rate from 1915 to 1919 substantially relieved the labour market from 1931 to 1935. But it is very improbable that the number of wage earners in Czechoslovakia fell to any great extent during these years. The distribution of the population by age groups in the 1930 census suggests rather that the number of wage earners did not change appreciably one way or the other.

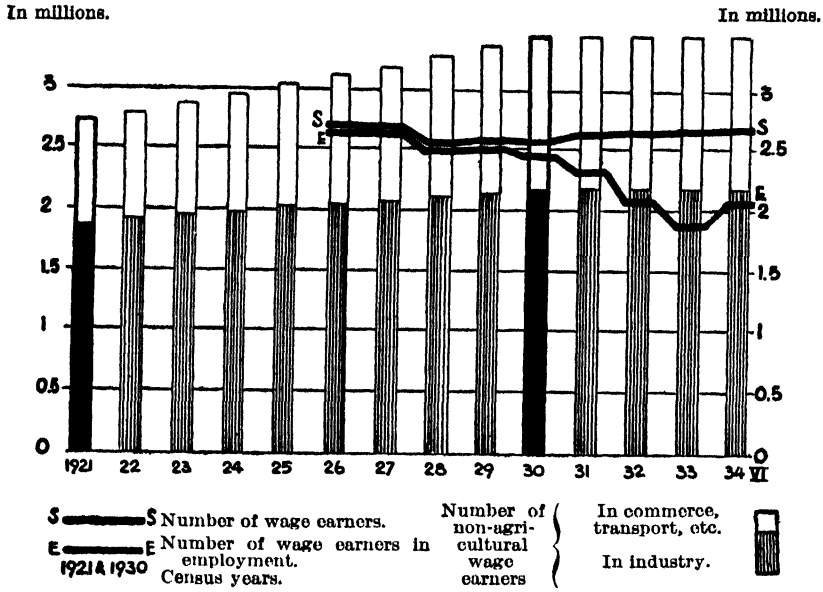
In the light of these considerations, the number of occupied persons in dependent positions (wage earners in the wide sense) in Czechoslovakia from 1921 to 1934 may be estimated as follows (in thousands):

	All occupations except agriculture	Industry only
Average for		
1921	2,710	1,880
1922	2,790	1,915
1923	2,870	1,950
1924	2,950	1,985
1925	3,030	2,020
1926	3,110	2,055
1927	3,190	2,090
1928	3,270	2,125
1929	3,350	2,160
1930	3,420	2,180
1931, unchanged until 1934	3,450	2,190

No reasonably complete statistics of employment were compiled in Czechoslovakia until 1928. The figures given here for earlier years are based in part on estimates. A comparison of these data with those for unplaced applicants for employment gives the following results (in thousands):

	Wage earners in employment (statistics of sickness funds)	Unemployed (unplaced applicants for employment)	Total
Average for:			
1926	(2,612)	68	(2,680)
1927	(2,619)	53	(2,672)
1928	2,488	39	2,527
1929	2,506	42	2,548
1930	2,446	105	2,551
1931	2,313	291	2,604
1932	2,069	554	2,623
1933	1,889	738	2,625
1934	1,878	677	2,555

DIAGRAM XXXIV.—NUMBER OF WAGE EARNERS AND EMPLOYMENT IN CZECHOSLOVAKIA



The discrepancy between the sum of the number of wage earners in employment and those unemployed and the figures given above for the number of dependent workers may be attributed to a variety of causes :

(a) In the census, certain persons are counted as wage earners who do not fall within this category for social insurance purposes.

(b) Some groups of wage earners (higher employees, migrant workers, etc.) are not counted in the statistics of employment.

(c) Wage earners who are sick or momentarily out of employment while changing jobs are not counted either as being in employment or as being unemployed.

(d) A certain number of agricultural workers have been included among wage earners in employment or among the unemployed.

An obstacle to the exact study of developments on the Czechoslovak labour market is the fact that its statistics of employment

and unemployment make no distinction between industrial and other occupations.

According to the writer's calculations (p. 129), the index number of wage earners in industrial occupations was as follows :

	1921	1922	1923	1924	1925	1926	1927	1928	1929
S =	100	101.9	103.7	105.6	107.4	109.3	111.2	113.0	114.9

In order to determine the proportion of unemployed persons, recourse must be had to the official unemployment statistics, although they cover every economic activity and the figures must therefore be considered rather too low for industry taken alone :

	1921	1922	1923	1924	1925	1926	1927	1928	1929
Ch =	2.1%	3.9%	6.2%	2.9%	1.5%	2.1%	1.6%	1.1%	1.2%

By combining these two series one obtains the index of the number of wage earners in employment, taking the number in 1921 as a base (1921 = 100).

	1921	1924	1925	1926	1927	1928	1929
E =	97.9	102.6	105.8	107.0	109.4	111.8	113.5

The combination of this index with the index of industrial production shows the development of individual output [1] :

	1921	1924	1925	1926	1927	1928	1929
V =	100	107	113	112	130	145	149
$100\,\dot{T} = \frac{100\,V}{E}$ =	102.1	104.3	106.8	104.7	118.8	129.7	131.3

According to these calculations, the number of wage earners in industrial occupations rose by 15 per cent. in eight years. During the same period there was an improvement in individual output of 29 per cent. But the influx of new workers and the march of technical progress were counterbalanced by the expansion of industry, so that when the depression caused by stabilisation had been overcome there were only slight fluctuations in unemployment and no marked tendency for it to increase.

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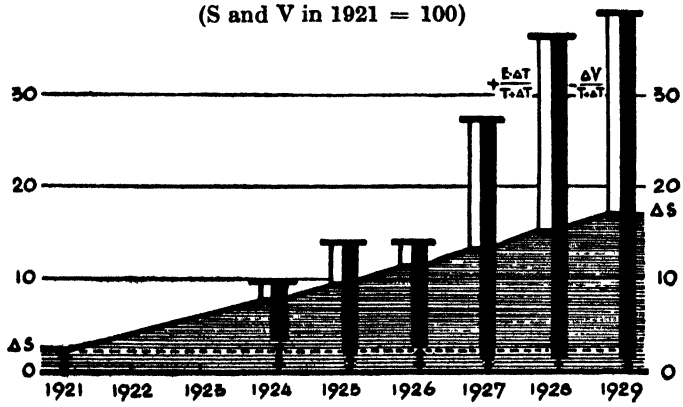
[1] Cf. appendix, p. 165.

DIAGRAM XXXV.—DEVELOPMENT OF UNEMPLOYMENT IN CZECHOSLOVAK INDUSTRY

(S and V in 1921 = 100)



After the world depression began (it was only in 1930 that the situation became serious in Czechoslovakia) the unemployment curve rose rapidly, as can be seen from table XXXVIII [1].

TABLE XXXVIII.—THE DEPRESSION IN CZECHOSLOVAKIA [1]

Average for year	Index of industrial production (1929=100)	Wage earners in employment		Unemployed unplaced (thousands)
		Actual number (thousands)	Index number (1929 = 100)	
1929	100	2,506	100	42
1930	89.2	2,446	97.6	105
1931	80.6	2,313	92.3	291
1932	63.5	2,069	82.6	554
1933	60.0	1,887	75.3	738
1934	66.5	1,878	74.9	677

[1] From the *Monthly Bulletin of Statistics* of the League of Nations.

The course of the production index would indicate that the depression was at its worst in Czechoslovakia in the spring of 1933, when the index had fallen to 58 (average for 1929 = 100).

[1] Cf. diagram XXXIII, p. 127.

Such a sharp fall was bound to involve the dismissal of staff, but the number of wage earners employed on the average during 1933 was not 40 per cent. but only 25 per cent. below the 1929 level. This comparatively mild reaction to the fall in production was due to two factors: (1) the spread-over of employment; (2) the less marked influence of cyclical fluctuations on non-industrial occupations.

In 1933, when industrial production had fallen to 60 per cent., industrial undertakings could not utilise much more than 60 per cent. of the amount of labour they required in 1929. But by spreading employment over a greater number of workers (and partly as a result of a slackening in technical progress) they were able to keep on a larger proportion of their former staffs : perhaps 66 per cent. or even more. Employment in industrial undertakings thus declined by a little over 30 per cent. But as the decrease in the amount of work performed in commerce and transport was much less marked, the average decline in employment shown in the official statistics seems to be quite credible.

This does not mean that there was no invisible unemployment in Czechoslovakia; all that is claimed is that its volume was not very great.

With regard to the origin of the widespread unemployment in Czechoslovakia, no trace has been found of overcrowding on the labour market as a result of an excessive influx of new workers or of too rapid technical progress. The disorganisation of the labour market in this case is of purely economic origin, being due to the decrease in industrial production.

