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WEALTH AND WELFARE

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BY

A. C. PIGOU, M.A.

PROFESSOR OF POLITICAL ECONOMY IN THE UNIVERSITY OF CAMBRIDGE
AUTHOR OF 'THE PRINCIPLES AND METHODS OF INDUSTRIAL PEACE'
'PROTECTIVE AND PREFERENTIAL IMPORT DUTIES,' ETC.

'Discontent, to be effective, must be shot with the colours of hope.'
CHARLES BOOTH.

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TO

DR. ALFRED MARSHALL

PREFACE

SEVERAL years ago I began to study the causes of unemployment. It soon became apparent, however, that these causes are so closely interwoven with the general body of economic activity that an isolated treatment of them is scarcely practicable. Hence the gradual growth and more extended scope of the present volume. The drift of the argument is indicated in a brief and incomplete manner in the Analytical Table of Contents. This table, however, is not a summary, and, indeed, it deliberately ignores the more difficult parts of the discussion. It should, therefore, only be used as a guide to the pages on which the different topics treated in the text may be found. I have endeavoured so to arrange the book that the main body of it may be intelligible to readers other than professional economists. Such readers, however, are recommended to omit Chapter III. of Part I., and Chapters I., VIII., X., XI., and XII. of Part II.

In a work covering so wide a field, and attempting to bring into an ordered unity so many different aspects of economic life, I cannot hope to have avoided altogether error and ambiguity. For protection against these dangers I owe

much to Mr. J. M. Keynes, of King's College, Cambridge, and Mr. Donald W. Corrie, of the Inner Temple, both of whom have very kindly read the whole book, either in manuscript or in proof. I am also indebted to Mr. Corrie for the compilation of the Index.

<div style="text-align: right">A. C. PIGOU.</div>

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PART I

WELFARE AND THE NATIONAL DIVIDEND

CHAPTER I

§ 1. " IF I am asked ' What is good ? ' my answer is that good is good, and that is the end of the matter. Or, if I am asked ' How is good to be defined ? ' my answer is that it cannot be defined, and that is all I have to say about it." [1] Welfare means the same thing as good. It, too, cannot be defined, in the sense of being analysed. At the same time we can say, and, indeed, it is the chief task of ethics to say, whether, and in what way, particular things belong to welfare. For the purpose of this volume it is sufficient to lay down on this subject two propositions : first, that welfare includes states of consciousness only, and not material things or conditions : secondly, that welfare can be brought under the category of greater and less. This is all that need be said here concerning welfare in general.

§ 2. Of welfare in general economic welfare is one part. It is welfare arising in connection with the earning and spending of the national dividend, or, in other words, of those parts of the community's net income that enter easily into relation with the measuring rod of money. Economic welfare, however, does not contain all welfare arising in this connection. Various good and bad qualities indirectly associated with income-getting and income-spending are excluded from it. It does not include the whole psychic return, which emerges when the objective services constituting the national dividend have passed through the factory of the body ; [2]

[1] G. E. Moore, *Principia Ethica*, p. 6.
[2] Cf. Fisher, *Capital and Income*, p. 168.

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it includes only the psychic return of *satisfaction.* Thus, economic welfare is, as it were, a part of a part of welfare.

§ 3. This being so, it is plain that welfare may change while economic welfare remains the same; and that a given change in economic welfare will seldom synchronise with an equal change in welfare as a whole. This circumstance might seem, at first sight, to render the study of economic welfare unimportant. To conclude thus, however, would be to mis-conceive the whole purpose of economic investigation. That purpose is not primarily scientific, if by science we intend the single-eyed search after knowledge for its own sake. It is rather practical and utilitarian, concerned chiefly to lay bare such parts of knowledge as may serve, directly or indirectly, to help forward the betterment of social life. Hence, the failure of economic welfare to act as a baro-meter of total welfare is of but slight importance. For, what we wish to learn is, not how large welfare is, or has been, but how its magnitude would be affected by the introduction of causes, which it is in the power of statesmen or private persons to call into being. The failure of economic welfare to serve as an index of total welfare is no evidence that the study of it will fail to afford this latter information: for, though a whole may consist of many varying parts, so that a change in one part never measures the change in the whole, yet the change in the part may always *affect* the change in the whole by its full amount. If this is the case, the practical importance of economic study is fully established. It will not, indeed, tell us how total welfare, after the introduction of an economic cause, will differ from what it was before; but it will tell us how total welfare will differ from what it would have been if the cause had not been introduced. That economic science may provide this important information is a possibility. Is the possibility realised in fact? To the view that it is so realised two serious objections may be urged, and must be studied.

§ 4. The first objection is an obvious one. It is that causes influencing the satisfactions and dissatisfactions, which arise in connection with income, are not confined in their

effect to these things, but modify also other parts of welfare.
Since the modifications thus brought about are not taken into
account by our study, we are not entitled to infer that, because
one specified cause would add more to economic welfare than
another specified cause, therefore it would add more to total
welfare. Nor may we even infer that, because a specified cause
would increase economic welfare, therefore it would increase total
welfare. For, the non-measured effect on non-economic welfare
might modify, or even outweigh, the measured effect on economic
welfare.   Furthermore, full justice is not done to this
objection, when it is merely stated in terms of possibility.
For, we know definitely that, in many cases, economic causes do
influence non-economic welfare, both directly and indirectly, in
a very important degree.

Let us look first at direct effects.   Every conscious state is
a complex of many elements, and includes not only satisfactions
but also cognitions, emotions and desires.   This being so, it is
natural to expect that causes operating to change satisfac-
tions may, either in the same act or as a consequence of it,
alter some of these other elements.   This is, in fact, what
happens.   For example, if the commodity which satisfies some
desire becomes more common, it will often result that this
desire, through experience of realisation, becomes more intense.
But, if the desire is in itself good or bad, a growth in its
intensity will alter welfare, and this alteration will be
additional to any that takes place through satisfaction.   Nor
are desires the only things that may be collaterally affected
by changes in the economic environment.   The core of feeling
and purpose, which we call people's character, is susceptible,
especially in youth, of modification either towards good or
towards evil.   The surroundings of work react upon the
quality of life.[1]   Ethical quality is affected by the occupa-
tions—menial service, agricultural labour, artistic creation,

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[1] "The Plymouth Cordage Company of Massachusetts found that, in conse-
quence of surrounding their factory with lawns and shrubberies, and covering its
walls with creepers, ' the employés took home with them the lessons we were
endeavouring to teach.   They started to fix up their own grounds ; walks that
had never seen the edging knife were edged, and lawns were carefully cut,
which at once began to lend an entirely different character to the homes of the
employés.' "—Meakin, *Model Factories and Villages*, pp. 79-80.

independent as against subordinate economic positions,[1]
monotonous repetition of the same operation, and so on—
into which the desires of consumers impel the people who
work to satisfy them.   It is affected, too, by the influence
which these people exert on others, with whom they may be
brought into personal relations.[2]   The social aspect of
Chinese labour in the Transvaal and of the attempt by
Australian pastoralists to maintain the convict system, as a
source of labour supply,[3] have relevance to welfare.   The
human relations that arise out of industrial relations are
also relevant.   The *esprit de corps* and interest in the fortunes
of the firm, which animate the workpeople in establishments.
where the personal intercourse of employers and employed is
cordial, besides leading to increased production of wealth, *is*
in itself an addition to welfare.   Nor is this all.   Closely
interwoven with the quasi-patriotic sentiment, which arises in
connection with some kinds of industrial arrangement, there
may be found another important non-economic good—
sympathetic and friendly feeling between man and man.   As
large-scale industry extended during the eighteenth and
nineteenth centuries, employers and employed became more
distant in station, and their opportunities of meeting one
another diminished.   In the wake of this inevitable physical
separation, there followed in some cases a moral separation—
" the personal alienation of the employer from his fellow-men
whom he engages to work for him in large numbers." [4]   This
spirit of hostility was an obvious negative element brought
about in non-economic welfare by an economic cause ; and the
partial suppression of it through Boards of Conciliation and
Copartnership arrangements is an equally obvious positive
element.   Yet again, economic causes affect that non-economic
part of welfare, which is associated with family life or inter-

[1] Thus, it is important to notice that machinery, as it comes to be more
elaborate and expensive, makes it, *pro tanto*, more difficult for small men,
alike in industry and agriculture, to start independent businesses of their own.
Cf. Quaintance, *Farm Machinery*, p. 58.

[2] Mr. Rowntree, for example, rightly emphasises the important influence
which the overlookers may exert on the moral tone of persons employed in a
factory.   Cf. *Industrial Betterment*, pp. 10-11.

[3] Cf. V. S. Clark, *The Labour Movement in Australia*, p. 32.

[4] Gilman, *A Dividend to Labour*, p. 15.

national comity. The unity of interest and occupation which characterises the farm family, as distinguished from the town-dwelling family,[1] the sociability and the opportunities for mutual education, both formal and informal, attached to membership of co-operative stores, the coarsening influence of over-crowded houses, the possible destruction of sympathy between kindred peoples through pro-tariff or anti-tariff disputation, the possible contamination of judicial or administrative activity by the poison of covert bribery, all these things are relevant. So also, finally, is the reflex influence upon people's characters produced by such things as public museums and even municipal baths.[2] This very real element in welfare will only be counted in economic welfare in the special case, in which one group of people devote income to purchasing things *for* other people. When they do this, they are likely to take account of the total effect, and not merely of the effect on the satisfactions of those people,—especially if the said people are their own children. As Sidgwick acutely observes : " A genuine regard for our neighbour, when not hampered by the tyranny of custom, prompts us to give him what we think really good for him, whereas natural self-regard prompts us to give ourselves what we like."[3] In this case, therefore, the gap between the effect on economic welfare and the effect on total welfare is partially bridged. In many cases, however, it is not so bridged.

Let us now turn to indirect effects. Causes that modify economic welfare may influence other parts of welfare, not directly, but indirectly through objective conditions of welfare other than the national dividend. The most important of these conditions are the services rendered by certain objects of natural beauty, and those rendered by certain people, for which money payment is not made. The effect of economic causes on objects of natural beauty is illustrated by

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[1] Cf. *Proceedings of the American Economic Association*, vol. x. pp. 234-5.

[2] Cf. Darwin, *Municipal Trade*, p. 75.

[3] *Practical Ethics*, p. 20. Cf. Effertz : "Ce que les intéressés savent généralement mieux que les non-intéressés, ce sont les *moyens* propres à réaliser ce qu'ils croient être leur intérêt. Mais, dans la détermination de l'intérêt le non-intéressé voit généralement plus clair."—*Antagonismes économiques*, p. 237-8.

the frequent desolation of beautiful scenery through the hunt
for coal or gold, the desecration widely wrought by uncon-
trolled smoke from factories, and the degraded form frequently
assumed by public advertisements.[1]   Effects on the services
rendered by certain people occur whenever economic causes,
such as Poor Law or factory regulations, or fluctuations in the
demand for men's labour, divert women workers from factory
work or paid home-work to unpaid home-work, in attendance
on their children, economical preparation of the family meals,
repair of the family clothes, thoughtful expenditure of house-
keeping money, and so on.[2]   It is clear that, in cases of this
kind, the changes that appear in economic welfare result almost
entirely from the definition we have selected for that term,
and do not represent any considerable change in total welfare.
It may be well, however, to add that, though there occurs regu-
larly a large absolute amount of unpaid work, which does not
enter into income—the philanthropic work, for example, of
unpaid organisers, church workers, Sunday school teachers, the
scientific work of disinterested experimenters, the political work
of many among the leisured classes, and so forth—it is probably
not the case that economic causes bring about any large amount
of *transference* between unpaid and paid occupations.   Conse-
quently, the qualification proper to inferences concerning total
welfare from facts about economic welfare is probably not so
large under this head as it might be thought to be at first
sight.

§ 5. The second objection is of a more recondite character.
The methodological principle at the basis of economic science,
and that which separates it from the other social sciences, is
the reference which it makes to a measure, namely, money.   This

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[1] The Advertisement Regulation Act, 1907, allows local authorities to frame
by-laws designed to prevent open-air advertising from affecting prejudicially
the natural beauty of a landscape or the amenities of a public park or pleasure
promenade.   It is not, we may note in this connection, a decisive argument
against underground, and in favour of overhead, systems of tramway power wires
that they are more expensive.   The London County Council have deliberately
chosen the more expensive underground variety.

[2] It must be noted, however, that, according to the investigators employed
by the Royal Commission on the Poor Laws, a plan of liberal relief to widows
with children adopted in Glasgow sometimes led to mere gossip and bad habits.
"So many of the women are devoid of domestic or other interest that work for
wages is a positive safeguard."—Report, p. 154.

measure, however, can only be brought* into relation with satisfactions and dissatisfactions through the medium of *desires* and *aversions*. Consequently, in order to make use of our measure, we are driven to *define* a given quantity of satisfaction as the satisfaction of a desire of given intensity. When a desire of greater intensity is satisfied, we say there is more satisfaction than when a desire of less intensity is satisfied, and *vice versa*. This is, of course, in itself an entirely legitimate proceeding. When, however, satisfaction is defined in this way, it is essential to observe that, though satisfaction remains a part of welfare, an addition to satisfaction, or to the economic welfare which is comprised of satisfaction, does not necessarily imply, even when everything else remains the same, any addition, much less an equivalent addition, to total welfare. In order that this implication should hold good, it would be necessary that the satisfaction of desires of equal intensity should always involve, in themselves and apart from their effects, equal measures of "good." It is easily shown, however, that the required equivalence may fail in either of two ways.

First, let us suppose, to take the strongest case, that the object of desire is always desired as a means to good and with an intensity proportionate to the good which it is expected to yield. In this case a given addition to satisfaction, in the sense defined above, will not yield a corresponding addition to welfare, when the expectations that have been formed are erroneous; and expectations are frequently erroneous.

Secondly, as a matter of fact, objects of desire are not desired with an intensity proportionate to the "good" expected to result from them. The point is illustrated in a special case by Sidgwick's remark: " I do not judge pleasures [and the case is clearly the same with satisfactions other than pleasures] to be greater and less exactly in proportion as they exercise more or less influence in stimulating the will to actions tending to sustain or produce them."[1] In like manner, Franz Brentano writes: "The actual presence of love by no means testifies unconditionally to the worthiness of the object

[1] *Methods of Ethics*, p. 126.

to be loved. . . . It frequently happens that a person, even
while loving something, confesses himself that it is unworthy
of his love:

<div align="center">

Video meliora proboque,
Deteriora sequor." [1]

</div>

This point is obviously of large practical importance. Together
with opinions as to the relative *ignorance* of the poor, it lies
at the basis of arguments, such as those advanced by Mr. Lever
in favour of prosperity-sharing—where employers decide in
what form the workmen shall take their extra gains—as
against profit-sharing,[2] and of the kindred arguments often
employed in defence of the sanitary clauses of the Factory
Acts, governmental prohibition of truck, and compulsory
insurance. In wider fields its significance is equally clear.
Imagine, for example, that a statesman is considering how far
inequality in the distribution of wealth influences welfare.
He will reflect that the satisfaction of some of the desires
of the rich, such as gambling excitement or luxurious
sensual enjoyment, or perhaps, in respect of Eastern
countries, opium-eating, is ethically inferior to the satisfaction
of primary physical needs, to the securing of which the
capital and labour controlled by the demand of the rich would,
if transferred to the poor, probably be devoted. On the other

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[1] *Origin of the Knowledge of Right and Wrong*, p. 17.

[2] Under profit-sharing Mr. Lever holds "that most of the extra money
received by the men is either absolutely wasted personally, or in luxuries which
do not materially improve the living conditions, so that the wife and family
often fail entirely to benefit therefrom. In place, therefore, of merely sharing
its profits with its employés, this firm endeavours to share with them the results
of prosperity, by laying aside yearly a proportion of its profits to be invested for
the benefit of all, not to be divided among them and thus lost sight of." (Meakin,
Model Factories and Villages, p. 428.) Again : "The benefits of prosperity-
sharing may be applied to labour in a great variety of ways. . . . One of the
best methods . . . is to be found in building cottages to be let at low rentals.
This plan is most effective in elevating and bettering the conditions of labour,
and has the additional advantage of ensuring that the wives and children shall
share in it. . . . Contributions may be made towards the building of clubs,
recreation halls, institutions, summer holidays, winter entertainments, sick and
burial societies. . . . By contributing to objects such as these, labour enjoys the
fullest liberty in managing its own institutions outside the business, whilst
management is maintained in its proper place inside the business." (Lever,
Economic Review, Jan. 1901, pp. 62-3.) There can be little doubt that, under a
policy of this sort, *wisely carried out*, a given sum of money will react more
forcibly on the quality of workpeople than it would do if simply handed over to
them in the form of coin.

hand, he will reflect that other satisfactions purchased by the rich—those, for example, connected with literature and art—are perhaps ethically superior to satisfaction of primary needs, and certainly superior to that part of the satisfaction of the poor which is derived from excessive indulgence in stimulants.

§ 6. The discussion of the two preceding sections makes it plain that anything in the nature of rigid inference from effects on economic welfare to effects on total welfare is out of the question. In certain cases the divergence between the two effects will be insignificant, but in others it will be very wide. Nevertheless, I submit that, in the absence of special knowledge, there is room for a judgment of probability. When we have ascertained the effect of any cause on economic welfare, we may, unless, of course, we have evidence to the contrary, regard this effect as *probably* equivalent in direction, though not in magnitude, to the effect on total welfare ; and, when we have ascertained that the effect of one cause is more favourable than that of another cause to economic welfare, we may, on the same terms, conclude that the effect of this cause on total welfare is probably more favourable. In short, there is a presumption,—what Professor Edgeworth calls an " unverified probability,"—that conclusions about the effect of an economic cause upon economic welfare will hold good also of the effect on total welfare. The burden of proof lies upon those who hold that, in any particular case, this presumption should be overruled.

§ 7. The above result suggests *prima facie* that economic science, when it shall have come to full development, is likely to furnish a powerful guide to practice. Against the acceptance of this suggestion there remains, however, one considerable obstacle. When the conclusion set out in the preceding section is admitted to be valid, a question may still be raised as to its practical utility. Granted, it may be said, that the effects produced by economic causes upon economic welfare are probably, in some measure, equivalent to those produced on total welfare, we have really gained nothing. The effects produced upon economic welfare cannot—the argument runs— be ascertained beforehand by those partial and limited investi-

gations, which alone fáil within the scope of economic science. The reason for this is that the effects upon economic welfare produced by any economic cause are likely to be modified according to the character of the non-economic conditions, which, in one form or another, are always present, but which economic science is not adapted to investigate.   The difficulty is stated very clearly by J. S. Mill in his *Logic*.   The study of a *part* of things, he points out, cannot in any case be expected to yield more than approximate results: "Whatever affects, in an appreciable degree, any one element of the social state, affects through it all the other elements. . . . We can never either understand in theory or command in practice the condition of a society in any one respect, without taking into consideration its condition in all other respects.   There is no social phenomenon which is not more or less influenced by every other part of the condition of the same society, and therefore, by every cause which is influencing any other of the contemporaneous social phenomena."[1]   In other words, the effects of economic causes are certain to be partially dependent on non-economic circumstances, in such wise that the same cause will produce somewhat different economic effects according to the general character of, say, the political or religious conditions that prevail.   So far as this kind of dependence exists, it is obvious that causal propositions in economics can only be laid down subject to the condition that things outside the economic sphere either remain constant or, at least, do not vary beyond certain defined limits.   Does this condition destroy the. practical utility of our science ?   I hold that, in respect of nations in a reasonably stable state of general culture, like those inhabiting Western Europe, the measure in which the condition fails is not, in general, large enough to render the results reached by economic inquiry other than reasonably good approximations to truth.   This is the view taken by Mill.   While fully recognising "the paramount ascendancy which the general state of civilisation and social progress in any given society must exercise over all the partial and subordinate phenomena," he concludes that the portion of social phenomena, in which the immediately

[1] *Logic*, ii. p. 488.

determining causes are principally those that act through the desire for wealth, " do *mainly* depend, at least in the first resort, on one class of circumstances only." He adds that, " even when other circumstances interfere, the ascertainment of the effect due to the one class of circumstances alone is a sufficiently intricate and difficult business to make it expedient to perform it once for all, and then allow for the effect of the modifying circumstances; especially as certain fixed combinations of the former are apt to recur often, in conjunction with ever varying circumstances of the latter class." [1] I have nothing to add to this statement. If it is accepted, the difficulty discussed in the present section need no longer give us pause. It is not necessarily impracticable to ascertain by means of economic science the approximate effects of economic causes upon economic welfare. The bridge that has been built in earlier sections between economic welfare and total welfare need not, therefore, rust unused.