Belgium

Before the war Belgium was already one of the most highly industrialised countries. According to the 1910 census, 46.1 per cent. of the occupied population were engaged in manufactures and mining, as compared with 32.2 per cent. in the United States, 41.3 per cent. in Germany, 45.6 per cent. in Great Britain, 30.1 per cent. in France[1], 24.6 per cent. in Italy, 37.8 per cent. in Holland, 25.7 per cent. in Sweden, etc.

[1] In 1906.

The census of 1920 showed a decline in the occupied population as compared with 1910. The figures were (in thousands):

	End of 1910	End of 1920 [1]	Increase (+) or decrease (—)
Number of inhabitants ...	7,424	7,406	— 18
Occupied population :			
Agriculture	783.4	613.6	— 169.8
Mines and manufactures.	1,609.9	1,491.3	— 118.6
Other occupations	1,098.5	1,100.3	+ 1.8
Total occupied population	3,491.8	3,205.2	— 286.6

[1] Without the districts of Eupen and Malmedy.

These figures are all the more surprising when it is remembered that the population of working age increased appreciably during the same period. The number of persons between the ages of 15 and 60 was (in thousands):

	1910	1920	Increase
Men	2,221	2,370	+ 149
Women	2,236	2,427	+ 191
Total...	4,457	4,797	+ 340

This fact suggests that the 1920 census figures are incomplete, as is quite probably the case in view of the disorganisation of economic life just after the war.

From 1920 to 1930 the increase in the number of persons between the ages of 15 and 60 years has been estimated at 5 per cent.[1], and to this must be added the excess of immigration over emigration. From 1921 to 1930 there were 303,000 emigrants, as against 425,000 immigrants or returning migrants. The excess of immigration was therefore 122,000. On the whole, then, the middle age groups increased from 1920 to 1930 in roughly the same proportion as in the preceding decade. But the distribution of the increase over the various branches of the economic system is not known, as the results of the 1930 census have not yet been published.

At the end of 1930, however, a census of industry and commerce was made in Belgium, and the results are in part compa-

[1] Cf. A. L. Bowley : *Estimates of the Working Population, etc.* Geneva, 1926, p. 12.

rable with those of the similar census in 1910 [1]. The occupied population (in thousands) was :

	1910		1930	
	Men	Women	Men	Women
Industry	1,319.4	390.8	1,592.4	345.8
Commerce	237.5	285.2	321.0	243.6

According to these statistics, the number of persons in industrial occupations rose by 13 per cent. in 20 years, and the number of those engaged in commerce by 8 per cent.

The number of wage earners among those engaged in industrial or commercial occupations in 1930 (in thousands) was :

	Workers	Salaried employees	Total
Industry	1,480.8	184.9	1,665.7
Commerce	63.8	119.0	182.8
Total [1] ...	1,545.4	304.9	1,850.3

[1] Including wage earners who could not be classified under industry or commerce.

Of these persons the following numbers were partially or wholly unemployed at that date (in thousands) :

	Workers	Salaried employees	Total
Completely unemployed .	147.5	7.1	154.6
On short time	228.8	3.5	232.3

It is assumed in the following pages that the number of wage earners in industry increased uniformly from 1910 to 1930, at the rate of about 0.6 per cent. annually.

With regard to the degree of employment for the available labour supply, continuous information is available in the Belgian statistics of unemployment and short time among workers insured against unemployment. But this insurance was introduced by stages after the war [2]. It is therefore preferable to take, in place of the actual figures given in these statistics, the percentage of unemployment among insured persons. Up to 1923 no distinction was made between complete unemployment and short time; since 1924 the two groups have been kept separate.

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[1] *Revue du Travail*, Brussels, June 1934, pp. 719-771.

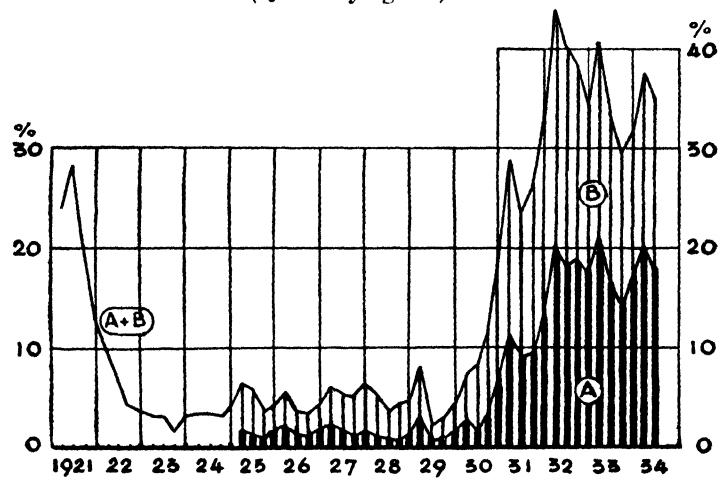
[2] In the years 1926-1928 the number of insured persons fluctuated round 600,000; from 1929 to 1930 it was about 650,000, in 1931, 726,000, in 1932, 850,000, in 1933, 980,000; in 1934 it approached the million.

The insured population comprised :

Average for :	Full-time workers	Completely unemployed	On short time
1921	78.4	21.6	
1922	93.5	6.5	
1923	97.3	2.7	
1924	96.7	1.0	2.3
1925	94.4	1.5	4.1
1926	95.8	1.5	2.7
1927	94.3	1.8	3.9
1928	95.6	0.9	3.5
1929	95.7	1.3	3.0
1930	88.5	3.6	7.9
1931	72.2	10.9	16.9
1932	60.3	19.0	20.7
1933	65.8	17.0	17.2
1934	63.8	19.0	17.2

DIAGRAM XXXVI.—UNEMPLOYMENT IN BELGIUM : PERCENTAGE OF INSURED WAGE EARNERS UNEMPLOYED

(Quarterly figures)



Ⓐ Completely unemployed.
Ⓑ On short time.

In 1921 Belgium passed through a severe depression. The number of unemployed persons, including those on short time, exceeded 30 per cent. of the total number of insured persons between March and May of that year. But in the second half of the year an improvement began, unemployment decreased rapidly and by 1922 the economic machine was again working to capacity. It was not until 1930 that another depression

visited the country. It led at first to an extension of short time, and towards the end of the year dismissals of staff became frequent.

The relatively favourable situation on the Belgian labour market between those two depressions may be attributed to the increase in the volume of industrial production, the index number of which moved as follows (1913 = 100) [1] :

Average for :		Average for :	
1921	64	1928	137
1922	84	1929	138
1923	96	1930	123
1924	105	1931	114
1925	103	1932	95
1926	118	1933	98
1927	129	1934	93

The degree of disorganisation in Belgian industry in 1921 is revealed by the fact that the level of production was extremely low as compared with the number of persons employed : individual output had fallen to a point 15 or 20 per cent. below the pre-war level. In 1924 the output per head of those employed had returned to the 1913 figure. As hours of work had been reduced in the interval, this means that the output per head was 10 or 15 per cent. higher than in 1913. Since then the volume of production has risen from year to year. In 1929, Belgian industry was employing little more labour than in 1923, although the volume of production had increased by about 42 per cent. The average annual increase in individual output must therefore have been 6 per cent [2]. This rapid technical progress would have caused technological unemployment but for the simultaneous feverish expansion of production.

During the depression, production fell by more than 30 per cent. But commerce, transport and the other occupational groups covered by unemployment insurance are less sensitive to cyclical fluctuations than is industry, and it is therefore normal for the average decline in employment, as shown by the unemployment insurance statistics, to be less marked than the fall in production.

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[1] *Institut des sciences économiques*, Louvain.

[2] A more careful calculation, taking into account the changes in hours of work, would give a slightly lower figure for the average annual rate of technical progress, but this would in no wise affect the explanations that follow.

TABLE XXXIX.—THE DEPRESSION IN BELGIUM

Quarters	Volume of industrial production (1928 = 100)	Percentage of insured persons	
		Completely unemployed	On short time
1930			
I	97	2.8	4.5
II	89	2.0	6.1
III	80	3.0	8.5
IV	81	6.6	12.5
1931			
I	81	11.4	17.1
II	78	9.0	14.6
III	78	9.7	16.6
IV	75	13.6	18.9
1932			
I	69	20.1	23.6
II	65	18.4	22.2
III	—[1]	19.1	19.7
IV	69	17.9	17.0
1933			
I	69	21.1	19.8
II	70	16.3	17.3
III	66	13.7	16.2
IV	69	18.7	15.3
1934			
I	69[2]	20.2	18.1
II	67[2]	18.0	17.0
III	66	17.5	17.3
IV	69	20.1	16.4

[1] Trade dispute (coal mines).
[2] Trade dispute (wool).

As was mentioned above, the proportion of insured persons who were completely unemployed in 1932 was 19 per cent., and the proportion on short time 20.7 per cent. (as against 1.3 and 3 per cent. in 1929). If allowance is made for a regular increase of 0.6 per cent. annually in the number of wage earners, it will be seen that there was a decrease of about 20 per cent. in the total amount of work performed. The only cause of the unemployment in 1932 was therefore the decline in production.

About the middle of 1932 a slight increase in production occurred, and unemployment fell to a corresponding extent. But the improvement of the labour market was as brief as the revival of industrial activity; by the second half of 1933 both had slumped again.

Sweden, Norway and Denmark

During the war there was great industrial activity in the Scandinavian countries. In order to cope with the orders from the belligerent countries, their industries (especially in Norway) had to be brought up to date and their plant extended. The improvement in the technique of production did not, however, prevent the supply of work from being ample for all. Even although emigration was at a standstill, the level of unemployment remained exceptionally low.

TABLE XL.—INDEX NUMBERS OF INDUSTRIAL PRODUCTION (V) IN THE SCANDINAVIAN COUNTRIES [1]

(1913 = 100)

Year	Sweden	Norway	Denmark
1920	83	102	128
1921	80	72	107
1922	93	90	113
1923	100	100	125
1924	109	108	136
1925	112	117	126
1926	115	104	126
1927	119	106	128
1928	129	118	139
1929	137	131	149
1930	131	132	163
1931	115	103	149
1932	108	121	136
1933	112	124	157
1934	137	131	167

[1] For Sweden: until 1926, index of the "Institut für Konjunkturforschung," Berlin (*Die Industriewirtschaft*, p. 65); after 1926, official index of production. For Norway: official index of production (*Statistisk Aarbok for Norge*, 1934, p. 66). For Denmark: until 1927, index of the "Institut für Konjunkturforschung," Berlin (*Die Industriewirtschaft*, p. 64); after 1927, official index of production.

In 1921—even in 1920 in Sweden—the depression came. Judging by the decrease in production and in the amount of work done, it would seem that this post-war slump in the Scandinavian countries was more serious than were the depressions caused by demobilisation and stabilisation in most of the ex-belligerent countries. It was not until 1923 that the depression began to disappear. By that time the process of reconstruction and adaptation seemed to be complete. But in 1926 there was a

fresh fall in production in Norway and Denmark; Sweden alone was destined to enjoy more-or-less satisfactory economic conditions for a few years longer.

The world depression reached the Scandinavian countries comparatively late : about the middle of 1930 in Sweden and Norway, and towards the end of that year in Denmark.

Table XL shows that even during the most recent years of the depression industrial production in the Scandinavian countries remained above the 1913 level; they differ in this respect from Germany, Great Britain, the United States, Belgium, Czechoslovakia and most other industrial countries.

It must not be forgotten, however, that while the machinery of production in the neutral countries escaped the destructive effects of the war the same is true of their population, so that the number of persons to be supported by the economic system of the country had considerably increased.

In Sweden and Norway the natural increase in population was all the more marked on account of the decline in emigration [1]. In the case of Denmark, the extension of the territory of the country must also be borne in mind [2].

There was at the same time a change in the economic distribution of the population in the Scandinavian countries. Statistics on this point for the period 1920-1930 are available only for Norway. But for the period 1910-1920 the census results of the three countries are available, and the data they supply are comparable from country to country [3].

In the decade between the two censuses the occupied population increased by the following amounts :

Sweden	401,000	= 17%
Norway	125,000	= 13%
Denmark	131,000	= 11%

This increase was confined almost entirely to industry, commerce and transport; the number of persons in these occupational groups rose as follows :

	Industry		Commerce and transport		Total	
Sweden	244,000	= 43%	139,000	= 60%	383,000	= 48%
Norway	64,000	= 26%	51,000	= 32%	115,000	= 28%
Denmark ...	71,000	= 24%	47,000	= 26%	118,000	= 25%

[1] This explains, *inter alia*, the decrease in the surplus of women in the middle age groups.

[2] Cf. table XLI, p. 141, note 2.

[3] Cf. table XLII, p. 141.

TABLE XLI.—POPULATION OF WORKING AGE (15-60 YEARS) IN THE SCANDINAVIAN COUNTRIES [1]

Year	Sweden		Norway		Denmark [2]	
	Men	Women	Men	Women	Men	Women
	Actual numbers (in thousands)					
1910/1911	1,513	1,598	606	686	744	809
1920/1921	1,693	1,741	726	781	922	986
1930/1931	1,891	1,940	817	866	1,063	1,124
	Index numbers (1910-1911 = 100)					
1910/1911	100	100	100	100	100	100
1920/1921	112	109	120	114	124	122
1930/1931	125	120	135	126	143	139

[1] *Statistical Yearbook of the League of Nations*, 1933-1934, pp. 30-31.
[2] The change in the territorial extent of the State after the war increased the population by about 13 per cent.

TABLE XLII.—DISTRIBUTION OF THE OCCUPIED POPULATION IN THE SCANDINAVIAN COUNTRIES BY OCCUPATIONAL GROUPS [1]

(In thousands)

Occupational Groups	Sweden		Norway		Denmark	
	Men	Women	Men	Women	Men	Women
1910/1911						
Agriculture	758	258	321	53	403	110
Industry	480	85	184	62	231	66
Commerce and transport	188	44	120	40	139	41
Other occupational groups	162	225	35	130	72	168
Total...	1,588	612	660	285	845	386
1920/1921						
Agriculture	808	251	336	58	405	69
Industry	656	153	248	62	302	66
Commerce and transport	261	110	150	61	174	53
Other occupational groups	103	261	38	118	77	216
Total...	1,827	774	772	298	958	404

[1] *Statistical Yearbook of the League of Nations*, 1931-1932, p. 49; 1933-1934, pp. 41-43.

The number of persons engaged in agriculture and other occupations remained practically unchanged.

The provisional results of the last Norwegian census are available for the decade 1920-1930. They show that the occupied population of the country has increased from 1,070,000 to 1,167,000—i.e., by 97,000 or 9 per cent. But there has been no change in the number of persons in industrial occupations; the increase has been in agriculture (+ 16,000), commerce and transport (+ 43,000) and other occupational groups (+ 38,000).

The contrast with the previous decade is striking. Whether the phenomenon is purely local, affecting Norway only, or whether the same trend exists in Sweden and Denmark cannot be decided until the results of the latest census in these countries are available.

But it would appear that in Sweden and Norway the occupied population has not increased so rapidly since the war as it did from 1910 to 1920, and that the widespread unemployment that exists has held up to some extent the stream of persons entering industrial occupations in search of employment.

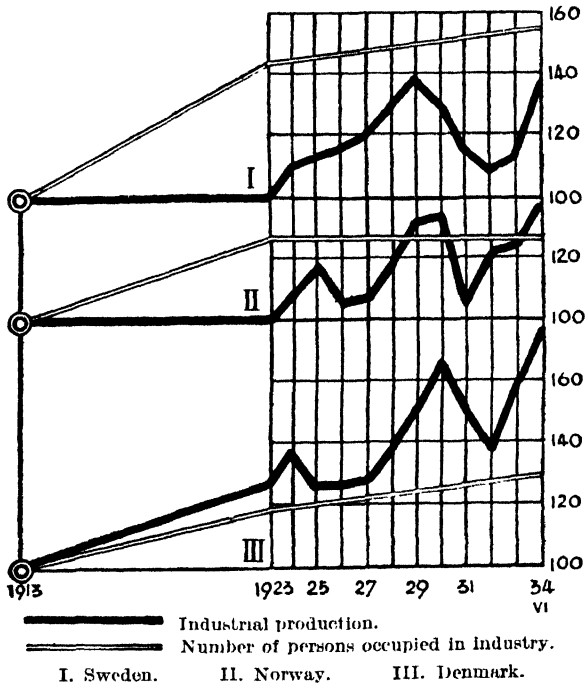
As the percentages given above for the increase in the number of persons in industrial occupations (Sweden : + 43 per cent.; Norway : + 26 per cent.; Denmark : + 24 per cent.) are not the result of any cyclical change but rather the reflection of a structural transformation in the population, it may be concluded that they hold good for the decade 1913-1923 as well as for the period 1911-1921. Since then, as has been seen, the industrial population of Norway has not changed. In Sweden and Denmark, on the other hand, there would seem to have been a slow but steady increase in the number of persons in industrial occupations. The index numbers of the development of the industrial population of the three countries may therefore be given as follows :

	Sweden	Norway	Denmark
1913	100	100	100
1923	143	126	124
1924	144	126	125
1925	145	126	126
1926	146	126	127
1927	147	126	128
1928	148	126	129
1929	149	126	130
1930	150	126	131
1931	151	126	132
1932	152	126	133
1933	153	126	134

For 1923, the figures for all three countries are based on the census results [1]. The Norwegian figure for 1933 is also based on the census, while those for Sweden and Denmark are very approximate estimates (an increase of 7 or 8 per cent.). For the sake of simplicity, it has been assumed that the development between those dates was uniform.