[1] *Logic*, ii. pp. 490-91.

CHAPTER II

§ 1. In the preceding chapter some study has been made of the effects produced by economic causes, immediately upon economic welfare, and ultimately upon total welfare. We have now to notice that few causes operate upon economic welfare directly. In general, they operate indirectly through the magnitude of the national dividend, and through its distribution between different persons and between different parts of time. The problem of this chapter is to determine in broad outline the relations subsisting between changes in economic welfare and changes in certain quantitative aspects of the dividend. Before this is attempted, however, some closer study of the dividend itself must be attempted.

§ 2. The ultimate elements of which the dividend is composed consist of objective services, some of which are rendered through commodities, while others are rendered direct. In reckoning up these elements, we must be careful not to count the same thing twice over—not to enter in our inventory, for example, both the services of the baker and the loaf that these services bake, or both the railways of the country and the value of railway shares. Under this head difficulties of some importance need to be overcome. Their nature may be illustrated from the recent official attempt, not, indeed, to make an inventory of the national dividend, but to estimate, in part, its money value. In the Preliminary Report issued in connection with the Census of Production, the Director summarises the method followed to avoid double counting as follows: " The result of deducting the total cost

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of materials used and the amount paid to other firms for work given out from the value of the gross output for any one industry or group of industries is to give a figure which may, for convenience, be called the 'net output' of the industry or the group. This figure expresses completely and without duplication the total amount, by which the value of the products of the industry or group, taken as a unit, exceeded the value of the materials purchased from outside; *i.e.* it represents the value added to the raw materials in the course of manufacture. This sum constitutes for any industry the fund from which wages, salaries, rents, rates, taxes, depreciation and all other similar charges, as well as profits, have to be defrayed." [1] By adding together the net products of all the industries of the country, along with the net products of the country's capital invested abroad, we obtain a catalogue of the whole dividend expressed in terms of money. If double counting is obviated by methods of this kind, there is no objection in principle to including the two sorts of services distinguished above—those rendered through commodities and those rendered direct—under the term " goods and services." When this term is properly guarded and qualified, its meaning is precisely the same as that which Professor Fisher and others intend to signify by the term " services." The choice between the two terms is a matter, not, as Professor Fisher appears to suggest,[2] of principle, but of convenience. Personally, while recognising the awkwardness of wide departure from business usage, I am inclined to prefer the shorter and simpler term " services."

§ 3. It is, again, a matter of convenience, and not of principle, to determine whether all or some, and, if some, what services or goods and services shall be reckoned as parts of the national dividend. As indicated at the beginning of the preceding chapter, I propose here to follow Dr. Marshall's usage and to include only such items as can be brought easily into relation with a money measure. The test of easiness again, I derive, still following Dr. Marshall, from the practice of the British Income Tax Commissioners. Hence, I include

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[1] [Cd. 4896], p. 6.
[2] *The Nature of Capital and Income,* pp. 105-6.

everything that people buy with money income, together with such services as a man obtains from a house owned and inhabited by himself. But, "the services which a person renders to himself and those which he renders gratuitously to members of his family or friends; the benefits which he derives from using his own personal goods [such as furniture and clothes], or public property such as toll-free bridges, are not reckoned as parts of the national dividend, but are left to be accounted for separately."[1] Our decision to use the term national dividend in this restricted significance must not be forgotten when we proceed to argue that a diminution in the dividend, in general, implies a diminution in economic welfare.

§ 4. Our next problem is of more substantial significance. Certain services have been separated off by the two preceding paragraphs as *prima facie* belonging to the national dividend. Among these services, however, closer reflection exhibits two distinct groups—services that are converted into psychic income forthwith, and services that are devoted to the construction of instruments for yielding other services, which will be converted into psychic income in the future. It is a question of some difficulty to decide whether both these groups are really eligible, or whether the latter ought to be excluded altogether, or whether some part of both ought to be excluded. The whole body of these services we may call, if we will, the *gross* national dividend. Our problem then assumes the form: "What part of the gross national dividend constitutes the true, net, national dividend?"

§ 5. To this problem two principal solutions have been given by Dr. Marshall and Professor Fisher respectively. Dr. Marshall writes: "The labour and capital of the country, acting on its natural resources, produce annually a certain net aggregate of commodities, material and immaterial, including services of all kinds. This is the true net annual income or revenue of the country, or the national dividend."[2] But, he adds elsewhere: "If we look chiefly at the income of a country, we must allow for the depreciation of the sources

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[1] Marshall, *Principles of Economics*, 6th ed. p. 524.
[2] *Ibid.* p. 523.

from which it is derived."[1] In other words, Dr. Marshall's view is that the true net national dividend comprises the whole of the gross dividend, *minus* such part as would suffice to maintain the country's capital intact. It may, therefore, according to circumstances, be either greater or less than the sum of services devoted to immediate consumption during the year ; if new capital is created, it will be greater than that sum, whereas, if renewals and repairs are neglected, it will be less. Professor Fisher, on the other hand, placing in the forefront of his argument the proposition that savings are in no circumstances income, claims unequivocally to identify the national dividend with those services, and those only, that enter directly into consumption. According to him, Dr. Marshall's national dividend represents, not the dividend that actually *is* realised, but the dividend that would be realised *if* the country's capital were maintained. These two things are, indeed, *materially* equivalent in the special case where resources are set aside, whether in renewals of obsolescent plant or in depreciation funds, to an extent that exactly offsets the depreciation in capital that occurs. In practice, however, it is extremely rare for the two things to be *materially* equivalent, and it is impossible for them to be *analytically* equivalent.

§ 6. There can be no question that, in point of logical compactness, Dr. Marshall's definition labours under a serious disadvantage. In a thorough-going stationary state there is no ambiguity or difficulty about the conception of what is required to maintain capital intact. If a particular sort of machinery wears out in ten years—Taussig's estimate for the average life of machinery in a cotton mill[2]—it is obvious that the net national dividend over ten years falls short of the gross dividend by the value of this machinery. Again, in so far as the growth of any sort of crop wastes the productive powers of the soil, the net dividend falls short of the gross dividend by the cost of returning to the soil those chemical ingredients that have been removed.[3] Again, when minerals

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[1] *Principles of Economics*, p. 80.

[2] *Quarterly Journal of Economics*, 1908, p. 342.

[3] Professor Carver writes of the United States : "Taking the country over, it is probable that, other things equal, if the farmers had been compelled to buy fertilisers to maintain the fertility of their soil without depletion, the whole

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are dug out of the ground, a deduction should be made equal
to the excess of the value, which the minerals used during
the year had in their original situation (theoretically
represented by the royalties paid on their working), over
the value which whatever is left of them possesses to the
country after they have been used. If "using" means
exporting in exchange for imports that are not used as capital,
this latter value is zero. If, on the other hand, it means
working up into some enduring instrument, the value of the
mineral after use will be greater than the value it had in the
mine, and, in order to obtain the net from the gross dividend,
we shall need to add, and not to subtract, something.

All this is simple enough. When, however, we are con-
cerned, not with an imaginary stationary state, but with the
condition of affairs that actually exists, the mere maintenance
of the physical efficiency of our plant is no longer obviously
equivalent to the maintenance of our capital intact. Machinery
that has become obsolete because of the development of im-
proved forms is not really left intact, however excellent its
physical condition; and the same thing is true of machinery
for whose products popular taste has declined. If, however,
in deference to these considerations, we decide to make an
allowance for cases of obsolescence, we are exposed to the retort
that this concession logically implies the recognition of the
value, and not the physical efficiency, of instrumental goods as
the object which is to be maintained intact. But, it is then
urged, the value of instrumental goods, being the present value
of the services which they are expected to render in the future,
necessarily varies with variations in the rate of discount.
Is it really a rational procedure so to define the net national
dividend that its relation to the gross dividend shall
depend on a circumstance of this kind? No doubt, we can
and do protest vigorously against the stretching of our conces-
sion upon this logical Procrustes' bed. We assert that capital
is maintained intact *in our sense*, when physical depreciation

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industry would have become bankrupt. . . . The average farmer had never
(up to about 1887) counted the partial exhaustion of the soil as a part of the
cost of his crop " (*Sketch of American Agriculture*, p. 70). Against this
capital loss has to be put, however, the capital gain due to the fact of occupation
and settlement of the land.

and depreciation through obsolescence have been made good, whether the rate of discount has varied or not. This is a definite position, and one that renders the conception of the net national dividend, which is linked up with it, reasonably precise. Nevertheless, we are bound to confess that this conception is in the nature of a compromise and does not present those clear-cut logical facets, with which the rival conception of Professor Fisher confronts us.

§ 7. The issue between these two conceptions of the dividend cannot, however, be decided by dialectics of this kind. Its solution, as I conceive the matter, does not turn so much upon general reasoning as upon the particular purpose for which we intend the conception to be used. If we are interested in the comparative amounts of economic welfare, which a community obtains over a long series of years, and are looking for an objective index, with which this series of amounts can be suitably correlated, then, no doubt, Professor Fisher's conception is the proper one. In this volume, however, we are concerned, not with measurement, but with causation. The general form of our questions will be : " What effect on economic welfare as a whole is produced by such and such a cause operating on the economic circumstances of 1912 ? " Now, it is agreed that the cause operates through the dividend, and that direct statements of its effects must refer to the dividend. Let us consider, therefore, the results that follow from the adoption of Professor Fisher's and Dr. Marshall's conceptions respectively. On Professor Fisher's plan, we have to set down the difference made by the cause to the dividend, not merely of 1912, but of every year following 1912 ; for, if the cause induces new savings, it is only through a statement covering all subsequent years that its effect on the dividend, as conceived by Professor Fisher, can be properly estimated. Thus, on his showing, if such a thing as a piano is made in 1912, not the capital value of that article, but only the rental value of the services rendered by it in 1912, should be reckoned in the dividend of 1912 ; and the aggregate effects of the creation of the piano cannot be measured without reference to the national dividend of a long series of years. On Dr. Marshall's plan

this inconvenient ˣelaboration is wholly dispensed with.
When we have stated the effect produced on the dividend,
in his sense, for the year 1912, we have implicitly included
the effects, so far as they can be anticipated, on the consumption
both of 1912 and of all subsequent years; for, these effects are
reflected in the capital value originally possessed by the piano.
The *immediate* effect on consumption is measured by the
alteration in the 1912 dividend as conceived by Professor
Fisher.   It is, however, through total consumption, and not
through immediate consumption, that economic welfare and
economic causes are linked together.   Consequently, despite its
inferiority from the standpoint of dialectics, I hold that Dr.
Marshall's conception is substantially the one that we require;
and I, therefore, propose in what follows to adopt that con-
ception.[1]   The ground being thus cleared, the main argument
may proceed.   The problem before us will be approached in
the present chapter in a rough general way.   Complications
arising from the fact that the dividend consists of diverse
sorts of goods and services consumed in different proportions
by different people will be left aside, and the argument will
be conducted much as it would be if the dividend were
homogeneous in character.

§ 8. On this basis, three important propositions can be
laid down.   The first of these is that, if a cause is introduced,
which makes for an increase in the aggregate size of the
dividend, provided that the absolute share of no group of
members, in terms of the commodities which that group is
accustomed chiefly to consume, decreases, the economic wel-
fare of the community as a whole is likely to be augmented.

This proposition can be established in a general way thus.
Causes affecting the magnitude of the dividend may be divided
into two groups, those operating from the side of supply and
from the side of demand respectively.   The former group
embraces all causes that enable things to be produced at a

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[1] For a somewhat different line of criticism, *vide* an article by Professor
Flux in the *Quarterly Journal of Economics* for February 1909, to which
Professor Fisher replied in the May issue of the same journal.   The problem of
how to distribute charges between income and capital account from the standpoint
of an individual business is well discussed in Mr. Cole's work on *Accounts*, chapter

smaller cost, the latter all causes that render things more intensely desired. It is obvious that improvements and so forth, when the general conditions of demand are given, involve both increased production, that is to say increased dividend, and also increased economic satisfaction; and it is equally obvious that a development in the desire for things, when the general conditions of supply are given, has the same double consequence. Furthermore, the probability that an increase in the dividend, resulting from either of the two groups of causes that have been distinguished, will be associated with an increase in economic welfare, is enhanced by the fact that processes of production and personal tastes both develop through practice. If the expansion of the dividend is due to expanded desires, besides the direct increase in economic welfare, there may occur an indirect increase through reaction on infant industries. This indirect increase may, on occasions, be more marked than the direct increase itself. In a short epoch of keen demand, for example, ideas and inventions may be generated, which become a permanent factor in the enhancement of the dividend, and hence, in turn, in economic welfare. The same class of consideration is applicable, if the original expansion of the dividend arises out of the circumstances of production. For, there are infant demands as well as infant industries. Experience in using a commodity promotes affection for it, just as experience in producing it promotes ability to produce. People may be given a taste for a particular thing, or the keenness of their desire for it may be permanently increased, through the temporary use of, or acquaintance with, it. When machines are sent out on trial, or articles presented in sample-packets, or pictures exhibited free to the public, the popular taste for these objects tends to be augmented. When public-houses, or lotteries, or libraries are easily accessible, the taste for drink, or gambling, or literature is not merely gratified, but is also stimulated. When cleanliness, or light,[1]

[1] Cf. Walpole's account of the way in which the introduction of street lamps led to an increased demand for illuminants *within* the neighbouring houses. (*History of England*, i. 86.) An elaborate method of advertising electric light is quoted in Whyte's *Electrical Industry* (p. 57). A company undertakes to instal six lamps in a house free of all charge for a six months' trial, the householder paying only for the current that he uses. After the six months, the company undertakes to remove the whole arrangement if the customer so desires.

or model dwellings, or model plots of agricultural land are set up, though it is only to be seen, and not owned, by the neighbours, the object lesson may still succeed and make plain superiorities hitherto unrecognised.[1] Thus, " free libraries are engines for creating the habitual power of enjoying high-class literature," and a savings bank, if confined to the poor, is an " engine for teaching thrift."[2] Furthermore, just as with expanded desire, so also with expanded production, the indirect effect on economic welfare may be more marked than the direct effect. An increase in the supply of some commodity, for example, may be brought about by means of a bounty. The direct effect, in some cases, continues only so long as the bounty is in operation; but, the tastes of the people may be altered permanently, and they may presently get more satisfaction than before from the original quantity of supply. A case in point is furnished by Benini. According to that writer, the depression from which Italy suffered between 1888 and 1896, by compelling people, for the time, to spend less on gambling, has permanently lessened the taste for gambling.[3]

The connection between an increase in the dividend and an increase in economic welfare, thus generally set out, is, from the standpoint of this work, most important when the increase of dividend in question is due to some cause affecting supply. Causes operating on the side of demand are, indeed, sometimes of great practical significance. There is much suggestion in Jevons's characteristic remark: " It may be difficult to resist pointing out how slight an alteration of wants and tastes would often result in a great increase of wealth [in the sense of satisfaction]. . . . While the great Irish famine was at its worst, abundance of salmon and other

[1] Cf. Miss Octavia Hill's practice in insisting on the cleanliness of the *staircases* of her houses, and Sir H. Plunkett's account of the Cork Exhibition, 1902 (*Ireland in the New Century*, pp. 285-7).

[2] Jevons, *Methods of Social Reform*, p. 32. It should be noted, however, that Dr. Marshall thinks this order of consideration of small practical importance. He writes: "Those demands, which show high elasticity in the long run, show a high elasticity almost at once ; so that, subject to a few exceptions, we may speak of the demand for a commodity as being of high or low elasticity without specifying how far we are looking ahead." (*Principles of Economics*, p. 436.)

[3] *Principii di statistica metodologica*, p. 259.

fish could have been had for the trouble of catching; scarcely any of the starving peasantry would consent to touch it." [1] A similar thought underlies Canon Barnett's saying: " Children should be prepared for leisure with as much care as they are prepared for work. Great pains are taken that boys should learn some skill and that girls should do needlework, but surely as great pains should be taken that they may develop powers of self-amusement and others' amusement." [2] The problems associated with the training of demand are deserving, as these quotations suggest, of the most careful study. Such study, however, partly on account of its difficulty, does not fall, in any large measure, within the scope of my present purpose. In the main, as I have said, this work is concerned with causes operating on the side of supply.

This circumstance gives special importance to a difficulty in the way of our general view, which now presents itself. The proposition set out at the head of the present section is most interesting to us, when it avers that improvements and so on, by making the dividend larger, are likely to make welfare larger also. This, however, is just the form, or part, of the proposition most readily open to attack. The point is this. The satisfaction a man obtains from his economic environment is, in great part, derived, not from the *absolute*, but from the *comparative*, magnitude of his income. Mill wrote: " Men do not desire to be *rich*, but to be richer than other men. The avaricious or covetous man would find little or no satisfaction in the possession of any amount of wealth, if he were the poorest amongst all his neighbours or fellow-countrymen." [3] More elaborately, Signor Rignano writes: " As for the needs which vanity creates, they can be satisfied equally well by a small as by a large expenditure of energy. It is only the existence of great riches, which makes necessary for such satisfaction a very large, instead of a very small, expenditure. In reality a man's desire to appear ' worth ' double what

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[1] *Principles of Economics*, p. 32.
[2] *Towards Social Reform*, p. 302 ; cf. Fisher, *The Nature of Capital and Income*, p. 176.
[3] Posthumous Essay on Social Freedom, *Oxford and Cambridge Review*, Jan. 1907.

another man is worth, that is to say, to possess goods (jewels, clothes, horses, parks, luxuries, houses, etc.) twice as valuable as those possessed by another man, is satisfied just as fully, if the first has ten things and the second five, as it would be if the first had a hundred and the second fifty."[1] Moreover, it is not merely rivalry that is in question. Besides the desire for a good relative position among people, which improvement benefiting all people similarly obviously does nothing to satisfy, there is the nobler desire for excellence for its own sake. "We needs must love the highest when we see it"; we desire, in a measure, that what we have shall be the best of its kind. This desire obviously receives no fuller satisfaction, or, in other words, welfare in respect of it gains nothing, when improvements create a new "best" superior to the old one. The qualification to the proposition laid down above, which is necessitated by considerations of this order, is probably of much greater importance than is generally recognised. Nevertheless, I am satisfied that the qualification is *only* a qualification. An ordinary man's satisfaction does not depend entirely upon his comparative, but partly also upon his absolute, income. It cannot well be maintained seriously that an increase in the latter will add *nothing whatever* to the satisfactions which constitute his economic welfare.[2] Hence, subject to the condition that other things are equal, my first proposition stands.

§ 9. My second proposition can be stated in several ways. The most abstract form of it affirms that economic welfare is likely to be augmented by anything that, leaving other things unaltered, renders the distribution of the national dividend less unequal. If we assume all members of the community to be of similar temperament, and if these members are only two in number, it is easily shown that any transference from the richer to the poorer of the two, since it enables more intense wants to be satisfied at the expense of less intense wants, must increase the aggregate sum of satisfaction. In a community consisting of more than two members, the meaning of "rendering

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[1] *Di un socialismo in accordo colla dottrina economica liberale*, p. 285.