DIAGRAM XXXVII.—INDEX NUMBERS OF INDUSTRIAL PRODUCTION AND OF THE POPULATION IN INDUSTRIAL OCCUPATIONS IN THE SCANDINAVIAN COUNTRIES

(1913 = 100)



With the reservation that these figures are an indication of trends rather than accurate statistics, the index numbers given above may now be compared with the index numbers of production in the three countries. The differences in the development of the economic situation and in the population of the countries will then become quite apparent. The common feature for all three is the marked increase in the number of persons in industrial occupations.

[1] Cf. table XLII, p. 141.

The estimated index numbers of the occupied population in industry given above may also serve as index numbers of the number of wage earners in industry. But there is always a certain divergence between these figures and the number of wage earners in employment. The number of those in employment has, in recent years, always remained below the number available. Even during the prosperous years 1928 and 1929 there was unemployment on a large scale in Norway and Sweden, and the situation of Sweden during the period under consideration here can be considered satisfactory only in so far as it was better than that of her neighbours.

An index number of employment in industry can be calculated from the index number of wage earners in industry and the percentage of unemployment among trade union members [1]. By dividing the index of production by the index of employment in industry, one obtains the index number of individual output [2].

TABLE XLIII.—UNEMPLOYMENT IN THE SCANDINAVIAN COUNTRIES : PERCENTAGE OF TRADE UNION MEMBERS UNEMPLOYED [1]

Average for year	Sweden	Norway	Denmark
1913.....	4.4	1.5	7.1
1920.....	—	2.3	5.8
1921.....	26.2	17.7	19.7
1922.....	21.9	17.1	19.2
1923.....	12.5	10.3	12.6
1924.....	10.1	8.5	10.8
1925.....	11.0	13.2	14.7
1926.....	12.2	24.3	20.7
1927.....	12.0	25.4	22.5
1928.....	10.6	19.1	18.5
1929.....	10.7	15.4	15.5
1930.....	12.2	16.6	13.7
1931.....	17.2	22.3	17.9
1932.....	22.8	30.8	31.7
1933.....	23.7	33.4	28.8
1934.....	18.9	30.7	22.2

[1] For Sweden : *Statistisk Årsbok för Sverige*, 1934, p. 375.—For Norway : *Statistisk Aarbork for Norge*, 1934, p. 138.—For Denmark : *Statistisk Aarbog*, various years.

[1] There is in Sweden an official index of employment in large and medium-sized industrial undertakings. Later on, this will be compared with the result of the author's calculations, as a check on the latter. Cf. table XLIV, p. 145.

[2] Cf. table XLV, p. 146.

It is true that the trade union unemployment statistics do not embrace all industrial occupations equally, and the aggregate figures include a certain number of unemployed persons belonging to non-industrial occupations. But the inclusion of a few thousands of unemployed workers from commerce, transport or public services is not a sufficiently great error to have any real effect on the general results of these statistics. They may therefore be used to determine the index of employment in industry. But it would be a mistake to base any conclusions concerning employment in all urban occupations or among the wage earners of the country as a whole on the trade union unemployment statistics.

TABLE XLIV.—INDEX NUMBERS OF WAGE EARNERS IN EMPLOYMENT (E) IN INDUSTRY IN THE SCANDINAVIAN COUNTRIES [1]

(Number of wage earners in 1923 = 100)

Year	Sweden	Norway	Denmark
1923	87.5	89.7	87.4
1924	90.3	91.5	89.9
1925	90.2	86.8	86.9
1926	89.8	75.7	81.3
1927	90.3	74.6	80.1
1928	92.4	80.9	84.9
1929	93.4	84.6	88.8
1930	93.1	83.4	91.4
1931	87.5	77.7	87.7
1932	82.1	69.2	73.5
1933	81.8	66.6	77.3

[1] The table is drawn up on the basis of the usual formula. The number of wage earners (S) in 1923 being taken as = 100, the number of wage earners in employment (E) for the year in question was obtained by subtracting Ch from S. The value of Ch as a percentage is given in table XLIII, p. 144.

Before going further, it will be well to compare the index number of employment calculated in this way for Sweden with the official index of employment in large and medium-sized industrial undertakings in that country. The index numbers are (1929 = 100):

	1926	1927	1928	1929	1930	1931	1932	1933
Index calculated by author	96	97	99	100	100	94	88	88
Official index	93	94	98	100	100	91	86	85

It will be seen that the two sets of figures follow an identical course, but the official index appears to be more sensitive to market fluctuations both on the up grade and on the down grade. This is exactly what might be expected, since it covers only large and medium-sized undertakings, whereas the author's index covers the whole of industry. This comparison of the two series of figures confirms the accuracy of the index numbers given in table XLIV.

The employment figures in the first line of table XLIV (for 1923)—87.5, 89.7 and 87.4—may seem rather high as compared with those for 1932 or 1933. But when they are compared with the pre-war period or with the situation in other countries before the depression began, they reveal a profound disturbance in the economic balance of the Scandinavian countries. In the " fat " years that followed, Sweden was the only one that showed any appreciable increase in the number of persons employed in industry; in Norway, and to some extent also in Denmark, the number of wage earners in employment continued to fall in spite of the improved economic situation.

Table XLV shows the development of individual output (per head of those employed in industry) in the three countries. A specially noteworthy feature is the rapidity of technical progress in Norway, which naturally had an influence on the power of absorption of the labour market.

TABLE XLV.—INDEX NUMBERS OF INDIVIDUAL OUTPUT IN INDUSTRY IN THE SCANDINAVIAN COUNTRIES [1]

Year	Sweden		Norway		Denmark	
	100 T	1923 = 100	100 T	1923 = 100	100 T	1923 = 100
1923	114.3	100	111.5	100	114.4	100
1924	120.7	105.6	118.0	105.8	121.0	105.8
1925	124.1	108.6	134.8	120.9	116.0	101.4
1926	128.1	112.1	137.4	123.2	124.0	108.4
1927	131.8	115.3	142.1	127.4	127.8	111.7
1928	139.6	122.1	145.9	130.8	131.0	114.5
1929	146.7	128.3	154.8	138.8	134.2	117.3
1930	140.7	123.1	158.3	142.0	142.7	124.7
1931	131.4	115.0	132.6	118.9	135.9	118.8
1932	131.5	115.0	174.9	156.9	148.3	129.6
1933	136.9	119.8	186.2	167.0	162.5	142.0

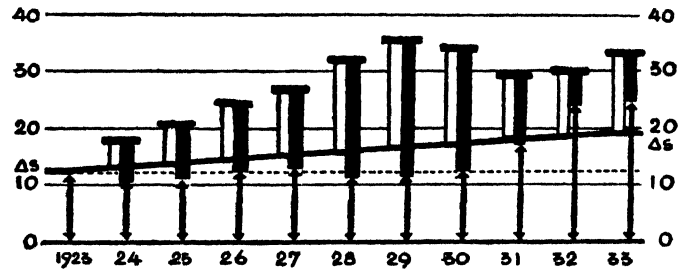
[1] $T = \frac{V}{E}$. For the values of V and E, cf. tables XL, p. 139 and XLIV, p. 145.

The combined action of the three factors in unemployment is represented in the usual manner in diagram XXXVIII.