[2] Lassalle's view, as quoted by Leroy-Beaulieu, that " la situation de chaque classe a toujours pour unique mesure la situation des autres classes dans le même temps " (*Répartition des richesses*, p. 45), is clearly an extravagance.

the distribution of the dividend less unéqual" is ambiguous. On the assumption, however, of similarity of temperament among the members, it can be shown that a diminution in the inequality of distribution, in the sense of a diminution of the mean square deviation from the mean income, probably increases satisfaction.[1]   It is not, however, really necessary for my purpose to give a precise definition of the meaning of a diminution in the inequality of distribution, for, though it is, doubtless, possible to discover cases, in which one measure records an increase and another a decrease in inequality, these cases are not likely to be of large practical importance.   In a rough general way, the measure afforded by the mean square deviation will be concordant with such a measure as that which Pareto obtains by dividing the logarithm of the number of incomes in excess of any amount x into the logarithm of x. For, *ceteris paribus*, this measure can only indicate increased equality of distribution, when people, formerly possessing less than an income x, come to possess more, and this, in general, implies that some incomes exceeding x are reduced.[2]   My second proposition may, therefore, be stated in more concrete form thus.   If a cause is introduced, which makes for an increase in the absolute share of relatively poor groups of persons (in terms of the commodities which these groups are accustomed chiefly to consume), provided that the magnitude

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[1] If A be the mean income, and a_1, a_2 . . . deviations from the mean, aggregate satisfaction, on our assumption,

$$= nfA + (a_1 + a_2 + \ldots)f' + \frac{1}{2!}(a_1{}^2 + a_2{}^2 + \ldots)f'' + \frac{1}{3!}(a_1{}^3 + a_2{}^3 + \ldots)f''' + \ldots$$

But we know that $\{a_1 + a_2 + \ldots\} = 0$.
We know nothing to suggest whether the sum of the terms beyond the third is positive or negative.   But, it is certain that $\frac{1}{2}\{a_1{}^2 + a_2{}^2 + \ldots\} f''$ is negative. If, therefore, the third and following terms are small relatively to the second term, it is certain, and, in general, it is probable, that aggregate satisfaction is larger, the smaller is $(a_1{}^2 + a_2{}^2 + \ldots)$.   This latter sum, of course, varies in the same sense as the mean square deviation or standard

deviation $\sqrt{\Sigma \dfrac{a^2}{n}}$.

[2] The problem of measuring inequality is discussed in articles by Dr. Watkins and Dr. Persons in the *Quarterly Journal of Economics*, 1908 and 1909. Dr. Persons advocates the mean square deviation, without, however, noting the theoretical defence available for it that is given in the preceding footnote.   It may be observed that Pareto's measure is subject to great difficulty, unless we accept his view that, in the distributions we wish to investigate, the ratio between his two logarithms is approximately the same for all values of x.

of the aggregate national dividend (in terms of commodities in general) does not decrease, economic welfare is likely to be augmented.

No doubt, the inequalities which this proposition condemns are random inequalities. The condemnation would not hold good, if such inequalities of income as existed were always arranged in accordance with capacity for obtaining enjoyment from economic resources. This consideration may not impossibly justify the claim that *certain specified inequalities* between races or groups ought not to be abolished; though it must be remembered even here that, since capacity for enjoyment depends largely upon education in it, groups or races of little capacity under present conditions are not thereby proved to be inherently of little capacity. For the present purpose, however, qualifications of this kind need not detain us. When we reflect upon the actual conditions of modern civilised countries, it is obvious that the above plea cannot be urged successfully in defence of the generality of inequalities that subsist there.[1] According to the estimates given by Mr. Chiozza-Money in his *Riches and Poverty*, the number of persons in this country—men, women and children all included—in receipt of wages for manual work is about 15,000,000. The number of " petty tradesmen, civil servants, clerks, shopmen, travellers, canvassers, agents, teachers, farmers, inn-keepers, lodging-house keepers, pensioners, and so forth, whose profits or salaries are below £3 a week " is about 3,000,000.[2] These two sets of persons, together with those dependent upon them, make a total of 38,000,000 persons not assessed to income-tax, whose aggregate income amounts to 880 millions a year, or £23 per head. Alongside of these,

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[1] It is obvious, of course, that a transference of income from the rich to the poor involves a modification of the concrete objects of which the dividend is made up. For example, the equalisation of incomes in England would mean, among other things, that some land suitable for cultivation and now used for deer-forests would be diverted to crops (cf. Landry, *L'Utilité sociale de la propriété individuelle*, p. 76), some precious metals now used for ornament to the service of industry, and some labour now employed in domestic service to the production of commodities in general demand.

[2] *Riches and Poverty*, pp. 16 and 18. The inequality of distribution is further illustrated by the fact that, whereas the income-tax falls at an abated rate on most income-tax payers, it falls at a full rate on most income (*e.g.*, a 1/- income-tax works out at $4\frac{1}{4}$ per cent).—*Income-tax Committee*, p. 219.

stand five million income-tax payers with an aggregate income of about 830 millions, and an income per head of £166, this last figure being an average derived from a number of individual figures, some of which are notoriously very high indeed. A more elaborated estimate, worked out by Mr. Ireson in 1910, is as follows :—[1]

Persons with	Number.	Average Income per head.	Average Spending.
Over £5000 . .	40,000	£12,100	£7000
From £5000 to £700 .	1,160,000	1,059	690
From £160 to £700 .	2,800,000	357	329
From £52 to £160 . .	27,000,000	142	138
Under £52 . . .	12,000,000	40	40

No doubt, these figures are subject to important qualifications. Mr. Ireson is careful to point out that "average income per head" is not equivalent to average spending per head, because a much larger proportion of the income of the rich than of the poor is saved. By the use of estimates into which much guess-work enters, he obtains the fourth column of the above table, in which the disparity between rich and poor is much smaller than it is in the third column. Furthermore, it is well to recollect that estimates of money income tend to exaggerate the relative real incomes of wealthy persons, because such persons are apt, in many of their purchases, to be charged higher prices than poor persons for the same services.[2] This sort of discrimination against "good addresses" is said to be made by a number of London shops; and hotel charges are also often discriminating. When all qualifications are made, however, in view of the above figures it appears, *prima facie*, quite obvious that, so long as the dividend as a whole is not diminished, a gain to the poor, achieved through more equal distribution, means an addition to economic welfare. If

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[1] *The People's Progress*, p. 146.
[2] Cf. Urwick, *Luxury and the Waste of Life*, pp. 87 and 90. Mr. Urwick suggests that 25 per cent of the money income of the rich, as spent by them, represents no equivalent in real income.

further confirmation ôf this proposition were needed, we might add that the satisfaction derived from large incomes is more likely than that derived from small to result from the *proportion* that A's income bears to B's, and is, therefore, less likely to be appreciably diminished by a contraction of the income of both A and B.[1]

§ 10. To this *prima facie* conclusion, however, two objections are sometimes urged. Of these the first asserts that additions to workpeople's wages do not really lead to economic welfare, but are merely dissipated in worthless forms of exciting pleasure. This objection is, indeed, obviously irrelevant, when economic welfare is defined as we have defined it. Insistence on such a point would, however, be pedantic. The real meaning of the objection, namely, that increased wages need not lead to increased welfare in the widest sense, deserves to be considered on its merits. No doubt, a sudden and sharp rise of wages may be followed for the moment by a good deal of waste. But, if the high wage-rate is maintained for any length of time, this phase will soon pass; whereas, if the increase is gradual or, still better, if it comes about in such a way as not to be directly perceived—through a fall in prices, for example—the period of extravagance need not occur at all. In any case, to contend that this extravagance will be so serious that a rise of wages will not promote welfare in any degree, is to press paradox beyond the point up to which discussion can reasonably be called upon to follow. The true view, as I conceive it, is admirably stated by Messrs. Pringle and Jackson in their special report to the Poor Law Commissioners: " It is in the unskilled and least educated part of the population that drink continues to hold its ground; as greater regularity of employment and higher wages are achieved by sections of the working-classes, the men rise in respectability and character. That the drink bill is diminishing, while wages are rising throughout the country, is one of the most hopeful indications of progress we possess."[2]

A second objection asserts that additions to the incomes of wage-earners will be prevented from adding to welfare by the stimulus they will afford to population. This objection

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[1] Cf. Rignano, *Di un socialismo*, p. 289.   [2] [Cd. 4795], p. 46.

is a survival of the celebrated "iron law of wages,"
according to which the tendency of their numbers to expand
must always press the earnings of the workpeople down to
"subsistence level." It may be noted, in passing, that this
contention, even if valid, would not suffice to prove that
better fortunes for the workers fail to increase economic
welfare; for, after all, if the life of an average workman
contains, on the whole, more satisfaction than dissatisfaction,
an increase in numbers, even though it leave economic welfare
per head the same, involves an addition to economic welfare in
the aggregate. I am not concerned, however, to press this
point, because the objection here in question is susceptible of
a more direct refutation.

It is, no doubt, true that an increase in the dividend
accruing to any group may not infrequently tend, in some
measure, to increase population. As regards marriage, there
is the well-known relation of the English marriage rate to
wheat prices in the earlier part of the nineteenth century,
and to exports, clearing-house returns and so on in the latter
part.[1] As regards deaths, it is equally well known that the
rate of mortality falls with growing wealth, and *vice versa*.
It is, however, quite contrary to experience to assert that
increased income stimulates population to so large an extent
that the individual earnings of workpeople are brought down
again to the level they occupied before the improvement.
There are two ways in which the working-classes can use
their increased claims over material things, namely, an increase
in population and an increase in the standard of comfort.
The distinction between these two ways is well illustrated by
the following contrasted passages from Malthus's *Principles of
Political Economy*. On the one hand, he found that the greater
wealth resulting from the introduction of the potato into
Ireland in the eighteenth century was "spent almost exclusively
in the maintenance of large and frequent families." On the
other hand, when the price of corn in England fell between
1660 and 1720, a considerable portion of the work-
peoples' "increased real wages was expended in a marked

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[1] Cf. Pareto, *Cours d'économie politique*, pp. 88 *et seq.* Cf. also Marshall,
Principles of Economics, pp. 189-90.

improvement of the quality of the food consumed, and a decided elevation in the standard of their comforts and conveniences." [1]   It does not seem possible to prophesy *a priori* in any particular case the precise proportion in which increased resources are likely to be devoted to these two uses.   The proportion will vary at different times and in different places.   Leroy-Beaulieu, for example, suggests that the population use has been predominantly followed in recent times in Belgium and Germany, and the standard-of-comfort use in other European countries.[2]   It is, however, practically certain not to happen that the population use will be allowed to absorb the *whole* fruits of increased command over nature.[3]   Nor need we stop at this point.   The important investigations of Professor Brentano, covering, as they do, a very wide range of facts, suggest that, at the present time, increased prosperity in any class in the modern world is likely to work, not for *any* increase, but actually for a contraction in the number of births.   Its influence in augmenting the marriage rate is, according to him, outweighed by its influence in limiting the number of births per marriage.   This influence works through the change which increased wealth indirectly induces in character and ideals.   A permanent improvement in wealth and culture, " as a comparison of different ranks, as well as of the same

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[1] *Principles of Political Economy*, pp. 252 and 254.

[2] *La Répartition des richesses*, p. 439.

[3] An addition to the standard of comfort does not, it should be noted, usually take the form of a mere addition to the quantity of material commodities consumed.   The workpeople's increased command over resources is apt to be used partly in the purchase of more *things*, but partly also in the purchase of more *leisure* for themselves and their families.   It is a well-established fact that the high-wage countries and industries are generally also both the short-hour countries and industries, and the countries and industries in which the wage-earning work required from women and children in supplement of the family budget is the smallest.   Professor Chapman, for example, notes the assertion that, whereas the German collier finds only 65·8 per cent of his family's earnings, the wealthier American collier finds 77·5 per cent (*Work and Wages*, i. p. 17); and Mr. Rowntree's interesting table for York points, when properly analysed, in the same direction (*Poverty*, p. 171). Again, reference may be made to the familiar correlation found in recent English history between rising wages and falling hours.   Finally, a study of the rates of wages and hours of labour in different districts in England at the present time would, I suspect, reveal a correlation of the same type. This appears to be the case with the figures for bricklayers in the Abstract of Labour Statistics for 1908 (pp. 42, etc.).

ranks and the same people at different stages of development has shown us, results in a diminution of births. . . . As prosperity increases, so do the pleasures which compete with marriage, while the feeling towards children takes on a new character of refinement, and both these facts tend to diminish the desire to beget and to bear children." [1] Detailed confirmation of this view, as well as of the modern character of the facts to which it relates, is afforded by Mr. Heron's recent statistical inquiry with regard to the metropolis. Selecting various districts, he found the correlation coefficients between the number of births per 100 wives and various indices of social status. The indices chosen were the proportion of occupied males engaged in professional occupations, the number of female domestic servants per 100 families, the number of general labourers per 1000 males, the proportion of the population living more than two in a room, and the number of paupers and of lunatics per 1000 of the population. In every case a low index of prosperity and a high birth-rate were found to go together. Against this result there had to be set the fact that a low index of prosperity was also accompanied by a high rate of infant mortality. This fact harmonises with Mr. Booth's statement that " the death of a child, especially if it be a baby, does tend to bring about the birth of another." [2] Investigation, however, showed that the excess of mortality was not sufficient to balance the excess of births; and the conclusion emerged, that " the wives in the districts of least prosperity and culture (and of course these poor wives were married to poor husbands) have the largest families." Furthermore, a comparison between the conditions of 1851 and 1901 brought out the startling fact " that the intensity of this relationship has almost doubled in the last fifty years." [3] These considerations make it plain that no hesitation to accept the conclusion of our last section need arise from regard for possible counteracting influences exerted through the numbers of the working classes.

[1] *Economic Journal*, 1910, p. 385.
[2] *Life and Labour*, final vol. p. 20.
[3] *The Relation of Fertility in Man to Social Status*, pp. 15 and 19.   M. Bertillon has obtained similar results in regard to a number of large towns in Europe (cf. Chatterton Hill, *Heredity and Selection in Sociology*, p. 326).

§ 11. There remains my third proposition.   This may be expressed roughly by saying that, if a cause is introduced which diminishes the variability, or inequality in time, of the dividend, and especially of that part of it which accrues to the poorer classes, the economic welfare of the community as a whole is likely to be augmented.   This proposition, requiring, as it does, for accurate statement, considerable detailed discussion, will here be set down without comment.   The proof of it is reserved for the first and second chapters of Part IV.

CHAPTER III

§ 1. IN our discussion of the fundamental propositions laid down in the preceding chapter it was tacitly assumed that the conception of an increase or decrease in the national dividend as a whole, or in the share of dividend accruing to any group of persons, is definite and unambiguous. If the dividend consisted of a single sort of commodity only, such as wheat, this condition would, of course, be fulfilled. In fact, however, what the community as a whole, or any group within the community, receives from time to time as dividend is not one large parcel of one single thing, but a number of small parcels of different things. The difficulty, which we have now to face, arises out of the fact that the sizes of these different parcels vary independently, so that their increases or decreases are generally in different proportions, while, not infrequently, some are growing larger at the same time that others are growing smaller. In such circumstances there is no necessary standard, by means of which we can decide, in any given case, whether, or by how much, the sum of the various parcels has increased or diminished. Whatever standard we adopt must be chosen arbitrarily, with a view to the special purpose that we have in hand. The problem, therefore, as I elect to state it, is this: to find a measure for changes in a heterogeneous dividend, such that the propositions laid down in the preceding chapter in the case of a homogeneous dividend remain true. There are, of course, several other, *prima facie* very different, forms in which the problem might be

stated. Essentially, however, all these forms are equivalent, and the one which I have chosen has advantages in respect of convenience.

§ 2. When the matter is put thus, it is clear that we are in contact with the difficult topic of index numbers.[1] The proportionate change, between two times or places, in the absolute share of dividend accruing to any group is equal to the proportionate change in the money income of the group, divided by the proportionate change in the prices that are relevant to the group.[2] We may, for simplicity of discussion—no difference in substance is made—suppose that the money income of the group whose fortunes we are considering is constant. In this case, the reciprocal of our measure of price change is the measure of change in the absolute share of dividend accruing to the group. The

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[1] It is a question of convenience whether the term index number should be applied to all tables exhibiting variations of price, or should be confined to those which *indicate* changes in respect of one object by recording changes in respect of some other related object. On the whole, it seems linguistically fitter, as well as more consonant with authority, to reserve the term for the latter meaning only (cf. Bowley, *Elements of Statistics*, p. 217). I shall not, therefore, speak of a list of wheat prices, worked out as percentages of the price at some given point, as an index number of the price of wheat; whereas I might speak of it as an index number, though a very bad one, of the price of a bushel of wheat, *plus* a pound of beef, *plus* a pound-and-a-half of bacon. In like manner, I might regard a table of wholesale price changes as an index number of retail price changes, and the index would be a good one, if I had reason to believe that the relation between wholesale and retail prices had remained fairly constant. Or, finally, I might regard a table giving the output of coal or iron or, in this age of electricity, of copper (cf. Watkins's *The Growth of Large Fortunes*, p. 91) as an index number of the output of business in general.

[2] If members of the group produce any commodities for consumption in the group, the market value of these commodities should be reckoned both as a part of the income and as a part of the expenditure of that group. It is then easy to reconcile with our analysis the following interesting statement by Leroy-Beaulieu: "La facilité des voies de communications et le peuplement des contrées neuves sont les deux principaux facteurs du nivellement des fortunes dans le vieux monde. Ce sont les grands propriétaires surtout qui pourront éprouver une dépréciation de leurs revenus par la mise en culture régulière de l'ouest des États-Unis ou du Canada, de l'Amérique du Sud, des vastes réserves du territoire australien, du Soudan, de la région des grands lacs africains et de l'Asie septentrionale et centrale. Les moyens propriétaires s'en aperçoivent moins parce que, vivant eux-mêmes de la vie du paysan, exploitant comme lui leurs domaines, consommant en grande partie leurs produits, ils retrouveront à peu près par le bon marché de leurs achats la compensation de la moins-value de leurs ventes. Quant au petit propriétaire qui consomme à peu près ce qu'il a produit, peu lui importent les prix auxquels il pourrait vendre des denrées qui servent à sustenter sa famille."—*La Répartition des richesses*, p. 125.

problem is to fashion our measure of price change in such a way that this reciprocal shall always move in the same direction as the quantity of economic welfare enjoyed by the group in whose fortunes we are interested. Before this problem is attacked directly, it is desirable to deal with two technical incidents which attach to the construction of all measures of the character of index numbers.