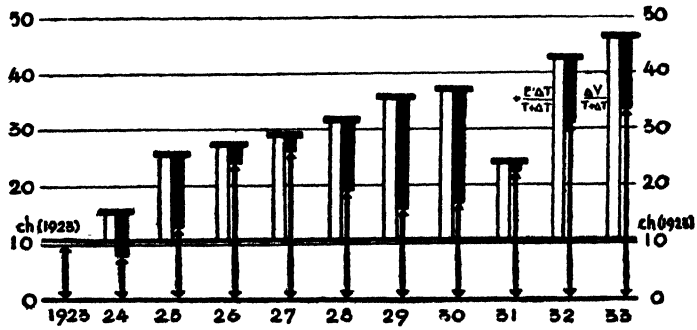
DIAGRAM XXXVIII.—DEVELOPMENT OF UNEMPLOYMENT IN INDUSTRY IN THE SCANDINAVIAN COUNTRIES

(S and V for 1923 = 100)

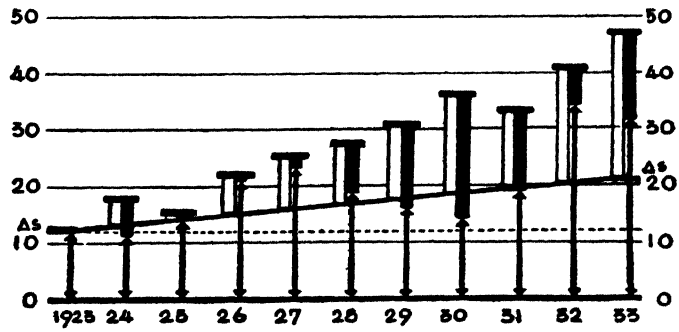
Sweden



Norway



Denmark



In all three countries, the opportunities of employment were inadequate even long before the war. In the case of Sweden the decisive factor was the increase in the number of persons in search of employment from 1910 to 1920 as a result of a permanent structural change [1]. In Norway it was the excessive increase in individual output that was one of the main causes of unemployment [2]. In other words, the overcrowding on the Swedish labour market was due to demographic causes, whereas in Norway unemployment was of a technological character. In Denmark, on the other hand, there was no excessive influx of new workers to the occupied population, nor was there any exaggerated technical progress. But the expansion of industry [3] was not sufficient to provide employment for all the available labour. The resulting permanent unemployment may be described as economic in the narrow sense.

Poland and Hungary

Poland and Hungary are definitely agricultural countries, in which the great majority of the population works on the land. Industry is not highly developed, and small undertakings predominate.

During the years 1920-1921, the population of these countries was distributed as follows :

	Poland (1921)		Hungary (1920)	
	In thousands	Per cent.	In thousands	Per cent.
Agriculture	10,269.9	75.9	2,126.7	58.2
Mines and manufactures	1,263.3	9.4	719.8	19.7
Other occupations ..	1,990.0	14.7	807.3	22.1
Total...	13,523.2	100.0	3,653.8	100.0

In countries where agriculture is so preponderant, the urban labour market is bound up with the rural one : labour flows from the country to the towns or back to the country according to the economic situation.

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[1] Cf. table XLII, p. 141 and diagram XXXVIII, p. 147.

[2] Cf. on diagram XXXVIII the columns $E \frac{\Delta T}{T + \Delta T}$, which rise very high above the line Ch (1923).

[3] Cf. the black downwards-pointing columns on the diagram.

The official statistics of unemployment in Hungary and Poland, which show the number of unplaced applicants for employment registered with the employment exchanges, cannot give an accurate idea of the real extent of unemployment.

The number of officially registered unemployed workers in these countries is very small. The average for the year was as follows (in thousands) [1] :

	1926	1927	1928	1929	1930	1931	1932	1933	1934
Poland	190	164	126	129	227	300	256	250	342
Hungary	13	14	15	15	44	52	66	61	52

For the year 1933, therefore, the number of unemployed would appear to have increased as a result of the depression by only 120,000 in Poland and 46,000 in Hungary as compared with 1929.

But the situation appears in quite a different light when studied with the aid of the employment statistics. For Poland these statistics cover large and medium-sized industrial establishments and the public services. In Hungary the employment statistics are based on the reports of the compulsory insurance scheme, which covers more than a million workers.

The index numbers of employment for the two countries, reckoned as an average for each year, varied as follows (1929 = 100) [2] :

	1927	1928	1929	1930	1931	1932	1933	1934
Poland	89.5	99.7	100.0	86.8	73.9	63.3	62.9	68.0
Hungary	98.3	101.3	100.0	94.3	89.2	82.0	81.1	86.9

According to these figures, the number of wage earners in employment decreased during the depression by about 37 per cent. in Poland and from 18 to 19 per cent. in Hungary. That means that almost a million workers were dismissed in Poland and some 200,000 or 250,000 in Hungary.

It is interesting to compare these employment figures with those of industrial production. If 1929 = 100, the index numbers of production for Poland and Hungary will be as follows (average for the year) [3] :

	1927	1928	1929	1930	1931	1932	1933	1934
Poland	88	100	100	82	69	54	55	63
Hungary	98	99	100	93	86	74	81	95

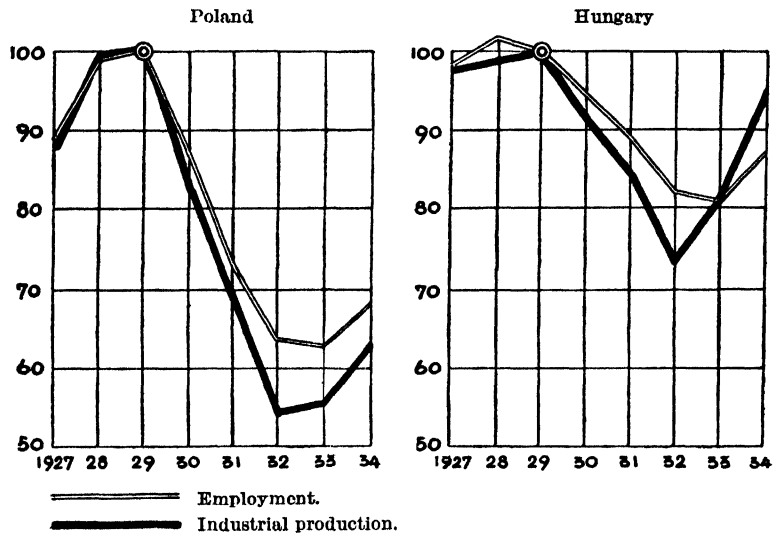
---

[1] *Statistical Yearbook of the League of Nations*, 1933-1934, pp. 53-54, and *Monthly Bulletin of Statistics*, 1934.

[2] League of Nations : *Monthly Bulletin of Statistics.*

[3] Cf. diagram XXXIX, p. 150.

DIAGRAM XXXIX.—INDEX NUMBERS OF EMPLOYMENT IN INDUSTRY IN POLAND AND HUNGARY



The agreement between the index numbers of employment and those of production proves that in both these countries the spread of unemployment during the depression kept pace with the gradual decline in production. In consequence of the economic structure of the countries, however, only a very small fraction of this increase in unemployment was registered by the exchanges, and the amount of "invisible" unemployment far exceeds the amount of officially registered unemployment.

Japan

Japan, as is well known, is one of the young capitalist countries with a rapidly developing industry. But in spite of its achievements in this field, which have begun to cause serious uneasiness to the large, old-established capitalist countries, Japan remains predominantly an agricultural country. It is a significant fact that there has been no industrialisation of the popu-

lation during recent years. The distribution of the occupied population in 1920 and 1930 was as follows (in thousands) [1]:

	1920	1930	Increase (+) or decrease (—)
Agriculture	14,661	14,724	+ 63
Mines	424	236	— 188
Manufacturing industry	5,297	5,291	— 6
Commerce	3,290	4,463	+ 1,173
Transport	923	1,109	+ 186
Public services and liberal professions	1,482	2,031	+ 549
Domestic service	655	806	+ 151
Other occupations	528	561	+ 33
Total occupied population	27,261	29,221	+ 1,960

The increase in the occupied population (about 7 per cent. in 10 years) was distributed over every branch of the economic system with the exception of manufacturing industry and mines.

But the group of the occupied population classified as belonging to industry is too varied for these figures to be used for the purpose of this study: it includes not only those employed in modern capitalist undertakings but also a large number of craftsmen and home workers. It is therefore better to consider industrial establishments in the narrower sense.

Table XLVI shows that the modern type of undertaking is gaining ground in Japan. Although the total number of persons in industrial occupations remained unchanged from 1920 to 1930, the number of workers in capitalist undertakings increased by 20 per cent. from 1919 to 1928.

But this increase seems comparatively slight when set over against the development of industrial production, for which the index number has been as follows [2]:

	Mines	Manufacturing industries	All industry
1913	100	100	100
1920	121	162	157
1921	108	188	176
1922	114	197	184
1923	115	206	192
1924	122	221	206
1925	129	241	222
1926	129	271	249
1927	135	274	251
1928	139	295	270
1929	143	324	297
1930	146	300	278
1931	124	303	276

[1] *Statistical Yearbook of the League of Nations*, 1933-1934, p. 40.

[2] " Institut für Konjunkturforschung ", Berlin.