§ 3. The first of these has to do with the representation in tabular form of the price changes of an object which can be observed. This presents no real difficulty. The device of calling the price prevailing at a given point, or the average of the prices prevailing over a given period, 100, and expressing the prices in a succession of years as percentages of this price, is too obvious to need explanation. There is only one point in regard to which any opening for misunderstanding exists. The " object," whose price changes we elect to measure, is often a " collection " of several physical things. It is possible that confusion may arise through ambiguity in the conception of a collection. Thus, we may vaguely suppose that our object is a collection consisting of " wheat and iron together," and that we are required to measure the price changes of " wheat and iron together." If we start from an idea of this sort, when the price per unit of wheat moves from a_1 to a_2, at the same time that the price per unit of iron moves from b_1 to b_2, we are confronted with dialectical difficulties as to the correct method of relating these changes, in order to ascertain the change that has occurred in the combined object " wheat and iron together." It can be shown, for instance, that the result obtained will be different if we combine the individual ratios by way of the arithmetic or the harmonic or the geometric mean ; and it may even be suggested that a combination by way of the square root of the sum of the squares of the ratios, or of the cube root of the sum of their cubes has equal claims with the simpler forms of mean. This difficulty may be illustrated by a concrete example. In European countries price is usually measured by naming the number of units of the standard of value which will buy a unit of the commodity ; in India it is measured by naming the number of units of the commodity which can be purchased by a unit of

currency.[1] The choice between these two methods is obviously a pure matter of arbitrary convention. But, to combine price ratios taken on the Indian plan into an arithmetic mean is equivalent to combining similar ratios taken on the European plan into a harmonic mean! Nor is this all. Even if we waive all question of more complicated methods and decide to hold by the arithmetic mean, it is immediately plain that our results may differ enormously according to the year we select as base. For example, suppose that, between the years 1890 and 1900, wheat has halved in price while iron has doubled. Then, by representing the price of both commodities in 1890 by 100, we can make it appear that the price of wheat and iron together has risen in 1900 by 25 per cent; whereas, by representing the price of both commodities in 1900 by 100, we can make it appear that this price has fallen 25 per cent (on the 1900 price).[2] An excellent practical illustration of this difficulty is afforded by certain tables in the Board of Trade publications concerning the cost of living in English and German towns respectively. In the Blue-book dealing with England the real wages of London, the Midlands and Ireland are calculated by means of index numbers, in which London (corresponding in our time index, say, to the year 1890) is taken as base, and the price of consumables and the rent prevailing there are both represented by 100. On this plan, prices of consumables and rent being given weights of 4 and 1 respectively, the Board of Trade find real wages in London to be equal to those of the Midlands, and 3 per cent higher than those of Ireland. If, however, Ireland had been taken as base, real wages would have appeared—in London 98, in the Midlands 104, in Ireland 100. A similar difficulty emerges in the Blue-book on German towns. The Board of Trade, taking Berlin as base, find real wages higher in that city than in any place save one on their list.[3] " If the North Sea ports, instead of Berlin, had been taken as base, Berlin would have appeared fourth on the list instead of second, and the order of

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[1] I am indebted for this illustration to Mr. J. M. Keynes.

[2] In these dialectics it is an argument in favour of the geometric mean that divergencies according to base are avoided. But, it may be answered that the geometric mean yields a ridiculous result when the price of anything sinks to zero.   [3] [Cd. 4032], p. xxxiv.

the other districts would have been changed; and, by taking
Central Germany as base, even greater changes in the order
would have been effected." [1]   It is true, no doubt, that *large*
discrepancies of this sort are not likely to occur, except when
large fluctuations arise in respect of commodities that are
heavily weighted.   Nevertheless, the essential difficulty re-
mains.   It would seem that the same changes in the individual
prices of wheat and iron separately may be made to imply
any one of a number of changes in the price of " wheat and
iron together," according as we take one or other of a number
of methods of combination, all of which appear to be equally
legitimate.

The answer to all these difficulties is as follows.   " Wheat
and iron together " may mean x units of wheat and y units of
iron, or any other conceivable proportion of units.   A given
change in the price of wheat *plus* a given change in the price
of iron cannot, therefore, have an unambiguous result on the
price of " wheat and iron together "; the result will depend on
the number of units of wheat and iron combined in " wheat
and iron together," that we have in view in respect of the two
periods.   If in both periods " wheat and iron together " be
taken to mean " x units of wheat *plus* y units of iron," it will
be different from what it would have been had we been con-
templating " y units of wheat *plus* x units of iron " in both
periods; and different again from what it would have been
had we meant " x units of wheat and y units of iron " in the
first period, and " r units of wheat and q units of iron " in the
second.   When this ambiguity is removed, and we define the
collection, with whose price we are concerned, in a precise
manner, the whole dialectical difficulty disappears.   Let the
collection in question consist unambiguously of x units of A
and y units of B, and let the prices per unit in the first period
be a_1 and b_1, and in the second a_2 and b_2.   Then, putting p_1
to represent the price of the collection in the first period and
p_2 in the second, we perceive at once that

$$\frac{p_1}{p_2} = \frac{a_1 x + b_1 y}{a_2 x + b_2 y}.$$

[1] J. M. Keynes, *Economic Journal*, 1908, p. 473.

It is perfectly obvious that this is the *only* correct method of measuring the price change in our "object."[1]

§ 4. The second technical incident arises when the "object," whose price changes we wish to ascertain, is only partially observable. The extent to which observation fails is, of course, different for different objects. In nearly all practical cases, however, we are compelled to content ourselves with the indication afforded by the price changes of a minor collection, embracing a comparatively small part of the total collection in which we are interested. The reason for this is that the range of things which we are practically able to observe, so as to include them in our observable collection, is narrowly limited.

First, except in the case of certain articles of large popular consumption, the retail prices charged to consumers are difficult to ascertain. Giffen once went so far as to say: "Practically it is found that only the prices of leading commodities capable of being dealt with in large wholesale markets can be made use of." This statement must now be qualified, in view of recent work by the Board of Trade in regard to retail food prices, but it still holds good over a considerable field. Even, however, when the difficulty of ascertaining retail prices can be overcome, such prices are unsuitable for com-

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[1] Care must be taken in the arithmetical handling of this conception. Suppose that we are interested in the price of 1000 units of wheat *plus* 1000 units of iron, and that the prices in a succession of years of a unit of wheat and a unit of iron respectively are $a_1, a_2 \ldots$ and $b_1, b_2 \ldots$ Then clearly, as between the first and the rth year,

$$\frac{p_1}{p_r} = \frac{a_1 + b_1 \ldots}{a_r + b_r \ldots}$$

This value, however, will not be obtained if we express a_1, b_1, and so on, as 100, and a_r, b_r, etc., as proportionate numbers, unless we so select our units that $a_1 = b_1 =$ etc. For, the value immediately given is:

$$\frac{100 + 100}{100\frac{a_r}{a_1} + 100\frac{b_r}{b_1}} = \frac{2a_1 b_1}{a_r b_1 + a_1 b_r},$$

and this is not *in general* equal to

$$\frac{a_1 + b_1}{a_r + b_r}.$$

In short, our a's and b's being absolute quantities, and our percentage numbers being ratios, the latter cannot in general be substituted for the former.

parison over a series of years, because the thing priced is apt to contain a different proportion of the services of the retailer and of the transporter, and, therefore, to be a different thing at one time from what it is at another. " When fresh sea fish could be had only at the seaside, its average price was low. Now that railways enable it to be sold inland, its average retail price includes much higher charges for distribution than it used to do. The simplest plan for dealing with this difficulty is to take, as a rule, the wholesale price of a thing at its place of production, and to allow full weight to the cheapening of the transport of goods, of persons, and of news as separate and most weighty items." [1]

Secondly, it is practically very difficult to take account even of the wholesale prices of manufactured articles, for the reason that such articles, while still called by the same name, are continually undergoing changes in character and quality. Stilton cheese, once a double-cream, is now a single-cream cheese. Clarets of different vintages are not equivalent. A third-class seat in a railway carriage is not the same thing now as it was twenty years ago. " An average ten-roomed house is, perhaps, twice as large in volume as it used to be ; and a great part of its cost goes for water, gas, and other appliances which were not in the older house." [2] The same class of difficulty applies to attempts to evaluate many direct services—the services of doctors, for example, which, as Pareto pointedly observes, absorb more expenditure than the cotton industry [3]—for these, while retaining their name, often vary their nature.

It would, thus, seem that the principal things available for observation are raw materials in the wholesale markets, particularly in the large world markets. These things have probably of late years fallen in price relatively to minor articles, in which the cost of transport plays a smaller part ; they have certainly fallen relatively to personal services, and they have probably risen relatively to manufactured articles, because the actual processes of manufacture have been improving.

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[1] Cf. Marshall, *Contemporary Review*, March 1887, p. 374.
[2] *Ibid.*, 1887, p. 375. [3] *Cours d'économie politique*, p. 281.

Our range being thus limited, it is plain that the choice
of a collection, whose price variations shall fairly represent
the price variations of the true collection, which, for such
special purposes as we have in hand, we should *like* to record,
may present considerable difficulty. When those components
of the true collection, about which we have information,
embrace the main part of the whole, in the sense that the
expenditure upon them comprises the main part of the total
expenditure on the collection, the minor collection made up
of these components may be employed just as it stands as an
index of the true collection. Its price variations will not, of
course, correspond exactly to those of the true collection, but,
in the absence of special evidence to the contrary, we may
reasonably conclude that the error involved is not likely to be
large. When the range of our information is less broad, the
probable error of an index number constituted in this way
is increased. It becomes, perhaps, worth while to consider
whether any of the articles, concerning which we have
information, are connected with any of the others in such
a way that their prices are likely to vary in the same sense;
and, upon this basis, to construct an ideal minor collection, in
which special " weight " is given to articles judged to be thus
" representative." Such an ideal minor collection would
probably constitute a better index than the actual minor
collection. In any event, provided that the items con-
stituting the true collection absorb individually a small part
of the total expenditure on the collection, and that our
information extends to a fairly large number of items, the
theory of error suggests that the actual and the ideal form
of minor collection are both likely to afford a fairly reliable
index. There is, indeed, a danger that this line of argu-
ment may be pressed too far. The assumptions, upon which
the mathematical defence of such existing index numbers as
those of Sauerbeck and the *Economist* rest, are, perhaps, less
fully realised in fact than theoretical statisticians are sometimes
willing to concede.[1] The practical conclusion seems to be
that we should construct as good an ideal minor collection as

[1] For a mathematical study of index numbers cf. Professor Edgeworth's
" Report to the British Association," 1889.

our information will allow; employ the known price variations, which we find in it, as an index of the unknown price variations of the true collection; but recognise throughout that this index may sometimes yield misleading results.

§ 5. Our discussion so far has been preliminary, and has concerned the technique of constructing any index number representative of the price changes undergone by an assigned collection of commodities, first when all the prices of individual commodities included in that collection are observable, and, secondly, when only some of these prices are observable. We have now to face our problem directly, and to devise, if we can, some measure of price changes, whether it represent the price changes in an assigned collection or not, the reciprocal of which shall vary in the same sense as the economic welfare of the group of persons whose fortunes we are at the time considering. In all attempts to solve this problem it is necessary to distinguish between cases in which the tastes and temperament of the group remain constant and cases in which they vary.[1] The former problem is, clearly, the simpler. It will, therefore, be convenient to attack it in the first instance, and, after some solution has been reached, to consider how far this solution holds good under conditions in which tastes and temperament, in fact, vary. We do not need to suppose that the constancy, to which I have referred, appertains to any actual individual in the group, but only that it belongs roughly to *l'homme moyen* of the group. The circumstances of this representative man can be taken to typify those of the group, just as the movements of the centre of gravity of a system can be taken to typify those of the system as a whole. We assume, of course, that the group is more or less homogeneous, and is not made up of two parts, containing, respectively, very rich people, and very poor people, whose standards of living are widely divergent.[2]

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[1] It may be observed that, if a man's income and its total utility to him remain constant and, if his tastes all remain constant, the marginal utility of money to him must also remain constant. It is possible, however, that his tastes may change in such a way that marginal utility remains constant while total utility changes, or *vice versa*.

[2] The need for this assumption is made plain by Pareto's observation : "Il convient à un riche anglais de venir vivre en Italie ; il convient également à un ouvrier italien de s'établir à Londres."

The method proposed is a method of approximation, but we need not anticipate that it will lead to serious error. On this basis then, the tastes and the personal powers of *l'homme moyen* being assumed to be given, we proceed to the first stage of our enquiry.

§ 6. To the assumption that tastes, temperament and so on have remained constant, let us, in the first instance, add the further assumption that the group of persons in whom we are interested always obtain the same *relative* amounts of different commodities. In this case, a measure representing the price changes of the collection of commodities which the group consumes at any point of time will clearly be the measure that we require. It will not, of course, be the case — the law of diminishing utility forbids it — that the economic welfare or satisfaction of the group will vary in as large a proportion as the reciprocal of this measure varies; but, it will vary always in the same direction as this reciprocal.

§ 7. When the assumption, that the proportion, in which different commodities are consumed by our group, remains constant, is removed, we find in the field two collections instead of one. There are, thus, two measures of price change, one indicating the difference in the price of the original collection between the two periods, the other indicating the like difference in respect of the secondary collection.

§ 8. In some cases *both* these measures fulfil the condition that their reciprocals shall move in the same direction as the quantity of economic welfare enjoyed by the group. These cases may be distinguished thus. If the price of the collection C_1, which *l'homme moyen* of the group purchased in the first period, is lower in the second period than in the first, and if the price of the collection C_2, which he purchased in the second period, is also lower in the second period than in the first, the total satisfaction obtained in the second period must be greater than in the first. The converse holds, of course, if both collections are more costly in the second period than in the first. The point can be made clear thus :—

Let C_1 contain x_1 units of A, y_1 of B . . . at prices a_1, b_1, . . .

Let C_2 contain x_2 units of A, y_2 of B . . . at prices a_2, b_2, . . .

The price of C_1 in the first period $= p_1 = x_1 a_1 + y_1 b_1 + \ldots$

The price of C_1 in the second period $= p_2 = x_1 a_2 + y_1 b_2 + \ldots$

The price of C_2 in the first period $= \pi_1 = x_2 a_1 + y_2 b_1 + \ldots$

The price of C_2 in the second period $= \pi_2 = x_2 a_2 + y_2 b_2 + \ldots$

Then

$$\frac{p_2}{p_1} = \frac{x_1 a_2 + y_1 b_2}{x_1 a_1 + y_1 b_1} \qquad \cdot \qquad \cdot \qquad \cdot \qquad (1).$$

$$\frac{\pi_2}{\pi_1} = \frac{x_2 a_2 + y_2 b_2}{x_2 a_1 + y_2 b_1} \qquad \cdot \qquad \cdot \qquad \cdot \qquad (2).$$

If both these fractions are greater than unity, it is reasonable to infer that the representative man's income yields less satisfaction than before; if both are less than unity, that it yields more satisfaction than before. That is to say, if both the above fractions point in the same direction, each of them, though the two are different, satisfies the condition required of our measure. From this it is, further, obvious that any mean between the two fractions will also satisfy the said condition.

§ 9. In the class of case we have been contemplating, therefore, the condition we have laid down does not determine the choice of a measure of price changes, but merely fixes the limits within which that choice must lie. The width of these limits depends upon the extent to which the two fractions $\frac{p_2}{p_1}$ and $\frac{\pi_2}{\pi_1}$ differ from one another. In some cases there exists between them a relation of approximate equality. In recent years, as regards the United Kingdom, this relation seems to have prevailed. Half a century ago, no doubt, man's power in different directions was increasing very unevenly. Of late, however, the dominant factor in the Englishman's increased capacity to obtain almost every important commodity is one and the same, namely, improved transport; for, a main part of what improvements in manufacture now accomplish is to cheapen means of transport. In other cases the difference between the two fractions is considerable. Illustrations of a directly applicable kind could easily be found. I prefer, however, to make use of

one drawn, not from the inter-temporary comparison of two conditions of the same group, but from a contemporary comparison of the conditions of two groups. This illustration is provided in the Board of Trade's Report on the *Cost of Living in German Towns.* The Report shows that what an English workman customarily consumes costs about one-fifth more in Germany than in England, while what a German workman customarily consumes costs about one-tenth more in Germany than in England.[1] If we assume—*what is, of course, not the case*—that English and German workmen's tastes are equivalent, and that their consumption differs only on account of price differences, and, if p_1 and π_1 refer to Germany and p_2 and π_2 to England, this result can be expressed in the form :

$$\frac{p_2}{p_1} = \frac{100}{120} : \frac{\pi_2}{\pi_1} = \frac{100}{110}.$$

§ 10. Though our condition, in the class of case so far considered, only fixes limits within which the measure of price changes should lie, considerations of convenience suggest even here the wisdom of selecting, though it be in an arbitrary manner, some one among the indefinite number of possible measures. When, however, we proceed from this class of case to another more difficult class, the need for resort to purely arbitrary choice is removed. The class of case now in question emerges when, of the fractions $\frac{p_2}{p_1}$ and $\frac{\pi_2}{\pi_1}$, one is greater and the other less than unity. When this happens, it is clear that the price changes of both the first and second collection cannot fulfil the requirement that their reciprocals shall move in the same direction as the quantity of economic welfare enjoyed by the group ; for the two price changes are in opposite directions. In the second period the representative man's money income (assumed constant) will buy for him a smaller amount of the collection which he was purchasing in the first period than it would buy in that period : but, on the other hand, it will buy a larger amount of the collection which he was purchasing in the second period. It is, thus, clear that a more elaborate

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[1] [Cd. 4032], pp. vii and xlv.

study is needed before the measure we are seeking can be found.

§ 11. Let us suppose the difficulties connected with rival and complementary commodities to be obviated by a process of grouping commodities connected in these ways in combined units, into whose composition both commodities enter in more or less arbitrarily chosen proportions. If we were able to construct utility curves representing the satisfaction yielded by various quantities of each of the several items in the collections, which our representative man purchases at the two periods respectively, we could estimate directly in which of the two periods his income buys him the larger total satisfaction, and could thus avoid the need of *any* intermediate index. In actual life the information necessary to this procedure is, of course, lacking, and, therefore, the direct method just indicated is not applicable. Nevertheless, absolute nescience does not inevitably result. Common sense, for example, suggests that, if $\dfrac{p_2}{p_1}$ divided by unity is very large, while unity divided by $\dfrac{\pi_2}{\pi_1}$ is very small, the satisfaction of the representative man has *probably* been diminished, and *vice versa*. This *prima facie* conclusion can be confirmed by exact analysis as follows. If $\dfrac{p_2}{p_1}$ is large, this means that our representative man, if he were to consume the commodities contained in his original collection in the second year in the same proportion as in the first, would have to reduce the quantity of every one of them that he consumed by a large percentage, and, therefore, would probably experience a large loss of satisfaction or total utility, measured, say, by K_1. Therefore, the fact, that, instead of doing this, he purchases the collection $(x_2 + y_2 + \ldots)$, proves only that the utility of this collection does not fall short of the utility of the first collection $(x_1 + y_1 + \ldots)$ by more than K_1. By similar reasoning it can be shown that, if, in the first year, our representative man were to consume the commodities contained in the second collection in the same proportion as in the second year, he would have to reduce the quantity of every one of them by only a small

percentage, and, therefore, would probably experience a small loss of total utility, measured, say, by K_2. Hence, we know that the total utility of the second collection does not fall short of that of the first by more than K_1, a large amount, and that it does not exceed it by more than K_2, a small amount. Since, therefore, there are more ways in which the total utility of the second collection can be less, than there are ways in which it can be more, than the total utility of the first collection, and since, further, the probability of any one of these different ways is *prima facie* equal to that of any other, it is *probable* that the total utility of the second collection is less than that of the first; and this probability increases the more largely the fraction $\dfrac{p_2}{p_1}$ exceeds the fraction $\dfrac{\pi_1}{\pi_2}$. From the above considerations we obtain the result that the total utility, or satisfaction, of the representative man *probably* decreases or increases in the second period, according as the fraction $\left\{\dfrac{p_2}{p_1} \times \dfrac{\pi_2}{\pi_1}\right\}$ is greater or less than unity. Hence, it follows that the quantity which most probably fulfils the condition required of our measure is, not the proportionate price change of any one collection, but the product formed by multiplying the proportionate price change of the original collection by the proportionate price change of the secondary collection. It is given, in short, by the quantity

$$\frac{P_2}{P_1} = \left\{\frac{p_2}{p_1} \times \frac{\pi_2}{\pi_1}\right\} = \frac{x_1 a_2 + y_1 b_2 + \ldots}{x_1 a_1 + y_1 b_1 + \ldots} \times \frac{x_2 a_2 + y_2 b_2 + \ldots}{x_2 a_1 + y_2 b_1 + \ldots}$$

which is, in turn, equal, money income being assumed constant, to $\dfrac{x_1 a_2 + y_1 b_2 + \ldots}{x_2 a_1 + y_2 b_1 + \ldots}$. This measure would seem to be better than any other for our purpose in the difficult class of case that we have just been considering. Since, therefore, it is obviously as good as any other in the simpler cases already discussed, and since there are clear advantages, from the standpoint of convenience, in the regular use of one measure only, this measure would seem to be the right one for us to adopt.[1]

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[1] The above reasoning can be extended in certain cases so as to exhibit the *comparative* advantage of measures, no one of which is the *best* measure. Pro-

§ 12. The measure thus obtained is not, indeed, well calculated to fulfil our condition, of representing the direction of changes in economic welfare between two periods, when in the second period, there exist important new commodities that were not being produced in the first. This matter is important, because new commodities, in the sense here relevant, embrace, not merely commodities that are new physically, but also old commodities that have become obtainable at new times or places, such as strawberries in December, or the wheat which railways have introduced into parts of India where it was formerly unknown. Obviously, we must not count December straw-berries along with ordinary strawberries, and so make inventions for forcing raise the price of strawberries, but must reckon December strawberries as a new and distinct commodity. This difficulty can, however, be obviated, in great measure, by Dr. Marshall's method, under which the year 1860 is compared with the year 1890, not directly, but by means of a chain of successive comparisons.[1] Dr. Marshall's measure is simpler in construction than the one suggested here; he merely compares 1860 with 1861 on the basis of the weights proper to 1860, 1861 with 1862 on the basis of those proper to 1861, and so on, arranging the results obtained in the form

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vided that $\frac{p_2}{p_1}$ does not differ widely from $\frac{\pi_2}{\pi_1}$, when $\left\{\frac{p_2}{p_1} \times \frac{\pi_2}{\pi_1}\right\} > 1$, it is *probable*

that $\frac{p_2 + \pi_2}{p_1 + \pi_1}$ is also > 1. Hence, we may infer that a measure of the form $\frac{p_2 + \pi_2}{p_1 + \pi_1}$,

which is equivalent to $\frac{(x_1 + x_2)a_2 + (y_1 + y_2)b_2}{(x_1 + x_2)a_1 + (y_1 + y_2)b_1}$, though inferior to the measure

used in the text, is *probably* superior either to $\frac{p_2}{p_1}$ or to $\frac{\pi_2}{\pi_1}$. This conclusion suggests that, in the comparison of real wages as an index of well-being in English or German towns, it is better to measure the prices at different places of a collection containing the average quantity of each item that is consumed in all towns, than to measure as the Board of Trade do, the prices of the actual collection that is consumed in some one among these towns. It is important to

notice, however, that this argument depends on the condition that $\frac{p_2}{p_1}$

does not differ widely from $\frac{\pi_2}{\pi_1}$; and it is only, as a rule, in cases where this con-

dition is *not* fulfilled that *any* formula has much advantage over the simple ex-

pressions $\frac{p_2}{p_1}$ and $\frac{\pi_2}{\pi_1}$.

[1] Cf. Marshall, *Contemporary Review*, March 1887, p. 371 *et seq.*

of a continuous index number. His chain method is, however, obviously applicable to our more complicated measure. Under it the error due to the introduction of new commodities is reduced to a minimum, because new commodities are seldom an important element in consumption during their first year, and, in every comparison except that between this year and the preceding year, the method is able to take account of them.[1] Still, even when assisted by the use of this plan, it must be remembered that our measure is never *certain* to fulfil the condition required of it. It is the best measure, but its success in achieving its purpose cannot be more than *probable*. Our confidence in it ought not to be very strong, unless the divergence from unity in one direction or the other of the fraction $\dfrac{P_2}{P_1}$ is considerable.

§ 13. The measure we have thus, with partial success, constructed depends for its validity, as was pointed out at the beginning of this chapter, upon the assumption that the tastes, temperament, and personal powers of *l'homme moyen* of our group remain constant. In practice, however, this condition may fail in either of two ways;—some of the representative man's tastes may change *relatively* to others, or the level of his tastes in general may change absolutely. The distinction is a rough one, but its significance can be made fairly clear by an illustration taken from contemporary differences between two comparable groups. On the one hand, if we contrast social classes, we may sometimes be able to say that the more cultured class, A, has a keener appre-

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[1] The chain method has a further enormous advantage over the continuous method adopted in such an index number as Sauerbeck's. For, whereas the chain method follows a system of weighting consciously changing with the relative importance of different commodities, the continuous method unconsciously follows one which often changes in the precisely opposite sense. That method actually reduces the weight assigned to commodities which have become cheaper and which are, therefore, presumably being consumed more largely in the second period, and increases that assigned to commodities which have become dearer. For, as Mr. Flux points out, a 20 per cent change in the price of a commodity whose index has fallen to 40 will not affect the final index number so much as an equal per cent change in respect of one whose index has risen to 160. Thus, the weight assigned in Sauerbeck's " unweighted " number to commodities, in the cost of which transportation is important, has been considerably reduced by the fact that transportation has become cheaper. (Cf. *Quarterly Journal of Economics*, August 1907, p. 615.)

ciation of, and derives more satisfactior from, practically all objects than the less cultured class B does. On the other hand, if we contrast the same social class in different countries, say English and German workmen, we may expect to find *general* temperaments to be much the same, but particular tastes, generated largely by custom, to be different. To put the point more precisely, in case (1) we should expect £100 to yield more satisfaction in either environment to the more cultured class than to other classes ; whereas in case (2) we should expect the aggregate satisfaction obtained by a German workman, from spending £100 this year in Germany and £100 next year in England, to be about the same as that derived by an English workman from a like proceeding, but the £100 spent in Germany to yield more to the German, and the £100 spent in England more to the English workman. To each of these types of failure in our condition there corresponds a type of failure in our measure.

§ 14. First, when the price of one of the commodities involved has gone up, because the people in whose welfare we are interested experience an enhancement in their taste for it relatively to other things, while the production of it follows the law of diminishing return, the use of our measure *may* make it seem that economic welfare has diminished when, as a matter of fact, it has increased. When the price of a commodity has fallen, on account of a depreciation of taste impinging on something produced under diminishing returns, the converse result may obtain. If the measure employed were simply the price of the collection consumed in either of the two periods, it would be *necessary* that this misrepresentation of the facts should occur. The failure of *our* measure does not, however, go so far as this. Whether the misrepresentation will in fact occur would seem to depend, among other things, upon the elasticity of the supply of the commodity, for which taste has changed. The more elastic the supply is, or, in other words, the less sharply diminishing returns act, the smaller is the probability of misrepresentation.[1]

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[1] This can be proved as follows. Our measure is given by $\dfrac{x_1 a_2 + y_1 b_2 + \ldots}{x_n a_n + y_n b_n + \ldots}$, where the a's and b's represent prices, and the x's and y's quantities. Since the

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Still, a considerable chance of this form of error in the measure exists. No doubt, it could be obviated analytically, if a_2, b_2, etc., were, not the actual prices prevailing for A's in the second period, but the supply prices of the nth unit (n being the number of units consumed in the first period). In practice, however, the available statistics do not permit of this device, and our measure cannot be thus emended.

§ 15. Secondly, our measure fails, not through direct misrepresentation, but through inability to represent at all the effects on economic welfare brought about by what I have called changes in the level of tastes in general. Such changes are increments or decrements of power to obtain enjoyment, not necessarily from every single kind of commodity, but from commodities generally. Thus, if, at a time when production was becoming easier, the level of general tastes was falling, it might happen that in reality economic welfare was growing less, though the reciprocal of our index number would necessarily be increasing. No doubt, a false appearance of this sort is not probable, at all events between closely adjacent times. Still, the fact that it is possible exposes a second somewhat serious defect in our measure.[1]

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representative man's money income is supposed to be constant, we know that $x_1a_1 + y_1b_1 = x_2a_2 + y_2b_2$.

Suppose that, under the influence of enhanced taste, x_2 becomes equal to $(x_1 + h)$ and a_2 to $(a_1 + k)$.

Then our measure becomes $\dfrac{x_1a_1 + y_1b_2 + kx_1}{x_1a_1 + y_2b_1 + ha_1}$.

When the values of x_1a_1 and $\{(x_1 + h)(a_1 + k)\}$ are given, it is plain that this fraction is more likely to be less than unity, in which case the representation given is a true one, the smaller k is relatively to h : that is to say, the smaller is the change in the position of the demand curve that calls out a given change in production ; that is to say, the more elastic is the supply of the commodity.

[1] The existence of differences in the absolute level of tastes in general between two points of time or space can never be revealed by statistics. It is interesting to notice, however, that, on some occasions, differences in the relative level of various tastes can be revealed in this way. For example, we know that Germans eat rye bread, whereas English people eat white bread. We know that this is not due merely to the fact that rye bread is relatively cheap in Germany and that Germans are poorer than Englishmen, because, if it were cheapness alone that was responsible for the consumption of rye in Germany, there would presumably be a higher consumption of white bread among better-to-do Germans. This, however, is not found. Hence, we can legitimately infer that Germans have a taste for rye bread, as against wheaten bread, different from the English

§ 16. The general result of the discussions conducted in the present chapter would seem to be of this kind : that for certain limited purposes a measure of price changes constructed, in respect of any group, on the plan explained in § 11 is an adequate measure, whose reciprocal will probably move in the same direction as the economic welfare enjoyed by the group, in respect of which it is constructed.   The measure, however, is very far from perfect, and is especially liable to fail if used for comparing together distant times, between which particular or general tastes are liable to wide divergence. Fortunately, however, in the broad discussion of general causal sequences, to which the present volume is devoted, difficulties of this order do not obtrude themselves.   It is well that we should guard against misconceptions by formulating a definite measure that can be applied to the changes we are about to discuss.   In the actual discussion, however, it will be found that direct reference to this measure seldom needs to be made.

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taste.   In other cases the inference is simpler.   For example, the Germans will not eat mutton, though it is a penny a lb. cheaper than pork, while the English eat it readily.—(Cd. 4032, pp. xlviii and xlix.)

CHAPTER IV

§ 1. THE general conclusions of the second chapter could, until quite recent times, have been stated as they are there stated, without evoking quarrel or dispute.   Of late years, however, a great advance has occurred in biological knowledge.   Old-time economics had, indeed, to take some account of the reaction of economic causes upon the quantity of the population, but questions concerning their reactions upon its quality were not raised.   Now, the situation is different.   Biometricians and Mendelians alike have turned their attention to sociology, and are insisting upon the fundamental importance for our science of a proper understanding of the laws of heredity.   Economists, it is said, in discussing, as I have done, the direct effect of the circumstances of the dividend upon welfare, are wasting their energies.   The direct effect of these circumstances is of no significance; it is only their indirect effect on the size of the families of good and bad stocks respectively that really matters.   For, every form of welfare depends ultimately on something much more fundamental than economic arrangements, namely, the general forces governing biological selection.   I have intentionally stated these claims in a somewhat indefinite form, because I am anxious to investigate the problem thus raised in a constructive rather than in a critical spirit.   I shall endeavour, in the following sections, to indicate, as precisely as possible, how far the recent advance in biological knowledge really affects our science.   To this end, I shall distinguish, first, certain results of that knowledge, which are of general importance, but

are not strictly relevant to economics; secondly, the general claim that the method of economic study indicated in the preceding chapters is rendered by the new knowledge trivial and unimportant; and, thirdly, certain points, in respect of which the new knowledge comes directly into contact with the problems I have undertaken to investigate, and makes it necessary, in some measure, to qualify the conclusions that have been reached.

§ 2. By far the most important contribution of modern biological study to sociology is the assurance, which it affords, of the definite heritable character of certain inborn defects. Whatever view be taken of the physiological mechanism of inheritance, the practical result is the same. We know that persons with congenital defects are likely, if they marry, to hand down a defective organisation to some of their children. We do not possess this definite knowledge with regard to general desirable qualities, particularly on the mental side. Professor Bateson issues a wise caution when he writes: "Whereas our experience of what constitutes the extremes of unfitness is fairly reliable and definite, we have little to guide us in estimating the qualities for which society has or may have a use, or the numerical proportions in which they may be required. . . . There is as yet nothing in the descent of the higher mental qualities to suggest that they follow any simple system of transmission. It is likely that both they and the more marked developments of physical powers result rather from the coincidence of numerous factors than from the possession of any one genetic element." [1] Again, Mr. and Mrs. Whetham rightly observe that desirable qualities, such as ability, moral character, good health, physical strength and grace, beauty and charm, "are, from the point of view of heredity, essentially different from some of the bad qualities hitherto considered, in that they depend on the conjunction of a great many factors. Such a conjunction must be very hard to trace in the hereditary process, where possibly each character may descend independently, or different characters may be linked together, or be incompatible, in far more complicated ways than we have traced in the qualities of plants and

[1] *Mendel's Principles of Heredity*, p. 305.

animals. Our present knowledge is quite insufficient to enable
us to predict how a complex combination of factors, making up
the personality of an able or charming man or woman, will
reappear in their offspring."[1]   We are, in fact, in this region,
surrounded by so much ignorance that the utmost caution is
essential.   Mr. Doncaster has well observed : " In this direction
empirical rules and common sense must still be followed, until
the time shall come when science can speak with no uncertain
voice."[2]   More recently, the late Sir Francis Galton lent the
weight of his authority to this opinion : " Enough is already
known to those who have studied the question to leave no
doubt in their minds about the general results, but not enough
is quantitatively known to justify legislation or other action,
except in extreme cases."[3]   In respect of definite defects the
case is quite different.   These *are* the extreme cases of which
Galton was thinking.   Not a few medical men have long been
urging that authoritatively to prevent propagation among those
afflicted with imbecility, idiocy, syphilis, or tuberculosis would
mean the cutting off at its source of a long stream of defective
humanity.   The Royal Commission on the Feeble-Minded hold
this view very strongly in regard to the mentally defective.
The matter is especially urgent among this class, on account of
the exceptionally high rate at which, if left to themselves, they
tend to produce children.   Thus, " Dr. Tredgold, an especially
experienced witness, pointed out that the average number of
children in the families which now use the public elementary
schools is about four ; whereas, in the degenerate families,
whose children are passed over to the special schools, there is
an average of 7·3 children, not including those still-born."[4]
Furthermore, feeble-minded women often begin child-bearing
at an exceptionally early age ; and it must be remembered that,
even if the size of families is unaffected, early marriage is not
a matter of indifference ; for, when the normal age of marriage
in any group is reduced, " generations succeed one another with
greater rapidity," so that the proportion of the whole popula-

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[1] *The Family and the Nation*, p. 74.
[2] *Independent Review*, May 1906, p. 183.
[3] *Probability the Basis of Eugenics*, p. 29.
[4] *The Family and the Nation*, p. 71.

tion embraced among the descendants of the original members of that group is increased.[1]   The mentally defective are not, however, the only class among which propagation might with advantage be restrained.   Some writers suggest that certain forms of criminality and certain qualities conducive to pauperism might be eradicated from the race in the same way.   Professor Karl Pearson makes a suggestion, which, if correct, strengthens considerably the probability that this sort of policy would reach its goal.   He thinks that imperfections of quite different kinds are correlated, and that " there is something akin to germinal degeneracy, which may show itself in different defects of the same organ or in defects of different organs." [2]   Professor Bateson, to the same practical, though not to the same theoretical, effect, speaks of the existence of " indications that, in the extreme cases, unfitness is comparatively definite in its genetic causation, and can, not unfrequently, be recognised as due to the presence of a simple genetic factor." [3]   In sum, as the last quoted writer states, there is little doubt that " some serious physical and mental defects, almost certainly also some morbid diatheses, and some of the forms of vice and criminality could be eradicated if society so determined." [4]   This is a conclusion of extreme importance.   It is one, too, that seems *prima facie* susceptible, without great difficulty, of some measure of practical application.   Occasions frequently arise when tainted persons, whether on account of crime or dementia, are compulsorily passed into governmental institutions.   In these cases it would seem that propagation might be prevented, after careful inquiry had been made, either by permanent segregation, or possibly, as is authorised by law in certain American States, by surgical means.[5]   The knowledge we possess seems clearly sufficient to warrant us in taking some

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[1] Haycraft, *Darwinism and Race Progress*, p. 144.
[2] *The Scope and Importance of National Eugenics*, p. 38.
[3] *Mendel's Principles of Heredity*, p. 305.
[4] *Ibid.* p. 305.
[5] According to Dr. Rentoul, sterilisation can be effected in either sex by a simple operation that carries few incidental ill-effects (*Race Culture and Race Suicide*, chap. xx.).   Sterilisation by this or some other method "has been legalised as a prevention of the procreation of the imbecile, insane, and criminal in Indiana (1907), California (1909), Connecticut (1909), and New Jersey (1911)" (*Quarterly Journal of Economics*, November 1911, p. 46).

cautious steps in this direction. There can be no doubt that such a policy would redound both to the general, and to the economic, welfare of the community. For this conclusion, and for the great step forward which it is hoped may follow from it, we are indebted to modern biology. The conclusion, however, is outside the sphere of economics, and does not in any way disturb the results that were attained in our second chapter.

§ 3. I pass, therefore, to something of whose relevance at all events there can be no doubt, the view, namely, that biological science proves all such inquiries as we are pursuing here to be trivial and misdirected. Put broadly, the charge is this. Economic changes, such as alterations in the size, the distribution, or the steadiness of the national dividend, affect environment only, and environment is of no importance, because improvements in it cannot react on the quality of the children born to those who enjoy the improvements. This view was crystallised by Professor Punnett, when he declared that hygiene, education and so on are but " fleeting palliatives at best, which, in postponing, but augment the difficulties they profess to solve. . . . Permanent progress is a question of breeding rather than of pedagogics ; a matter of gametes, not of training." [1] Mr. Lock [2] is even more emphatic in the same sense. The opinions of these writers on the practical side are substantially in agreement with those of Professor Karl Pearson.

The scientific foundation on which all such views rest is, of course, the thesis that acquired characters, such as arise out of the influence of environment, are not inherited. It is held, at least as regards the more complicated multicellular organisms, that the germ-cells, which will ultimately form the offspring of a living being, are distinct at the outset from those which will form the body of that being. Thus, Mr. Wilson writes : " It is a reversal of the true point of view to regard inheritance as taking place from the body of the parent to that of the child. The child inherits from the parent *germ-cell*, not from the parent body, and the germ-cell owes its characteristics, not to the body which bears it, but

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[1] *Mendelism* (second edition), pp. 80-81.
[2] Cf. *Recent Progress in the Study of Variation, Heredity and Evolution*, by R. H. Lock.

to its descent from a pre-existing germ-cell of the same kind. Thus, the body is, as it were, an offshoot from the germ-cell. As far as inheritance is concerned, the body is merely the carrier of the germ-cells, which are held in trust for coming generations."[1]   Mr. Doncaster takes up substantially the same position : "In the earlier theories of heredity it was assumed that the germ-cells were produced by the body, and that they must, therefore, be supposed either to contain samples of all parts of it, or at least some kind of units derived from those parts and able to cause their development in the next generation.   Gradually, as the study of heredity and of the actual origin of the germ-cells has progressed, biologists have given up this view in favour of a belief in germinal continuity, that is, that the germ-substance is derived from previous germ-substance, the body being a kind of offshoot from it.   The child is, thus, like its parent, not because it is produced from the parent, but because both child and parent are produced from the same stock of germ-plasm."[2]   If this view be sound, it follows that those definite characteristics of an organism, whose appearance is determined by the presence of definite structures or substances in the germ-cells, cannot be directly affected by any quality "acquired" by an ancestor.   It is only characteristics of an indefinite quantitative kind, such as may be supposed to arise from the intercommunication of the germ-cells with the other cells of the body and the reception of fluid or easily soluble substances from them, that can be affected in this way.   The characteristics thus reserved are not, of course, wholly without significance.   The question whether the submission of germ-cells to a poisonous environment reacts permanently upon the descendants of those cells does not seem to be a closed one.   Professor J. A. Thomson writes : "There is a great difference between a poisoning of the germ-cells along with the body, and the influencing them in a manner so specific that they can, when they develop, reproduce the particular parental modification."[3]   The germ-cells do not lead "a

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[1] Wilson, *The Cell in Development and Inheritance*, p. 13 ; quoted by R. H. Lock, *Variation, Heredity and Evolution*, p. 63.