TABLE XLVI.—INDUSTRIAL ESTABLISHMENTS IN JAPAN [1]

Year	Undertakings employing			Total
	from 5 to 9 workers	from 10 to 100 workers	100 or more workers	
	Number of establishments			
1909	16,802	14,306	1,120	32,228
1914	14,655	15,698	1,364	31,717
1919	20,118	21,587	2,243	43,949
1924	23,415	22,531	2,448	48,394
1928	29,116	24,012	2,820	55,948
	Number of workers (in thousands)			
1909	108	344	348	801
1914	94	393	461	948
1919	137	578	896	1,612
1924	154	570	1,066	1,790
1928	195	624	1,118	1,936

[1] INTERNATIONAL LABOUR OFFICE : *Industrial Labour in Japan*, Geneva, 1934, pp. 22 and 23.

The index number of production in manufacturing industries may be compared with the number of workers in industrial establishments employing 10 or more persons, which varied as follows (in thousands) :

1914	854	1925	1,651
1919	1,475	1926	1,701
1920	1,304	1927	1,607
1921	1,473	1928	1,649 [1]
1922	1,536	1929	1,852
1923	1,600	1930	1,687
1924	1,636		

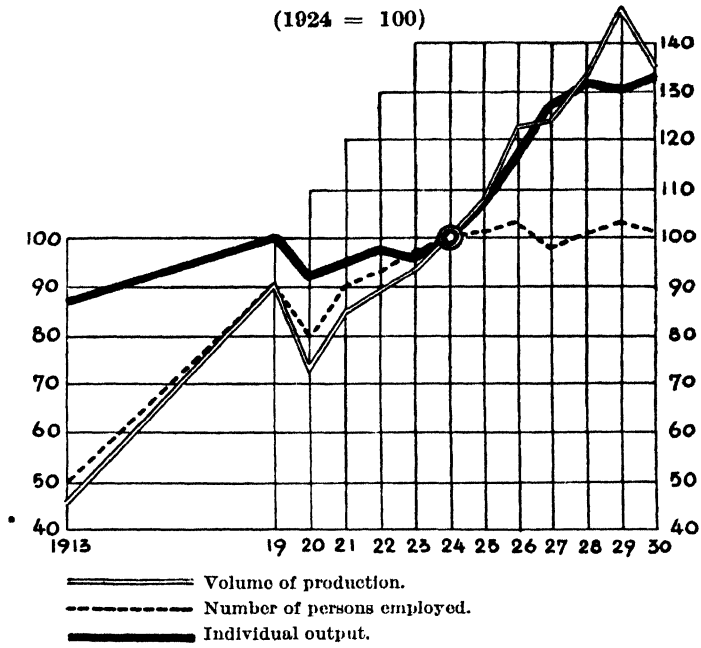
The divergence between the index number of production for Japanese industry and the index of the number of workers in industrial occupations shows the progress in industrial technique that Japan has made in recent years.

The curves in diagram XL show that, up to 1924, the increase in production was due mainly to the increase in the numbers of persons employed. The curve of the volume of production

[1] Revised number, Cf. table XLVI.

follows very closely, in the left half of the graph, the curve of the number of workers employed in industry. Consequently the curve of individual output is almost horizontal in this section of the graph, since technical progress was quite insignificant from 1914 to 1924. From 1924 onwards the situation changed. The number of persons employed rose very slightly, but the output per head increased. In this part of the graph, the production curve follows the curve of individual output, while the curve of those employed is almost horizontal. It may therefore be concluded that before the world depression began the tendency to replace human labour by machinery had manifested itself in Japan.

DIAGRAM XL.—INDUSTRIAL PRODUCTION IN JAPAN



In mines, this process had been going on for a long time. The output of coal and ore in 1930 was 20 per cent. more than the quantities extracted in 1920, although the number of persons employed had been considerably reduced [1].

But the Japanese statistics of the labour market do not give a clear picture of the effects of technical progress on employment.

[1] Cf. census figures for 1930, p. 151.

The census of the unemployed, made every five years, is incomplete, and it scarcely seems possible to make use of the results. The number of unemployed persons registered in industrial and mining centres was 105,612 in 1925 and 155,575 in 1930 [1].

It is nevertheless certain : (1) that the number of workers in Japan is increasing by several hundreds of thousands annually; (2) that the number of wage earners employed in industrial undertakings with 10 or more workers did not increase by more than 36,000 from 1925 to 1930; (3) that in 1930 the number of persons employed in industry was 165,000 lower than in the preceding year.

When faced with these facts, one is inclined to cast doubts on the accuracy of statistics that show an increase of only 50,000 in the unemployment figure. Even supposing that the method used is in itself faultless, the statistics must be based on an unduly narrow interpretation of the term " unemployed ", so that only a small fraction of those who have no work are registered as being unemployed.

For recent years, Japanese statistics provide an index number of employment based on figures for a certain number of typical undertakings in different branches of production. Table XLVII reproduces this index, together with the Mitsubishi index of production, which also covers manufacturing industry. The ratio of these two index numbers to each other gives the index of individual output (labour productivity).

TABLE XLVII.—MANUFACTURING INDUSTRY IN JAPAN

(1929 = 100)

Year	Number of wage earners employed (E)	Production (V)	Individual output $100\ T = \frac{100V}{E}$
1926	109.8	77.9	71
1927	104.1	83.0	80
1928	99.2	89.4	90
1929	100.0	100.0	100
1930	90.0	94.6	105
1931	81.7	97.2	119
1932	82.0	103.1	126
1933	89.9	119.0	132
1934	100.1	129.7	130

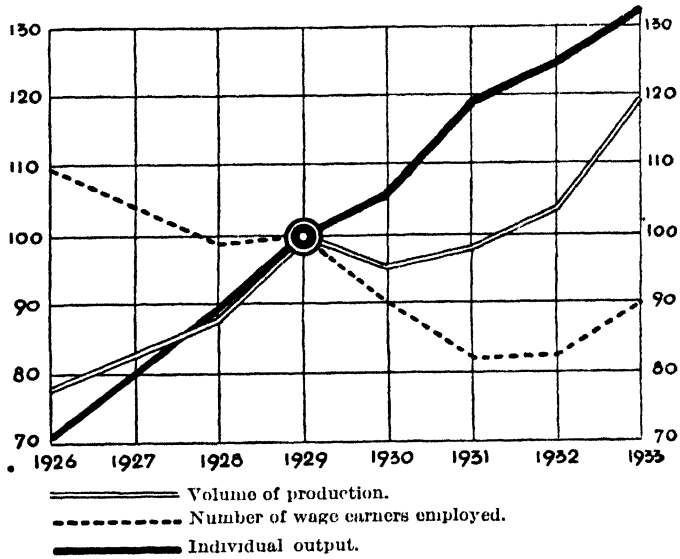
[1] INTERNATIONAL LABOUR OFFICE : *Industrial Labour in Japan*, p. 282.

The rate at which individual output increased was more or less steady throughout the period in question. If 1929 = 100, the increase in the output per head of those in employment was as follows :

From 1926 to 1927	+ 9
„ 1927 „ 1928	+ 10
„ 1928 „ 1929	+ 10
„ 1929 „ 1930	+ 5
„ 1930 „ 1931	+ 14
„ 1931 „ 1932	+ 7
„ 1932 „ 1933	+ 6
Average for the year	+ 9

DIAGRAM XLI.—INDUSTRIAL PRODUCTION IN JAPAN

(1929 = 100)



The rate of increase slackened only in 1930, but it was made good the following year.

The curve of individual output dominates diagram XLI, crossing it diagonally from the bottom left to the top right corner. The decline in production in 1930-1931 was very slight, and had there been no technical progress a slight reduction in hours of work, such as took place in other countries, would have sufficed to prevent any extensive dismissal of workers. These dismissals were therefore due, not so much to the fall in production, but

rather to the elimination of human labour by new technical methods. The unemployment that developed in Japan during this period must therefore be classed as technological.

With regard to its extent, there are monthly estimates of unemployment, published by the Japanese statistical services from 1930 onwards. They give the following annual averages :

	1930	1931	1932	1933	1934
Actual figures	369	423	486	409	373
Percentages	5.3	6.1	6.8	5.6	5.0

It is difficult to reconcile these figures with other Japanese statistics. From 1926 to 1931 the index of employment (1929 = 100) fell from 109.8 to 81.7 [1]. The number of persons employed in industrial undertakings would thus appear to have been reduced by 25 per cent., and that in itself must have meant, at a conservative estimate, the dismissal of 400,000 or 500,000 wage earners.

But in the meantime the number of persons in search of work had increased by reason of the natural growth of the population and the migration of surplus agricultural labour to the towns. The question therefore arises : what has become of all those extra workers? Did they become craftsmen, or have they realised that there is no place for them at nature's banquet. In that case, to pursue the metaphor of Malthus, they must be waiting at the door of the banqueting hall—uninvited guests. They have not disappeared from this world, but they have found no regular occupation in the town, and they have probably returned to the village or are reduced to earning a livelihood by picking up casual jobs here and there, for that is the fate to which hundreds of thousands, or even millions of men and women are condemned in an overpopulated country. Whether or not they are unemployed is a question they themselves would probably be unable to answer. The statistics of the labour market, in any case, know nothing of their existence. If they are unemployed, they must be classified under " invisible unemployment ".