[2] *Heredity*, p. 124.

[3] J. A. Thomson, *Heredity*, p. 198.

charmed life, uninfluenced by any of the accidents or incidents of the daily life of the body which is their bearer."[1] On the contrary, there is some evidence that, not only direct poisons like alcohol, but even injuries to the parent, may, by reacting on the nutrition of the germ-cells, cause general weakness and resultant bad properties in the offspring, though how far *the offspring of their offspring* would be affected is doubtful. The general opinion, however, among biologists appears to be that the effect of the acquired characteristics of one generation upon the quality of the succeeding generation is, at all events, very small compared with the effect of the inborn characteristics of the one generation.[2] "Education is to man what manure is to the pea. The educated are in themselves the better for it, but their experience will alter not one jot the irrevocable nature of their offspring."[3] And "neglect, poverty, and parental ignorance, serious as their results are, (do not) possess any marked hereditary effect."[4]

This biological thesis, which, since it is dominant among experts, an outsider has no title to dispute, is, as I have said, the scientific foundation of the view that economic circumstances, since they are environmental, are not, from a long-period standpoint, of any real importance. The biological premise I accept. To the sociological conclusion, however, I demur. Mr. Sidney Webb has already uttered a genial protest against a too exclusive attention to the biological aspect of social problems. "After all," he writes, "it would not be of much use to have all babies born from good stocks, if, generation after generation, they were made to grow up into bad men and women. A world of well-born, but physically and morally perverted adults is not attractive."[5] My criticism, however, goes deeper than this. Professor Punnett and his fellow-workers would accept Mr. Webb's plea. They freely grant that environing circumstances can

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[1] J. A. Thomson, *Heredity*, p. 204.
[2] Lock, *Variation and Heredity*, pp. 69-71.
[3] Punnett, *Mendelism*, p. 81.
[4] Eichholz, "Evidence to the Committee on Physical Deterioration," Report, p. 14. Dr. Eichholz's view appears to be formed *a posteriori*, and not to be an inference from general biological principles.
[5] *Eugenics Review*, November 1910, p. 236.

affect the persons immediately subjected to them, but they, nevertheless, hold that these circumstances are unimportant, because, not being able to influence the inborn quality of succeeding generations, they cannot produce any lasting result. My reply is that the environment of one genera- tion *can* produce a lasting result, because it can affect the environment of future generations. Environments, in short, as well as people, have children. Though education and so forth cannot influence new births in the physical world, they can influence them in the world of ideas;[1] and ideas, once pro- duced or once accepted by a particular generation, whether or not they can be materialised into mechanical inventions, may remodel from its very base the environment which succeeding generations enjoy. In this way a permanent change of environment is brought about, and, since environ- ment is admitted to have an important influence on persons actually subjected to it, such a change may obviously produce enduring consequences. Among animals, indeed, and among the primitive races of men this point is not important. For,

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[1] An interesting comparison can be made between the process of evolution in these two worlds. In both we find three elements, the *occurrence of*, *pro- pagation of*, and *conflict between*, mutations.

In both worlds the *kind* of mutations that occur appear to be fortuitous, and cannot be controlled, though in both it is sometimes suggested that the tendency to mutate is encouraged by large changes in, and particular kinds of, environment. In both, with every increase of *variability*, the chance that a " good " mutation will occur is increased. Hence, *ceteris paribus*, environments that make for variability are a means to good. Thus, of local governments Dr. Marshall writes : " All power of variation that is consistent with order and economy of administration is an almost unmixed good. The prospects of pro- gress are increased by the multiplicity of parallel experiments and the inter- communion of ideas between many people, each of whom has some opportunity of testing practically the value of his own suggestions." (*Memorandum to the Royal Commission on Local Taxation*, p. 123 ; cf. also Booth, *Industry*, v. p. 86 ; and Hobhouse, *Democracy and Reaction*, pp. 121-3.)

The *propagation* of mutations, on the other hand, does not proceed in the same way among ideas as among organisms. Among the latter the fertility of mutated members is not, but among the former it is, affected by their adapta- tion or otherwise to successful struggle. Animals that are failures and those that are successes are equally likely to have offspring. But, among ideas, those that fail are likely to be barren and those that succeed to be prolific.

Still more marked is the difference between the character of the *struggle* that takes place between mutated members in the two groups. In the physical world the process is negative—the failures are cut off. In the world of ideas it is positive—successful ideas are adopted and imitated. One consequence of this is that, in general, a successful experiment diffuses itself much more rapidly than a successful " sport."

there, what the members of one generation have wrought in
the field of ideas is not easily communicated to their suc-
cessors. " The human race, when widely scattered and incap-
able of intercommunication, makes the same discovery a
hundred times. Its efforts and its triumphs are annihilated
with the death of the individual, or of the last member of the
family in which the invention has been passed on by oral
tradition."[1] Among civilised men, however, the arts of
writing and of printing have rendered thought mobile through
time, and have, thus, extended to each generation power to
mould and remodel the ideal environment of their successors.
M. Tarde grasps this point when he writes : " To facilitate
further production is the principal virtue of capital, as that
term ought to be understood. But, in what is it inherent ?
In commodities or in particular kinds of commodities ? Nay,
rather in those fortunate experiments of which the memory
has been preserved. Capital is tradition or social memory.
It is to societies what heredity or vital memory,—enigmatical
term,—is to living beings. As for the products that have
been saved and stored up to facilitate the construction of new
copies of the models conceived by inventors, they are to these
models, which are the true social germs, what the cotyledon,
a mere store of food, is to the embryo."[2] Bacon had already
exclaimed : " The introduction of new inventions seemeth to
be the very chief of all human actions. The benefits of new
inventions may extend to all mankind universally, but the
good of political activities can respect but some particular
country of men : these latter do not perdure above a few
ages, the former for ever." Dr. Marshall writes in the same
spirit : " The world's material wealth would quickly be re-
placed if it were destroyed, but the ideas by which it was
made were retained. If, however, the ideas were lost, but not
the material wealth, then that would dwindle and the world
would go back to poverty. And most of our knowledge of
mere facts could quickly be recovered if it were lost, but
the constructive ideas of thought remained ; while, if the
ideas perished, the world would enter again on the Dark

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[1] Majewski, *La Science de la civilisation*, p. 228.
[2] *La Logique sociale*, p. 352.

Ages."[1]   Nor is even this a full account of the matter.   As Dr. Marshall well observes in another place : " Any change that awards to the workers of one generation better earnings, together with better opportunities of developing their best qualities, will increase the material and moral advantages which they have the power to offer to their children ; while, by increasing their own intelligence, wisdom, and forethought, such a change will also, to some extent, increase their willingness to sacrifice their own pleasures for the well-being of their children."[2]   Those children, in turn, being themselves rendered stronger and more intelligent, will be able, when they grow up, to offer a better environment—and under the term environment I include the physical circumstances of the mother before, and immediately after, child-birth[3]—to their children, and so on.   The effect goes on piling itself up. Changes in ancestral environment start forces, which modify continuously and cumulatively the conditions of succeeding environments, and, through them, the human qualities for which current environment is in part responsible.   Hence, Professor Punnett's assertion is unduly sweeping.   Progress, not ⸺merely permanent but growing, *can* be brought about by causes with which breeding and gametes have nothing to do.   There is no fundamental difference of the kind supposed between causes operating on acquired, and causes operating on inborn, qualities.   The two are of co-ordinate importance ; and the students of neither have a right to belittle the work of those who study the other.

§ 4. I proceed now to the third of the topics indicated for discussion in the first section of this chapter, the measure, namely, in which new biological knowledge makes it necessary for us to qualify the conclusions laid down in the second chapter. These conclusions, it will be remembered, were to the effect that, other things being equal, a general increase in the national dividend, a change in the distribution of the dividend favourable to the poor, and a ' steadying ' of the dividend,

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[1] *Principles of Economics*, p. 780.   [2] *Ibid.* p. 563.

[3] The importance of this point is illustrated by the observation of the London Education Committee of 1905, that the children born in a year when infant mortality is low show an improved physique, and *vice versa*. (Cf. Wells, *New Worlds for Old*, p. 216.)

particularly of that part of it which goes to the poor, would all be likely to increase economic welfare and, through economic welfare, general welfare. The third of these conclusions may, perhaps, in the present connection, pass without challenge. Against the other two, however, the biologically trained critic urges an important caution. May it not be, he asks, that advance along the first of these lines, by checking the free play of natural selection and enabling feeble children to survive, will set up a cumulative influence making for national weakness; and that advance along the second line, by differentiating in favour of inferior stocks, will have a similar evil effect? In either case is there not ground for fear that the brightness of the stream of progress is deceptive, that it bears along, as it flows, seeds of disaster, and that the changes we have pronounced to be productive of welfare are, at the best, of doubtful import? The two parts of this thesis must now be examined in turn.

§ 5. The danger to national strength, that results from a growth of wealth in general, has been emphasised by many writers. In a softened environment children of feeble constitution, who, in harder circumstances, would have died, are enabled to survive and themselves to have children.[1] It has even been suggested that in this fact may lie the secret of the eventual decay of nations and of aristocracies which have attained great wealth. Now, I do not, of course, deny that there is some element of truth in this view. It is not, however, for several reasons, so important as is often supposed. First, according to the most recent biological opinion, the survival of weakly children, if their weakness is, as it were, accidental, and not due to inherited defect, is not ultimately harmful, because the children of the weakly children are quite likely to be strong. Secondly, if increased wealth removes influences that make for the elimination of the unfit, it also removes influences that make for the weakening of the fit. The total effect of this twofold action may well be beneficial rather than injurious. That this is, in fact, the case is suggested by a recent important report published by the Local Government Board on the relation of infantile mortality to general

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[1] Cf. Haycraft, *Darwinism and Race Progress*, p. 58.

mortality.   In that report Dr. Newsholme directly combats the view that improvements making for a reduction of infant mortality, by enabling more weaklings to survive, must be inimical to the average health of the population.   He finds, on the contrary, " that the counties having high infant mortalities continue, in general, to suffer somewhat excessively throughout the first twenty years of human life, and that counties having low infantile mortalities continue to have relatively low death-rates in the first twenty years of life, though the superiority is not so great at the later as at the earlier ages . . .   It is fair to assume, in accordance with general experience, that the amount of sickness varies approximately with the number of deaths; and there can be no reasonable doubt that, in the counties having a high infant death-rate, there is—apart from migration—more sickness and a lower standard of health in youth and in adult life than in counties in which the toll of infant mortality is less." [1]   Nor is this all.   We need to remember that weakness in infancy is not necessarily a good index of essential inborn weakness. Thus, Mr. Yule, after reviewing the available statistics by mathematical methods, is led to suggest that, perhaps, " the mortality of infancy is selective only as regards the special dangers of infancy, and its influence scarcely extends beyond the second year of life, whilst the weakening effect of a sickly infancy is of greater duration." [2]   All these considerations militate against the view that a growing dividend and the improvements that naturally accompany it carry seeds of future weakness, such as ultimately to make against, rather than in favour of, economic welfare.   In any event, the danger that they may have this effect can be readily and completely counteracted, if the policy of segregating the unfit, advocated in the second section, is adopted.   As Professor Thomson points out, no biological evil can result from the preservation of weaklings, provided that they are not allowed to have children. [3]   There is, therefore, no need to surrender our conclusion that causes, which make for an expansion of the dividend, in general make for economic and, through economic, for aggregate, welfare.

[1] Report for 1909-10 [Cd. 5263], p. 17.
[2] Appendix to the Report cited above, p. 82.   [3] *Heredity*, p. 528.

§ 6. The danger to national strength and efficiency through an improvement in the distribution of the dividend might seem *a priori* to be very important. For, improved distribution is likely to modify the proportion in which future generations are born from the richer and poorer classes respectively. If, therefore, the poorer classes embrace less efficient stocks than the richer classes—if, in fact, economic status is anything of an index of inborn quality—improved distribution must modify the general level of inborn quality, and so, in the long run, must react with cumulative force upon the magnitude of the national dividend. Now, I do not agree with those who hold that poverty and inborn inefficiency are obviously and certainly correlated. Extreme poverty is, no doubt, often the result of feckless character, physical infirmity, and other "bad" qualities of finished persons. But, these themselves are generally correlated with bad environment; and it is ridiculous to treat as unworthy of argument the suggestion that the "bad" qualities are mainly the result, not of bad original property, but of bad original environment.[1] Nevertheless, though I do not regard it as self-evident, I do regard it as probable, that a considerable measure of correlation exists between poverty and "bad" original properties. For, it is apparent that among the relatively rich are many persons who have risen from a poor environment, which their fellows, who have remained poor, shared with them in childhood; and this sort of movement is probably becoming more marked, as opportunities of education and so forth are being brought more within the reach of the poorer classes. In like manner,

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[1] This class of difficulty is experienced in many statistical investigations of social problems. For example, an interesting inquiry into the inheritance of ability, as indicated by the Oxford class lists and the school lists of Harrow and Charterhouse, has recently been published by Mr. Schuster. But, the value of his results is in some measure—it is not possible to say in *what* measure—impaired by the fact that the possession of able parents is apt to be correlated with the reception of a good formal, and, still more, informal, education. Mr. Schuster argues (p. 23) that the error due to this circumstance is not likely to be large. (Cf. also Karl Pearson, *Biometrika*, vol. iii. p. 156.) M. Nicefero, on the other hand, in his study of *Les Classes pauvres*, lays stress on the effects of environment in promoting the physical and psychical inferiority of these classes; but, he does not seem to justify by evidence his conclusion that "tous les facteurs—en dernière analyse—plongent leur racine bien plus dans le milieu économique de la société moderne, que dans la structure même de l'individu" (p. 332).

of course, among the poor are some persons who have fallen
from a superior environment.   Among the original properties of
these relatively rich there are presumably qualities making for
efficiency, which account for their rise; while, among the original
properties of *these* relatively poor, there are, presumably,
qualities of an opposite kind.[1]   Hence, it is probably true
that causes affecting the comparative rate of child-bearing
among the relatively rich and the relatively poor respectively
affect the comparative rate among those with " better" and
" worse " original properties (from the point of view of efficiency)
in the same direction.   So long as it was the case that in-
creased prosperity in a poor class involved a higher rate of
reproduction, it would follow that an improved distribution of
the dividend would increase the number and, therewith, the
proportion, of children born from parents of inferior stock.
Professor Brentano's investigations, which were previously
noticed, have, however, suggested that increased prosperity in
a class tends, on the whole, to diminish rather than to increase
the reproduction rate of that class.   Hence, an improvement
in the distribution of the dividend may be expected to diminish
the proportion of children born from inferior stocks.   In short,
this biological consideration, so far from reversing the con-
clusion of the second chapter, that improved distribution makes
for economic and general welfare, lends, in present conditions,
some support to that conclusion.   None of the three main
results of that chapter are, therefore, reversed by biological
considerations.

[1] Professor Pareto ignores these considerations when he argues (*Systèmes
socialistes*, p. 13, *et seq.*) that an increase in the relative number of children
born to the rich must make for national deterioration because, since the
children of the rich are subjected to a less severe struggle than those of the
poor, feeble children, who would die if born to the poor, will, if born to the
rich, survive and, in turn, have feeble children.   In view of the fact noted
in the text, this circumstance should be regarded merely as a counteracting
force, mitigating but not destroying, the beneficial consequences likely to result
from a relative increase in the fertility of the rich.

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CHAPTER V

THE METHOD OF DISCUSSION TO BE FOLLOWED

THE conclusions we have reached may now be repeated. They are to the effect that : (1) other things being equal, an increase in the size of the national dividend will probably increase economic welfare ; (2) other things being equal, an increase in the absolute share of the national dividend accruing to the poor will probably increase economic welfare ; and (3) other things being equal, a diminution in the variability of the national dividend, especially of the part accruing to the poor, will probably increase economic welfare.   If it were the case that causes affecting the size of the dividend had no influence on the absolute share of the poor or on the variability of the dividend, while causes affecting the absolute share of the poor and the variability of the dividend respectively were similarly self-contained, the remaining stages of our inquiry would be simple.   Each of these groups of causes would be examined in turn separately.   As a fact, however, the same cause will often affect at once the size, the distribution, and the variability of the dividend, and it is not, *prima facie*, necessary that it should affect them all harmoniously.   That this circumstance must greatly complicate our exposition is obvious.   No method of treatment of a wholly satisfactory kind seems to me, in the circumstances, to be possible.   After some hesitation, however, I have decided to proceed as follows.   In Part II. I shall begin by showing that the generality of causes, which affect the size of the dividend and the absolute share of the poor, act harmoniously upon these two quantities, and I shall then examine successively certain

principal causes upon which the size of the dividend depends. In Part III. I shall investigate generally the effects of attempts to improve the distribution of the dividend by the deliberate transference of resources from relatively rich to relatively poor persons. Finally, in Part IV., I shall study separately causes whose primary effect is on the variability of the dividend. This arrangement, I am fully aware, lacks logical symmetry. It seems, however, on the whole, to be more convenient than any other that I have been able to devise.

PART II

THE MAGNITUDE OF THE NATIONAL DIVIDEND

CHAPTER I

§ 1. THE statement that economic causes *may* affect in a discordant manner the size and the distribution respectively of the National Dividend, seems to the plain man too obvious for discussion; and he wishes to proceed at once to a detailed inquiry concerning the extent to which disharmony in fact prevails. It may, therefore, cause surprise when I say that this inquiry must be set aside in favour of a discussion of the view that no inquiry is called for. The ground on which this view depends is the summary statement that causes operating in opposite senses upon the aggregate amount of the dividend and the absolute share of the poor do not and cannot exist. That a state of affairs so excellently adapted to the convenience of students should be found to prevail in the real world is a possibility *a priori* most remote. The remarkable investigations of Professor Pareto have, however, made it necessary seriously to ask the question, whether or not that possibility is actually realised. In the *Cours d'économie politique* statistics of income in a number of countries, principally during the nineteenth century, are brought together. It is shown that, if x signify a given income and N the number of persons with incomes exceeding x, and if a curve be drawn, of which the ordinates are logarithms of x and the abscissae logarithms of N, this curve, for all the countries examined, is approximately a straight line, and is, furthermore, inclined to the axis of X at an angle, which, in no case, differs by more than three or four degrees from $56°$. This means (since $\tan 56° = 1·5$) that, if the

number of incomes,greater than x is equal to N, the number greater than mx is equal to $m^{\frac{1}{1\cdot5}}$N, whatever the value of m may be. "We are confronted, as it were, with a great number of crystals of the same chemical composition. There are large crystals, middle-sized crystals, and small crystals, but they are all of the same form."[1]   From this premise Professor Pareto concludes, by mathematical reasoning, as follows: "To raise the level of the minimum income or to diminish the inequality of incomes, it is necessary that wealth should grow more rapidly than population.   Hence, we see that the problem of improving the condition of the poorer classes is, before everything else, a problem of the production of wealth."[2]   And the converse of this proposition is also, in general, true: "We may say generally that the increase of wealth relatively to population will produce either an increase in the minimum income or a diminution in the inequality of incomes, or both these effects in combination."[3]   In other words, of persons known before the change as poor, either the numbers must diminish or the fortunes of the poorest improve, or both these things occur.   Substantially, this means that the aggregate income of certain defined persons, now known as poor, can only be increased by influences increasing the aggregate income of the whole community; and *vice versa*.   Inequality of distribution, in short, as estimated by Professor Pareto's measure—and this measure we have already shown to be in general accord with the more strictly appropriate measure of standard deviation [4]—*cannot* be altered, so long as the *magnitude* of the dividend remains fixed.

§ 2. A view so surprising as the above should not, clearly, be accepted without careful examination.   Attention may be

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[1] *Cours d'économie politique*, ii. pp. 306-7.

[2] *Ibid.* p. 408.

[3] *Ibid.* p. 324.   Pareto defines a diminution in the equality of incomes thus : "Occorre definire cosa s'intende per quei termini 'Minore disuguaglianza delle entrate.'   Le entrate possono tendere all' uguaglianza in due modi bene diversi ; cioè perchè le maggiori entrate scemano, oppure perchè le minore entrate crescono.   Diamo quest' ultimo significato alla diminuzione della disuguaglianza delle entrate, la quale quindi avra luogo quando il numero degli individui aventi un entrata inferiore ad un entrata x scema paragonato al numero delle persone aventi un entrata superiore ad x."—*Manuale di economia politica*, p. 371.   [4] Cf. *ante*, p. 25.

directed, in the first instance, to the *material*, from which the alleged law is inferred. The figures furnished by Professor Pareto do not appear on inspection so entirely harmonious as he suggests. The approximation to linear character in the income-curve is, indeed, fairly well maintained, at least so far as incomes of moderate amount are concerned, but the inclination of the curve, though it does not differ widely, still does differ distinctly, in the different groups of statistics that have been observed. His lowest figure from adequate data for the tangent of the angle made with the axis of X is, for instance, 1·24 (Bâle, 1887), and his highest 1·89 (Prussia, 1852). Nor is this all. As Mr. Bowley has pointed out, in the most important set of figures observed over a long period (those for Prussia) the slope of the curve has been falling with the lapse of time. The figures which Mr. Bowley gives differ slightly from those of Professor Pareto, but the general effect is the same in both sets. It is obvious, however, that a smaller slope of the curve means a greater equality of distribution. Mr. Bowley, therefore, naturally offers as an explanation of the Prussian figures : " The incomes are becoming more uniformly distributed in Prussia, and the result is, from these figures, that the Prussian income is getting to the more uniform distribution of the English." [1] Finally, statistics relating, not, indeed, to incomes directly, but to the size of fortunes passing at death, to which incomes presumably bear some close relation, have recently been published by Benini for France, Italy and England. He finds that the English curve slopes considerably the most steeply. The numerical coefficients for the three countries respectively are : 0·1017, 0·1090 and 0·0769, thus showing that, despite great differences in absolute riches, France and Italy have similar distributions, while distribution in this country is more uneven.[2] Hence, interesting as Professor Pareto's results are, it is quite unjustifiable to derive from them any general law of the kind that was suggested in his *Cours*.

§ 3. It is not, however, only in respect of their statistical basis that the conclusions of the *Cours d'économie politique*

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[1] Select Committee on the Income Tax, 1906 ; *Evidence*, p. 81.
[2] *Principii di statistica metodologica*, p. 191.

are open to criticism.   The logical step involved in the transition from a small number of contemporary and recent facts to the enduring presence of a mysterious force, making it impossible for one class to become richer unless all classes do so, is surely a bold one.   So bold, indeed, is it that, in a later work, Professor Pareto himself explicitly rebuts the conclusions which seemed to flow from his earlier statements. In the *Manuale di economia politica* he strongly insists that his formula is purely empirical.   " Some persons would deduce from it a general law as to the only way in which the inequality of incomes can be diminished.   But, such a conclusion far transcends anything that can be derived from the premises.   Empirical laws, like those with which we are here concerned, have little or no value outside the limits for which they were found experimentally to be true."[1]   That this is, indeed, the case can readily be made plain.   For, even if the resemblances among different statistical groups were far greater than they in fact are, we should need to observe that, between the groups found to possess similar income-curves, there are many circumstances in common, besides the mere fact that they earn income.   Consequently, no ground would be given for believing that any given form of the income-curve is necessary, in the sense that a cause altering one of these common circumstances would leave it unchanged.   Professor Pareto in his *Manuale* admits this as regards a special case, when he writes : " We cannot assert that the form of the curve would not change if the social constitution were to change radically, if, for example, collectivism were to take the place of the system of private property."[2]   The point is well developed by Benini in his *Principii di statistica metodologica.*   He writes : " It is important to inquire if there is not some other antecedent common to all the cases observed, which might explain the characteristic constant form of the distribution of income among different people and in different times.   This inquiry is the more justified, because the distribution among individuals of physical, intellectual, and other endowments seems to follow the normal law of error ; so

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[1] *Manuale di economia politica*, pp. 371-2.
[2] *Ibid.* pp. 370-1.

that, if this distribution were the only cauŝe of the distribution of wealth, the curve representing the latter distribution ought to be binomial and not hyperbolic.   Now, what other antecedent common to the observed cases is there ?   There is the system of inheritance, which exists with but slight differences among the different countries examined.   The existence of that system should bring it about that many individuals of inferior aptitudes succeed in maintaining themselves at a high point in the scale of wealth, while others of superior aptitudes do not succeed, save in exceptional cases, in rising above the average.   The hyperbolic form of the curve of total incomes would, thus, be explained as a result of a deformation of the binomial curve, due to the disturbing element of the hereditary transmission of property.   In a hypothetical collectivist society, therefore, which suppressed current rules of succession, the distribution of wealth among individuals would not preserve its present form, but would rather obey fairly closely the normal law of error." [1]

Nor is it necessary to imagine so large a change as the destruction of inheritance laws, in order that the form of the income-curve may be largely affected.   There is ground for believing that a like result would come about in consequence of anything that affected, in a marked way, the proportion between " earned " income and income derived from investments.   The reason for this opinion is threefold.   First, it is found by experience that incomes from property are distributed much more unevenly than incomes from either head-work or hand-work.   Mr. Watkins, in his *Growth of Large Fortunes*, after printing an interesting table, comments on it as follows : " In making the comparisons made possible by this table, the criterion must be relative, not absolute.   Convenient relative numbers are the ratio of the upper decile, or the upper centile, to the median.   It will be observed that, in the statistics of wages, the upper decile is always somewhat less than twice the median, and, in one occupation of the nine, it is little more than one-fourth greater.   In the distribution of salaries the upper decile is approximately twice the median, the inequality thus being not greatly different from that prevailing among

[1] *Loc. cit.* p. 310.

wage-incomes. But there is a great gap between this and the prevailing distribution of income from property. In the Massachusetts probate statistics the upper decile is eight or nine times the median, and the error is doubtless in the direction of under-statement, since the figures are not net, so that large deductions for debts should be made from the smaller estates, and also since many very small properties do not pass through the courts. Among French estates the upper decile is thirteen times the median." [1] Secondly, the distribution of earned income itself is likely to be more uneven, the greater is the importance of the unevenly distributed " unearned " income. This result comes about because differences in " unearned " income make possible different measures of training, and afford different opportunities for entering into lucrative professions. The correlation between the two sorts of income is illustrated by Benini in a table, in which he divides the figures for certain Italian incomes into two parts: " The one represents the income that people derive from property, supposed to be invested for all the different categories at a uniform rate of, say, 5 per cent, the other represents the strictly personal income, due to work, enjoyed by the same people. For example, a total income of 2000 lire, accompanied by a property of 9016 lire, may be regarded as composed of 451 lire, the fruit of investment, and of 1549 lire, the fruit of professional activity. Calculating in this manner, we obtain the following table :—

Total Income (lire).		Income derived from Property.		Income derived from Personal Activity.
1000	=	143	+	857
2000	=	451	+	1549
4000	=	1458	+	2542
8000	=	4285	+	3715
16,000	=	11,665	+	4335
20,000	=	15,885	+	4115
32,000	=	28,640	+	3360
40,000	=	37,500	+	2500

It will be noticed, of course, that, so soon as total incomes begin to exceed 16,000 lire, the part derived from personal

[1] *The Growth of Large Fortunes*, p. 18.

activity diminishes; but this does not mean that the remuneration of the professions followed diminishes; it only means that many rich men live wholly on the incomes derived from their property, without following any gainful profession, and that this conduct of theirs reduces the average of the income due to work for the class to which they belong." [1]   Finally, a change in the distribution of training and so forth—investment of capital in people—may take place apart from variations in unearned income; and, when this happens, it is obvious that the change will tend directly to alter the distribution of earned income, even though original capacities are distributed in accordance with some (the same) law of error.   It is perhaps some change of this kind that accounts for the conclusion, which Professor Moore derives from his study of recent American wage statistics, that the "variability" of wages was less in 1900 than it had been in 1890.

§ 4. Further considerations pointing in the same direction as the above could easily be adduced.   What has been said, however, will suffice to show that no general proposition to the effect that improvements in the quantity and in the distribution of the dividend *necessarily* go together, can be successfully maintained.   We do not need, however, to rest content with this negative statement.   For, though absolute harmony can in no way be demonstrated, good reason can be found for the view that a limited, but, none the less, very important, measure of harmony exists.   To display this, it is necessary to undertake some brief discussion of "the laws of distribution."   The problem of distinguishing the extent to which causes favourable to the one are also favourable to the other calls, therefore, for direct attack.   In turning towards it, we find ourselves confronted with the broad problem of distribution.

[1] *Loc. cit.* pp. 336-7.

CHAPTER II

§ 1. THE "laws of distribution," which are explained in economic text-books, refer, as is well known, to distribution among the various "factors of production." The distribution, with which the present discussion is concerned, however, is distribution among people. These two sorts of distribution are not the same. They *would* be the same, if each factor were provided exclusively by a set of persons who provided nothing of any other factor. Of course, however, in real life the same man often provides portions of several factors, obtaining part of his income from one and part from another. A landlord is not merely the owner of "the original and indestructible properties of the soil." On the contrary, he frequently invests a great deal of capital in his land, and sometimes also considerable mental labour in choosing his tenants, exercising a certain control over their methods, and deciding, it may be, upon the necessity of evictions. A shop-keeper provides capital, or waiting, to some extent, but he also provides, especially if his sales are on credit, much mental labour in judging the "standing of his customers" and not a little uncertainty-bearing in respect of bad debts. A large capitalist employer is still more obviously capitalist, brain-worker, and uncertainty-bearer combined. Finally, an ordinary manual worker is frequently, in some measure, also a capitalist. In view of these considerations, it is plain that doctrines about distribution among factors of production cannot be applied directly and unreservedly to problems concerning distribution among people. This difficulty is not, however, as it so happens,

of great practical importance.   By far the largest part of the
poorer classes in this country consists of wage-earning work-
people.   We shall not, therefore, commit any serious error if
we treat manual workers and the poor as equivalent classes.
Furthermore, statistics show that by far the most important
income-yielding instrument actually possessed by the poor
of the United Kingdom, as thus defined, is manual labour.
Persons in receipt of wages number some 15,000,000, and it
is probable that persons dependent upon wages amount to
30,000,000, or nearly two-thirds of the population.   The
accumulated property of these persons is estimated at
£450,000,000, and the interest on it may therefore be put at
some £20,000,000 a year.   This is probably little more than
$\frac{1}{35}$th part of the total income of the wage-earners, all the rest
being received as wages of labour.[1]   Hence, just as we have
agreed roughly to identify the poor with the wage-earners,
we may agree also to identify the earnings of wage-earners
with the earnings of the factor labour.   No appreciable error
is introduced by this simplification.   When we have made it,
the familiar analysis of the economists can be directly applied.

§ 2. For our purpose it is convenient to divide the factors
of production, from whose joint operation the national dividend
results, into two broad groups, labour and the factors other
than labour, or, as we may say for brevity, non-labour.   Of
course it is obvious that, in fact, neither labour nor non-
labour constitutes a homogeneous group made up of similar
units.   Labour embraces the work both of unskilled casual
workpeople and of numerous sorts of skilled artisans.   Non-
labour embraces, along with the work of Nature, the work of
many kinds of mental ability, the service of waiting and the
service of uncertainty-bearing.[2]   From the present standpoint,

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[1] Cf. Chiozza-Money, *Riches and Poverty*, p. 49.

[2] The nature of the service of waiting has been much misunderstood.
Sometimes it has been supposed to consist in the provision of money, sometimes
in the provision of time, and, on both suppositions, it has been argued that no
contribution whatever is made by it to the dividend.   Neither supposition is
correct.   "Waiting" simply means postponing consumption, which a person
has power to enjoy immediately, thus allowing resources, which might have
been destroyed, to assume the form of productive instruments and to act as
"harness, by which natural powers are guided so as to assist mankind in his
efforts." (Flux, *Principles of Economics*, p. 89.)   The unit of "waiting" is,
therefore, the use of a given quantity of resources for a given time.   Thus, to

however, it is legitimate to abstract from these differences, to represent the whole mass of the factor labour as equivalent to so many units of a particular sort of labour, and the whole mass of the factor non-labour as equivalent to so many units of, say, "waiting." This being understood, it is obvious that the general run of causes affecting the magnitude of the national dividend are contained in one or other, or in both, of two groups, according as they act through (1) changes in the quantity or technical efficiency of non-labour, and (2) changes in the quantity or technical efficiency of labour. It can, I think, be shown that both these groups of causes influence in the same sense the magnitude of the dividend as a whole and the aggregate real earnings of labour. This is the limited harmony of which I spoke at the close of the preceding chapter.

§ 3. To analyze the effects of an increase in the quantity or technical efficiency of non-labour, resort must be had to the general analysis of distribution developed by Dr. Marshall. Subject to certain important qualifications, which are discussed in later chapters, this analysis shows, first, that, every factor of production, including *entrepreneurs'* work,[1] tends to be remunerated in proportion to the value of its marginal net product. It shows, secondly, that, other things being equal, the value of the marginal net product of every factor diminishes as the supply of that factor increases, whether the increase is due to an addition to its quantity or to its technical efficiency. This proposition can be inferred from a combination of two laws. The first of these may be called the *law of diminishing returns to individual factors of production.* It states that the increment of product, due

take Professor Carver's example, if a manufacturer buys one ton of coal a day on each day of the year and buys each day's supply one day ahead, the waiting he supplies during that year is one ton of coal for one year—a year-ton of coal. (*Distribution of Wealth*, p. 253.) In more general terms, we may say that the unit of waiting is a year-value-unit, or in the simpler, if less accurate, language of Dr. Cassel, a year-pound. The graver difficulties involved in the conception of uncertainty-bearing are discussed in the Note following this Chapter.

[1] The special case of the *entrepreneur's* earnings is discussed in detail by Professor Edgeworth in the *Quarterly Journal of Economics* for February 1904 ; it is also touched upon in his paper on "Mathematical Theories" in the *Economic Journal* of December 1907.

to the increase, by a unit, of any factor of production in any industrial field, will, in general, be smaller, other things remaining the same, the greater is the supply of that factor already employed there.) This law must not be confused with the law of *diminishing returns to resources in general invested in a given occupation.* The latter law states that, in some circumstances, the increment of product, due to the increase, by a unit, of resources in general—in such a unit several factors of production may be combined—in the occupation of producing a given commodity, will be smaller, the greater is the quantity of resources already engaged in that occupation. This latter law is applicable to the case of some commodities only, and corresponds to the law of increasing returns, as ordinarily understood, which is applicable to the case of others. The *law of diminishing returns to individual factors of production* is quite different from this, and describes the facts, not merely in some cases, but, apart from a few unimportant exceptions, in all.[1] There is no law of increasing returns to individual factors of production corresponding to it. It is a general fact that, as the supply of any factor increases, it pushes forward an irregular boundary along a great number of routes.[2] The more of it there is, the smaller is the quantity of other factors, with which to co-operate, and from which to derive assistance, that each new unit finds available. Consequently, its productivity per unit continually falls. This is the first law, upon which the proposition we are concerned to establish is based. The second law is the *law of diminishing utility.* It simply states that, in general, the more of any specific commodity that is supplied, the less satisfaction people obtain from the marginal unit of it, and, therefore, the less it is worth in terms of general value. From the conjunction of these laws it follows at once that, as the quantity of any factor increases, the value of its marginal net product decreases : which is the proposition required.

[1] For a discussion on lines somewhat similar to the above, cf. Carver, *The Distribution of Wealth*, pp. 65-6 ; and Wicksteed, *The Common Sense of Political Economy*, bk. ii. ch. v.

[2] This idea is well expressed by Turgot in an elaborate figure (cf. Cassel, *Nature and Necessity of Interest*, p. 22). In illustration, it may be noticed that, as the rate of interest falls, instrumental goods come to be built more solidly, and to be repaired and renewed more readily when need arises.

§ 4. From the „analysis, which we have just carried out, an important subordinate proposition can be directly derived. This proposition has two sides, and is to this effect: If the quantity or the technical efficiency of any factor of production is increased, the reward per efficiency unit reaped by all factors completely rival to that factor (in the sense of being perfect substitutes) will be diminished, and the reward per efficiency unit reaped by all factors completely complementary to it (in the sense of being, in no degree, substitutes) will be increased. The former half of this proposition is obvious.   The advent of Chinese immigrants in the retailing business *must* injure the British retail shopkeepers of New Zealand, and the steady flow of low-grade European immigrants *must* keep down the wages of unskilled American workmen in the United States.[1] The latter half of the proposition is easily proved as follows. Since each unit of the increased factor must be paid at the same rate, and the rate for the new units is less than the old rate, a part of the product of the old as well as of the new units is handed over to the complementary factors.[2]   As an illustration, we may note that a high level of wages generally prevails in new countries, because, first, there is a large quantity of land available, and secondly, by mortgaging the land to foreigners, the inhabitants can obtain a large quantity of capital also.[3]

§ 5. If, as is, of course, generally true in the concrete, different factors are partly complementary and partly rival, the effect of an increase in the quantity or efficiency of one of them upon the reward obtained by the others can be analysed in this wise.   Suppose that the quantity of factor A increases from A to $(A + a)$, and that x of the new units are substituted in uses formerly occupied by mx units of the other factor B. Then the effect produced on the reward per unit of B is equal

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[1] Professor Taussig points out that, whereas most money incomes in the United States have increased, "the wages of ordinary day labour and of such factory labour as is virtually unskilled seem to have remained stationary and sometimes seem even to have fallen." (*Quarterly Journal of Economics*, 1906, p. 521.)

[2] It is not relevant to the present argument to note, though the point may be added for completeness, that, in response to the improved demand, the complementary factors tend to increase in quantity, but, since their supply curve is inclined positively, not to a sufficient extent to reduce their receipts to the old level.

[3] Cf. Marshall, *Royal Commission on Labour*, Q. 4237-8.

to that which would have been produced had the two factors been entirely complementary, and had the quantity of A increased from A to $(A + a - x)$ and the quantity of B from B to $(B + mx)$. It is obvious that this effect *may* represent either an increase or a decrease in the reward per unit of B, and that it is more likely to represent an increase, the larger is $\dfrac{A + a - x}{A}$ relatively to $\dfrac{B + mx}{B}$. It is not possible, in the absence of knowledge as to the form of the function representing the relations between the factors and their product, to make any statement more precise than this. Interpreted roughly, the condition under which, on the hypothesis taken, an increase in the quantity of A would lead to an increase in the reward per unit of B, is that the predominant part of the extra units of A can be profitably turned to uses other than those formerly occupied by units of B. Hence, in general, where two factors are partly complementary and partly rival, an increase in the quantity or technical efficiency of the one will augment the reward per unit, and, therefore, the absolute share of the dividend, enjoyed by the other, if the relation of complementariness between the two factors is more important than their relation of rivalry.

§ 6. The question, whether the relation between non-labour and labour is, in the concrete, mainly complementary or mainly rival, is not one to which an *a priori* answer can be given. It has to be examined in detail with regard to the principal subdivisions of which non-labour is made up. In respect of the subdivision "uncertainty-bearing," little doubt can be entertained. Uncertainty-bearing and labour, in the sense of manual labour, are obviously complementary. Hence, the whole mass of modern devices, discussed in the note following this chapter, by which the quantity and the technical efficiency of uncertainty-bearing have been favourably affected, necessarily increase, at once the dividend, and the absolute share of labour. The answer to our question seems, however, *prima facie*, less certain in respect of the subdivisions "waiting" and the "mental capacity" that evolves constructive ideas. The relation between labour and these parts of non-labour, therefore, requires special discussion.