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[1] Cf. table XLVII, p. 154 and diagram XLI, p. 155.

CONCLUSIONS

The attempt must now be made to draw some conclusions from this analysis of the development of the labour market in various countries. These conclusions fall under two heads: *(a)* economic phenomena and *(b)* statistical problems arising out of these phenomena.

* * *

1. The development of employment possibilities in the various countries since the war has not been at all uniform, notwithstanding the fact that three depressions have shaken the economic life of the world during these sixteen years and that each of the depressions has been international in character and spread to a number of countries.

The first of these depressions in point of time (1920-1922) was essentially the consequence of demobilisation. It began in the United States about the middle of 1920 and spread successively to Great Britain, the Scandinavian countries, Belgium, Italy and a few other countries. France, Germany, the Danubian States and Japan escaped.

When this first wave of depression had passed, there was a spell of reasonable economic activity in most countries. But it was not long before a second depression set in (1926-1927) centring this time in Great Britain and Germany. In Britain this fresh depression was attended by serious social conflicts (the extensive coal strike); in Germany it was connected with the rationalisation of undertakings. This depression spread to the Scandinavian countries (more especially to Norway and Denmark) and to some parts of Eastern Europe (Poland).

The period that followed was one of economic recovery, but the boom was not sufficiently marked to absorb all the existing unemployment.

Towards the end of 1929 came the world depression. From the United States, where it first made itself felt, it spread like wildfire throughout the world. Unemployment grew beyond all measure,

reaching its peak in the summer of 1932. Since then, employment has improved slightly in most of the industrial countries; there are only a very few countries in which unemployment has continued to spread.

2. The characteristic feature of the period between the end of the war and the beginning of the world depression was the fact that in many countries the development of employment failed to keep pace with the growth of production. This was the case in the United States in the middle of a period of marked prosperity, as also in Great Britain, with its standing army of unemployed workers, in Germany during the years of economic recovery, in Japan, the Scandinavian countries, etc.

It was during 1929 that the economic situation of the world was, comparatively speaking, most prosperous. But even at that date there were more workers unemployed or on short time in many countries than there usually were during periods of depression before the war [1]. Even before the world depression, the labour markets of these countries were much overcrowded, their economic systems could not utilise all the available labour, and unemployment was gradually spreading. During the war and the period immediately following the armistice, there was practically no unemployment in the world; there was enough work for all. But this did not mean that the supply of and the demand for labour were really in stable equilibrium. And such a position of equilibrium had first to be found if the economic and social progress of the world after the war was to be guaranteed. No such position was found, and in the preceding analysis it has been seen how the balance was disturbed in various countries by the joint action of demographic, technical and economic factors.

3. From the demographic point of view, two separate phases can be distinguished in the post-war period : up to 1930, the age

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[1] The percentage of trade union members' unemployed or on short time in June-July 1929 was :

	Completely unemployed	On short time
Germany	8.5	6.8
Great Britain (unemployment insurance)	7.0	2.4
Sweden	7.2	—
Norway	11.3	—
Denmark	10.0	—
Australia	10.0	—
New Zealand	9.3	—

groups entering occupational life were well stocked; after that date came the age groups from the war years, when the birth-rate had been low.

During the first phase, up to 1930, there were three determining factors in the influx of new workers to the occupied population :

(a) the natural increase (at a rather high rate) of the population of working age;

(b) the removal of certain vestiges of the war years, when large numbers of women had temporarily engaged in occupational activities;

(c) the decline of international migration movements as compared with the pre-war period.

Under the influence of these three factors, the occupied population in most countries increased from year to year. The rate of increase was quite high, but as a general rule it did not exceed the pre-war rate [1].

In the second phase, which covers the years of world-wide depression, the pressure on the labour market in Germany, Great Britain, France, Italy and some other countries was appreciably relieved by the decline in the influx of new labour [2]. This to some extent mitigated the effects of the decrease in production on employment possibilities.

4. The distribution of the population over the various occupational groups may be considered as a demographic problem in the wide sense. The gradual industrialisation of the population was a characteristic feature of the pre-war period : the proportion of the occupied population in industrial occupations rose, and these occupations were able to absorb the surplus supply of labour from rural areas.

After the war, the industrialisation of the population ceased in

[1] In the United States, the annual increase in the occupied population was 0.9 per cent. from 1910 to 1920 and 1.6 per cent. from 1920 to 1930 (as against 2.3 per cent. from 1869 to 1899 and 3.2 per cent. from 1899 to 1913). In Great Britain, the occupied population increased by 1.4 per cent. annually on the average from 1923 to 1929, as compared with 1.2 per cent. from 1861 to 1911. In Germany the annual increase was 1.1 per cent. from the middle of 1925 to the beginning of 1930, and 1.6 per cent. from 1882 to 1907 In France and Italy, on the other hand, the occupied population fell in numbers after 1920.

[2] In Germany, for example, the number of wage earners varied as follows : 20,293,000 at the beginning of 1927; 21,127,000 at the beginning of 1930; 20,832,000 at the beginning of 1933.

many countries. In the United States, Great Britain, Japan and Norway, industrial occupations are so crowded that they have ceased to attract the new elements in the occupied population [1].

5. Everywhere the power of industry to absorb the additions to the occupied population has waned. In every country that has been affected by the latest depression and that has statistics of its labour market it has been found that the seat of the disease of unemployment lies in mining and manufacturing industry (not including building). But this phenomenon is always obscured to some extent by the fact that wage earners in search of employment are gradually forced into other occupational groups.

The absolute or relative decrease in the ability of the industrial occupations to absorb additional labour must be attributed to the changes that occurred : (1) in the rate of increase of the volume of industrial production; (2) in the output per head of industrial workers.

In all the cases studied in the preceding pages, it has been seen that before the war the volume of production increased more rapidly than did the individual output of the occupied population in industry (or of the wage earners employed in industrial undertakings).

	Percentage annual increase in the volume of production (ΔV)	Percentage annual increase in individual output (ΔT)
Great Britain, 1861-1911	1.85	0.59
United States, 1869-1899 ...	5.6	2.3
1899-1913 ...	4.5	1.1
Germany, 1882-1907	4.3	2.1

No figures are available for recent years that permit of an accurate comparison, for the period that could be considered would be too short and would cover only part of the economic cycle. Nevertheless, the figures for the years immediately preceding the economic depression are extremely interesting :

	Percentage annual increase in the volume of production (ΔV)	Percentage annual increase in individual output (ΔT)
United States, 1923-1929	2.9	4.8
Great Britain, 1924-1925	2.2	2.7
Germany, 1926-1929	9.0	3.1
Italy, 1923-1929	7.3	5.5
Czechoslovakia, 1921-1929 ...	6.3	3.2
Sweden, 1923-1929.....	5.4	4.2
Norway, 1923-1929	4.7	5.6
Denmark, 1923-1929	3.0	2.7
Japan, 1926-1929	8.7	12.1

[1] The same phenomenon has been noted in Portugal and India.

Before the depression, then, industrial production in the United States, Great Britain, Japan and Norway was increasing less rapidly than the individual output of the workers employed [1]. In these countries, $\Delta T > \Delta V$, which meant the elimination of a certain amount of labour from the production process. The unemployment that had grown up in industrial occupations in the United States, Japan and Norway before the depression may therefore be considered technological unemployment. In the case of Great Britain the situation is rather more complex : the unduly slow growth of production was really the cause of the disproportion in the development of the various factors.

On the other hand, no evidence of technological unemployment can be found in the case of Germany, France, Italy, Czechoslovakia, Sweden or Denmark. It is true that human labour was displaced by machinery in these countries too, but this was counterbalanced by an increase in production that absorbed the labour thus set free.

6. The unemployment that has come into existence since 1929 is due entirely to the decline in industrial production. In every country this unemployment was at first concentrated in the same branch of the economic system—industry. The other groups of occupations were not affected until later, and then much less acutely.

The amount of work to be performed during the depression kept pace with the falling rate of industrial production, but the undertakings were able, by spreading employment over a larger number of workers, to retain in their service a fraction of those who would otherwise have been dismissed as superfluous. When estimating the extent of unemployment during the depression, therefore, one must add to the official number of registered unemployed persons both those who are on short time and those " invisible " unemployed persons who did not apply to the exchanges because they did not expect to get any help from them.

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[1] The various percentages are not comparable with each other, having been obtained by a variety of methods and referring to different groups of undertakings. But the two percentages for each country cover more or less the same groups of undertakings and occupations. The sources of error involved in comparing the two are no greater than the possibilities of error in the original figures from which the percentages were calculated.

The technological unemployment of 1929 might be thought to be insignificant and harmless when compared with this disastrous unemployment of economic origin. But nothing could be more mistaken than such a conclusion. The recent depression might never have reached such alarming proportions if the economic equilibrium of the world had not first of all been upset by the growth of unemployment right in the middle of a period of economic recovery and prosperity.

* * *

This brief summary of the conclusions that may be drawn from the study of the labour market in several countries leads to the further question of how the development of employment or unemployment can best be kept under continuous observation.

The development of unemployment in each country was explained in these pages by the conjunction of demographic, technical and economic factors, the combined action of which was expressed in this formula :

$$\Delta \text{ Ch} = \Delta S + E \cdot \frac{\Delta T}{T + \Delta T} - \frac{\Delta V}{T + \Delta T}.$$

The various analyses were intended to test the value of this formula. In so far as it has survived the test, the conditions to be satisfied by statistics of the labour market may be summed up in the following points.

1. The point of departure for any statistics of the labour market must be as accurate information as possible concerning the size and composition of the *available labour supply* (S) of the country. These data should be available in the census. The census must therefore provide detailed information as to the social distribution of the population over the various branches of economic activity, the distribution of the wage earning population by sex and age and the amount of unemployment at the date of the census.

2. On the basis of these figures, the *probable development of the population of working age* in future years should be calculated

for each country with the help of mortality tables [1]. The series of figures thus obtained should be constantly corrected and kept up to date by reference to immigration, emigration and other statistics.

3. From the estimated development of the population of working age it is possible to estimate the probable increase in the occupied population and, more particularly, in the number of wage earners (ΔS).

A comparison of the development of the available labour supply with the development of employment (E) enables the investigator to assess the total amount of unemployment—a figure that may differ appreciably from the figures obtained by direct observation through sickness or unemployment insurance funds or the factory inspectorate.

The statistics of employment and unemployment require to be improved. It is specially necessary to calculate a separate index number of *employment in industry* (possibly including mines, but with a separate index for building). Permanent unemployment has its roots in the industrial occupations, which have ceased to absorb the influx of workers from the country to the towns; it is the loss of stable equilibrium in these occupations that reacts on the whole economic system and disorganises its other branches. Exact statistics for industrial occupations can therefore provide a key to the development of the economic system as a whole [2]. An index number of employment or unemployment that embraces indiscriminately industrial occupations, building, commerce and transport, the liberal professions and perhaps even agriculture is really of very little use. The best

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[1] The author has in mind the study made by Mr. A. L. Bowley for the League of Nations in 1926, to which reference has several times been made in these pages. The results of his work are now out of date, and the calculations should be made again on a broader basis, with a view to assessing the probable growth of the middle age groups from year to year and not merely the estimated number at a given date (e. g. 1940 or 1945).

[2] It is for the same reasons that building should be kept separate from industry in the narrower sense. The evolution of these two branches follows different, and sometimes contrary, trends. In the United States and in Great Britain the building trade absorbed some of the labour displaced from mining and manufacturing industries, by machinery or the decline in production; in Germany, on the other hand, the building trade is the cause of seasonal fluctuations in employment; in France, it was the great building activity during the depression that stimulated employment in various other branches of the economic system.

solution would be to have four distinct index numbers for: *(a)* manufactures and mining; *(b)* building; *(c)* commerce and transport; *(d)* other occupational groups.

4. It is very important that there should be exact statistics of *short time* and of the *spread-over of employment.* Experience shows that these statistics can equally well be linked up with those of unemployment (Germany) or with those of employment (France, United States). In this case also industry should be kept separate from other branches.

5. As was pointed out above, the statistics of *production, employment* and *unemployment* should be so co-ordinated that it is possible at any given moment to determine the development of output per head of those employed and per hour worked, not only for industry as a whole but also for the various branches of industry.

* * *

In these days it is time to have done with economic and social policy that gropingly seeks its way in the darkness. It must rise to the level of technical progress and be able to base its action on a full knowledge of the real facts of the moment and an adequate forecast of future trends.

The task of economic and social policy would be considerably lightened by the existence of unemployment and employment statistics satisfying those conditions. Such statistics would be like a powerful searchlight penetrating the darkness of the future; they would reveal in time the factors that threaten to upset the equilibrium of the economic and social system of a country, so that the danger could be met while there were still healthy sectors of the economic system to serve as bases for the necessary defensive operations.

APPENDIX

APPLICATION OF THE MATHEMATICAL FORMULA FOR UNEMPLOYMENT TO EMPIRICAL SERIES OF FIGURES

The application of the formula

$$\Delta \text{ Ch} = \Delta S + E \cdot \frac{\Delta T}{T + \Delta T} - \frac{\Delta V}{T + \Delta T},$$

will be demonstrated below, taking as an example the development of unemployment in Great Britain from 1860 to 1910.

Three series of figures are given :

(a) the index number of persons in industrial occupations (S);

(b) the percentage of persons in industrial occupations who were unemployed (Ch as a percentage of S);

(c) the volume of production (V).

	1860	1870	1880	1890	1900	1910
S =	100	113.0	129.2	148.8	169.4	191.7
Ch (as percentage of S) =	1.9	3.9	5.2	2.1	2.4	4.7
V =	100	129.4	155.9	182.4	232.4	250.0

The value S for each year is multiplied by the percentage of unemployed persons. This gives the index number of unemployment (Ch) in terms of the occupied population at the beginning of the observation period, in 1860. These figures are then deducted from the figures for the occupied population for the corresponding years. The difference indicates the changes in the number of members of the occupied population actually in employment (E).

	1860	1870	1880	1890	1900	1910
Ch =	1.9	4.4	6.7	3.1	4.1	9.0
E =	98.1	108.6	122.5	145.7	165.3	182.7

The index number of production (V) is then divided by the index of the number of persons in employment (E) to obtain the development of individual output, the basis of comparison (which in this case is 1 and not 100) being the production that would have been obtained at the beginning of the observation period (1860) per head of the occupied population engaged in industry if all these persons had been in employment at that time (i.e., if E = S = 100).

This gives :

	1860	1870	1880	1890	1900	1910
T =	1.019	1.192	1.273	1.252	1.406	1.368

In the following calculations, T will be used to indicate the figure for 1860 in the above series — i.e., 1,019. ΔT will be used to express the difference between the succeeding figures in the series and this initial figure. This gives two new sets of figures :

	1860	1870	1880	1890	1900	1910
$\Delta T =$	0	0.173	0.254	0.233	0.387	0.349
$\frac{\Delta T}{T + \Delta T} =$	0	0.145	0.199	0.186	0.275	0.255

The value of the three terms of the formula must now be calculated :

	1860	1870	1880	1890	1900	1910
$\Delta S =$	0	13.0	29.2	48.8	69.4	91.7
$E \cdot \frac{\Delta T}{T + \Delta T} =$	0	14.2	19.5	18.2	27.0	25.1
$\frac{\Delta V}{T + \Delta T} =$	0	24.7	43.9	65.8	94.2	109.7

ΔS represents the influx of new members of the occupied population to the labour market. If it be assumed that the volume of production remained constant ($\Delta V = 0$) and that the technique of production remained unchanged ($\Delta T = 0$), the number of unemployed persons (in 1860, Ch = 1.9) would have been $1.9 + \Delta S$ for each year. In order to allow for technical progress, one must add to this sum the amount of labour that would have been eliminated from the production process as a result of this progress if the volume of production had not increased. This amount of labour is represented by the value of $E \cdot \frac{\Delta T}{T + \Delta T}$.

This gives $1.9 + \Delta S + E \cdot \frac{\Delta T}{T + \Delta T}$, which represents the number of persons that would have been unemployed if—and the hypothesis is quite impossible—the population and technical progress had developed as they actually did, while the volume of production remained constant. From this sum must be deducted the value of $\frac{\Delta V}{T + \Delta T}$, which represents the absorption of unemployment as a result of increased production.

	1860	1870	1880	1890	1900	1910
$\Sigma = 1.9 + \Delta S + E \cdot \frac{\Delta T}{T + \Delta T} =$	1.9	29.1	50.6	68.9	98.3	118.7
$Ch = \Sigma - \frac{\Delta V}{T + \Delta T} =$	1.9	4.4	6.7	3.1	4.1	9.0

This is the method used for calculating the quantities represented in diagrams IV, V, IX, XVI, XXXII, XXXV and XXXVIII.