§ 7. *Prima facie*, it seems not unlikely that the relation between labour and waiting may often be predominantly one of rivalry. This opinion is suggested by the evident fact that machinery and labour are often alternative means of production, the choice between them turning on relative cost. Thus, " in India and Russia, where wages are extremely low, agriculture is generally carried on by means of implements of the very simplest description; Australia and the United States are the countries of the steam-plough."[1] It must, however, be remembered, as Dr. Marshall has observed, that machinery is not mere "waiting," but is the embodiment of labour and waiting jointly. Hence, "the competition is really between some kinds of labour, aided by a good deal of waiting, and other kinds of labour aided by less waiting. On the one side, for instance, are many who make shoes by hand, and a very few who make awls and other simple implements, aided by a little waiting; on the other are a relatively small number who work powerful sewing-machines, which were made by engineers, aided by a good deal of waiting."[2] This consideration goes some way to mitigate the apparent predominance of rivalry in the relation between the two factors labour and waiting. Surveying this relation in the broad, Dr. Marshall concludes—and I am content to accept his authority : " There is a real and effective competition between labour in general and waiting in general. But, it covers a small part of the whole field, and is of small importance relatively to the benefits which labour derives from obtaining cheaply the aid of capital, and, therefore, of efficient methods in the production of things that it needs."[3] In other words, the relation between the two factors is predominantly one of complementariness.

§ 8. The relation between labour and that part of non-labour, which consists in the mental power that evolves constructive ideas, is also somewhat obscure. The question, whether a particular constructive idea is mainly co-operant with, or rival to, labour is often confused with the different question, whether it leads to the employment of more or less

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[1] Cassel, *Nature and Necessity of Interest*, p. 117.
[2] *Principles of Economics*, p. 540.
[3] *Ibid.* p. 540.

labour in the manufacture of the thing•to which the idea
relates.   It is thought that the predominance of co-operant
character in an idea, and, therewith, the yield by it of a benefit
to labour, can be established by a demonstration that more
employment is brought about at the point where the idea is
applied.   Such a view leads at once to optimism.   Mr. Hobson
has, indeed, shown that the effect on employment at this point
is not always to increase it: " The introduction of spinning
and weaving machinery into Lancashire and Yorkshire afforded
a considerable increase of employment, and a number of
successive inventions and improvements during the second
and third quarters of the last century had a similar result,
but later increments of machinery have not been attended by
similar results; on the contrary, there has been a decline in
the number of persons employed in some of the staple textile
processes.   The introduction of typesetting machines into
printing works has been followed by a large increase of
employment; the introduction of clicking machinery into
the shoe trade has been followed by a net reduction of
employment." [1]   A broader illustration of a diminution of
employment in a particular field, in consequence of an inven-
tion in that field, is afforded by the case of agriculture: for, it
is well known that agricultural improvements have displaced
agricultural labourers.   An occasional failure of this kind is
fully admitted by all.   Still, broadly speaking, inventions, as a
general rule, are believed by those who have studied the matter
to increase, and not to diminish, employment at the point at
which they act.   Thus, M. Levasseur writes: " The common
opinion is that ' the machine drives out the workman ' and
robs a part of the working-classes of work.   It is certainly
true that a shop furnished with powerful machinery yields in
a given time a greater product, with the help of a much
smaller number of employees, than a shop where the same
goods are made by hand.   It is this that one perceives in the
first instance.   What one only perceives later, by dint of study,
is that the goods made economically by machinery, being sold,
in general, at a lower price, often find such a number of new
purchasers that the increased production, thus made necessary,

[1] *The Industrial System*, p. 281.

provides employment for a greater number of workpeople than were employed before the machinery was introduced."[1] Again, the Poor Law Commissioners are gratified to find among manufacturers a remarkable consensus of opinion concerning the effects of improvements in machinery. They believe that such improvements " do temporarily reduce the demand for labour within the department where such changes occur; that the displacement does not, as a rule, reduce the labour employed in each producing unit, the workers dispensed with being readily absorbed within the same business— particularly in shipbuilding, where changes are slowly introduced and affect only a few men at a time; and that the final result is that more labour is required instead of less."[2] Now, I am not at all concerned to deny the empirical part of these conclusions. I do not dispute the Poor Law Commissioners' assertion that the conditions necessary to secure that increased employment in any field will ultimately result from an invention in that field are, as a matter of practice, usually fulfilled. I do dispute, however, the very widespread opinion that these facts are relevant to the question whether constructive ideas are beneficial allies, or injurious rivals, to the factor labour.

§ 9. Let us begin by supposing that the commodity, in respect of which an invention has been made, is not consumed at all by the working classes. In this case, the greater cheapness of the commodity after the invention has no effect on the real earnings of labour. The effect on those real earnings depends solely on the combined effects produced on the quantity of labour and the quantity of waiting—we may ignore other factors—left at the points other than that at which the invention has occurred. A constructive idea is rival to labour, so far as it adds to, or fails to diminish, the quantity of labour at these points; and it is co-operant with labour, so far as it adds to, or fails to diminish, the quantity of waiting there. If we hold—ignoring the other factors—that the product of mx units of labour *plus mx* units of waiting will be m times as large as the product of x units of labour *plus* x units of waiting, the result is simple.

[1] *Salariat et salaires*, p. 421.   [2] *Report*, p. 344.

A constructive idea is mainly co-operant •with, and is, there-
fore, beneficial to labour if, as a consequence of it, the
proportion of waiting to labour, at points other than the
point directly affected by the idea, is increased; and such an
idea is mainly rival to, and is, therefore, injurious to labour in
the opposite case. Provided that the point, where the inven-
tion occurs, is one at which the proportion between labour
and waiting before the invention was equal to the average
proportion at all points, it follows that the invention benefits
labour, if it increases the proportion of labour to waiting at
that point, and injures it, if it diminishes this proportion.
Now, it is obvious that a constructive idea, to be economically
advantageous, must enable some given result to be achieved at
less cost than would be required apart from the idea. But, it
is equally obvious that the diminution of cost may be brought
about in such a way that the proportion borne by labour to
waiting in the act of production—the absolute amount of
these factors is irrelevant—is either (1) increased or (2)
unaltered or (3) diminished. In the first case, the construct-
ive idea may be called roughly "waiting-saving"—after the
manner of Marconi's invention of wireless telegraphy, through
which the need of cables is removed. In the second case, the
idea may be called neutral. Devices making possible the
substitution, for light railway lines, bridges, engines, cars and
so forth, of heavier transport instruments similar in general
character are of this kind.[1] In the third case, the idea may
be called roughly labour-saving. This last class of idea is
probably the most common in practice; for, as Dr. Cassel
observes, "almost all the efforts of inventors are directed
towards finding durable instruments to do work which has
hitherto been done by hand."[2] Given, then, that the com-
modity primarily affected is not consumed by working people,
constructive ideas of all three classes augment the national
dividend; those of the first class increase, those of the second
leave unaltered, and those of the third—so far as the present
argument goes—diminish, the absolute share of labour. This
statement is not, however, complete; for, it omits the fact

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[1] Cf. *Engineering Magazine*, January 1901, p. 746.
[2] *Nature and Necessity of Interest*, p. 112.

that the increase in the national dividend, in that it increases the fund from which waiting can be drawn, indirectly increases the supply of "waiting," in a manner that is cumulative from year to year. When account is taken of this circumstance, it is no longer clear that inventions of my third class must diminish the absolute share of labour in the long run, despite the fact that they do not affect any commodity which workpeople consume. On the contrary, it would seem that even this class of invention will ultimately increase the absolute share of labour.

§ 10. Not all readers, I suspect, will allow the reasoning of the last section to prove that an invention of the third class *must* always increase the absolute share of labour. It is *possible*, they will hold, that such an invention might diminish this absolute share, just as it is *possible* that the development of a foreign trade, under which such a thing as hand-made lace should be purchased from abroad by exports of manufactured goods, instead of being made at home, might have that effect. Hence, it becomes important to inquire whether this injurious effect, if it occurred, would be quantitatively significant. The answer to that question depends upon the magnitude of the elasticity of the demand for labour, that is to say, upon the measure in which a given percentage increase in the quantity of labour will, *ceteris paribus*, diminish the marginal net product of labour. If the elasticity in this sense is small, there is some chance that an invention of my third class might substantially reduce real wages; if, however, the elasticity is large, such a result is plainly impossible.

§ 11. In order, therefore, to answer our question, we need to obtain some general idea of the magnitude of the elasticity of the demand for labour, that actually prevails in this country. The problem thus presented is difficult, but it seems capable of solution. An increase in the quantity of labour will mean that some more labour is devoted to making things by itself, and some more to making them in conjunction with waiting. If there are a large number of things that labour can make by itself at practically constant return, and if these things are such that people want them about as keenly as the things they are just induced to buy now, the

demand for labour *must* be highly elastic.   There is some
reason to suppose that certain sorts of personal service are of
this kind.   Apart from such things, two cases have to be
considered.   First, if the supply of the other factors is rigidly
fixed, the elasticity of the demand for labour will depend upon
the rate at which the return diminishes, when more labour is
added to assist a given quantity of waiting.   It is difficult to
say how great the elasticity in this case would be likely to be.
But, secondly, the supply of waiting is known not to be rigidly
fixed.   Hence, when labour increases and, so, indirectly
enhances the return to a unit of waiting, we have to take
account of the fact that the quantity of waiting increases in
response to these higher earnings, and that this increase in
quantity reacts to increase the marginal productivity of any
given quantity of labour.   If the supply of waiting were per-
fectly elastic, the expansion in its quantity would be carried
up to the point at which waiting received the same reward
per unit as before, and, therefore, labour, despite its increase,
received the same reward per unit.   This would mean that
the demand for labour was perfectly elastic.[1]   As a fact, it is
probable that the supply of waiting *in existence* is fairly
elastic ; and it is certain that the supply of waiting *in respect
of any single country* is extremely elastic.   For, capital is so
mobile that a small increase in the return per unit obtain-
able by it at any point must inevitably bring about a
large influx from abroad.   Hence, the elasticity of the
aggregate demand for British labour is considerably greater
than the elasticity of that part of the demand which depends
on British capital alone.   It is, indeed, so much greater, that,
with any reasonable assumption as to this latter elasticity, it
may be taken as practically certain that the elasticity of the
aggregate demand will be immensely larger than unity.   This
means that, if a case occurs in which an invention of my third
class diminishes the absolute share of labour, the magnitude of
the diminution must be very small indeed.

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[1] This connection is stated in the abstract, *on the assumptions* that capital
and labour are the only factors involved and that the function F (L, C), which
gives the product, is homogeneous.   On these assumptions, an increase of labour
must, if the supply of capital is perfectly elastic, be accompanied by an equal
proportionate increase in the quantity of capital.

§ 12. The fear "that, in actual practice, an invention of
the third class may appreciably injure the absolute share of
labour is further mitigated by a practical consideration.   In
the real world the condition—assumed throughout the three
preceding sections—that the commodity, in respect of which
a constructive idea has been discovered, is not consumed at
all by the working-classes, is not, in general, fulfilled.   In
recent times, in particular, it would seem that inventions and
improvements have predominantly affected just those things
which *are* consumed by workpeople.   The commodities prin-
cipally purchased by the poor happen, according to Professor
Taussig, to be those which are made by machinery, and the
prices of which, therefore, invention has been able greatly to
reduce; while the commodities principally consumed by the
well-to-do are, in the main, the product of human labour, and
have, therefore, tended rather to rise in price, in consequence
of the rise in money wages.[1]   Professor Leroy-Beaulieu writes
strongly in this sense : " The man of fashion, who is fitted for
his clothes by a tailor, gains nothing from the great reduction
of prices, which shops selling clothes ready-made offer to the
less comfortable section of the population." [2]   And he contrasts
with these things " all those objects which the mass of the
people have hitherto done without, but which have now come
into general use, and which contribute either to better hygiene
or to increased decency and dignity in the homes of the work-
people.   Stockings, handkerchiefs, more varied and more suit-
able garments, curtains for the windows, carpets on the floors,
a less exiguous array of furniture, these things constitute demo-
cratic luxury, the fruit of the development of mankind's powers
of production." [3]   No doubt, it is true that no single technical
improvement is likely to have any very large advantageous result
for labour.   Dr. Marshall, for instance, has observed that the
improvements, which have enabled the work of one man to go
as far in the making of cotton goods as the work of 1000 men
went a century ago, have not profited labourers very much, be-
cause only a small part of their income is spent on cotton goods.[4]

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[1] Cf. Taussig, *Quarterly Journal of Economics*, August 1906, p. 508.
[2] *La Répartition des richesses*, p. 37.   [3] *Ibid.* p. 440.
[4] *Labour Commission*, Q. 8630.

No doubt, too, it may be suggested that the consumption of the poor embraces a much larger proportion of house-room and food than the consumption of the rich, and that both building labour and agricultural labour are relatively little aided by those mechanical instruments, in respect of which technical improvements and devices of organisation have the widest scope.   This qualification is especially applicable to the case of the very poor.   " The fall of prices does not benefit the various grades of wage-earners in direct ratio to their wages.   Rent and certain other necessary elements of expenditure, such as fuel, which have risen in amount for the large majority of workers, play a relatively larger part in the budget of the lower grades of workers, reducing to that extent the gain from the general fall of prices.   The poorest classes, whose retail purchases are made in very small quantities, also gain least from the lower prices of other commodities than housing and fuel." [1]   This circumstance, however, is more than counterbalanced, so far as our own country is concerned, by the fact, emphasised by Dr. Marshall, that our staple articles of common food are largely brought from foreign countries, and that one of the most marked features of recent times has been the development of constructive ideas in regard to the machinery of transport, and the consequent heavy fall in transport charges.   To this may be added the important development of constructive ideas in respect of the machinery for retailing goods to poor persons, as displayed in the device of co-operative stores, and the consequent heavy fall in the cost of the service of retailing.   Of course, the historical fact that recent inventions have largely affected commodities which enter directly or indirectly into the consumption of the working - classes, is not a proof that further inventions will be predominantly of a like kind.   It is, however, open to us to urge that this historical fact is conformable to *a priori* expectation, because the openings for profit, and, therefore, the stimulus to invention, are exceptionally great in respect of " mass-goods " of wide consumption.

§ 13. The result of the preceding discussion is to show that an increase in the supply of non-labour, even when it

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[1] *Report of the Royal Commission on the Poor Laws*, p. 309.

appears in the guise of a labour-saving invention, is likely,
in general, to involve an increase both in the national
dividend and in the aggregate real earnings of labour. It is
admitted that this result may, in special circumstances, some-
times fail. There seems, however, to be little doubt that,
broadly speaking, causes acting through the supply of non-
labour are harmonious, in the sense that they are likely to
affect the magnitude of the national dividend and of the
aggregate real earnings of labour in the same direction.

§ 14. We now turn to causes acting on the supply of
labour. In this case, the distinction between changes
operating through quantity and technical efficiency respectively
has an importance which it did not possess in regard to
non-labour. The two sorts of change in supply can,
however, be discussed together up to a point. Thus, it is
obvious that an increase in either the quantity or the efficiency
of labour involves an increase in the magnitude of the
national dividend. Whether it involves an increase in the
absolute share accruing to labour itself depends on the
question whether the elasticity of the demand for labour is
greater or less than unity. It is readily seen that, if the
elasticity is greater than unity, the factor labour in the
aggregate will receive a larger absolute quantity of dividend
than before; whereas, if the elasticity is less than unity, it
will receive a smaller absolute quantity.[1] It has, however,

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[1] The general proposition, of which the statement in the text is a special
instance, is that, other things being equal, an increase in the quantity of any one
factor of production will be accompanied by an increase in the *absolute share* of
product accruing to that factor, provided that the demand for the said factor has
an elasticity greater than unity. The condition that it will be accompanied by an
increase in the *proportionate share* of product accruing to the factor is different
from this, and can be determined as follows. The supply functions of the other
factors being given, the aggregate output of product P depends on the quantity
of the variable factor, in such wise that, if x represents this quantity, $P = f(x)$.
The *absolute share* accruing to the variable factor is, therefore, represented by
xf', and the *proportionate share* by $\dfrac{xf'}{f}$. The condition that this latter magni-
tude shall increase when x increases is that

$$\frac{1}{f}\left\{ f' + xf'' \right\} + xf'\left\{ \frac{-f'}{[f]^2} \right\} \text{ is positive.}$$

Let e represent the elasticity of demand for the factor in question. Then, since

$$e = -\frac{f'}{f''},$$

already been proved that the elasticity of the demand for labour in general is enormously greater than unity.   Hence, we may conclude that an increase in the supply of labour, whether through an increase in the number of units of labour of given efficiency that the average workman provides, or through an increase in the number of workmen providing, on the average, a given number of units of labour, must increase the absolute quantum of dividend that labour in the aggregate receives.   It is, no doubt, true that, *within* the broad group labour, an increase in efficiency, which only affects some of the sub-groups, may involve injury to other sub-groups, whose efficiency has not been improved. Even this danger, however, is likely to be avoided where the different sub-groups are not strictly homogeneous, but are partly complementary, and where, as occurs when *some* unskilled labourers are trained to trades, the group, which is not made more efficient, is diminished in numbers by the indirect operation of the change that has occurred.   Furthermore, these incidents within the broad group labour are, in any event, of subordinate interest.   So soon as it is shown that the absolute share of labour as a whole possesses, along with the aggregate dividend, the property of increasing with increases in the supply of labour, the proposition that we set out to establish is proved.

§ 15. At this point the distinction between causes acting

the above condition can be expressed by easy substitution in the form

$$e > \frac{1}{1 - \frac{xf'}{f}}.$$

This magnitude exceeds unity by a larger amount, the larger is the proportionate share of the product accruing, before the variation, to our variable factor.   The above formula, besides its general application, has also a subordinate one ; for, it gives the conditions under which an improvement in the methods of cultivation will increase the proportion that true rent bears to the gross produce of farm-land.   When additional doses of capital and labour yield only slightly diminishing returns, when, that is to say, the elasticity of the demand for them in terms of product is very large, an improvement (which is equivalent to an increase in the quantity of capital and labour applied) generally accords to capital and labour a larger proportion, and, therefore, to true rent a smaller proportion, than before.   When, on the other hand, diminishing returns act sharply, the proportion accruing to true rent will generally be increased by an improvement.

respectively on the quantity and on the efficiency of labour becomes significant.   When the increase in the supply of labour comes about through an increase in the efficiency of labouring people, it is obvious that the consequent increase in the absolute share of dividend accruing to them carries with it, in accordance with the argument of previous chapters, an increase in their economic welfare.   When, however, the increase of supply comes about through an increase in numbers, the absolute share *per man* is lessened, despite the fact that the absolute share of the group as a whole is increased.   If there were reason to believe that the loss per man were large, we should hesitate to conclude that an increase of this sort in the supply of labour involves an increase in the economic welfare of labour.   In fact, however, it can be shown that, under the conditions now existing in this country, the loss per man would be very small.   That it would be very small in terms of commodities in general follows from the fact already established, that the elasticity of the demand for labour in England is large.   If the conditions were such that an increase in numbers would materially increase the real cost of producing food or other articles predominantly consumed by the working-classes, it might, indeed, be large in terms of the things that are of significance to them.   At present, however, the fact that abundant supplies of imported food are available make it impossible that an increase in the population of a small country such· as ours should, to any important extent, evoke the law of diminishing returns in respect of food production. Hence, in all senses, the diminution of real wages per head of the working-classes would be very small.[1]   Consequently, it seems reasonable to conclude that an increase in the absolute share of labour, even when it results from an increase in the number of the population, carries with it an increase in the economic welfare of working people.   It is not necessary, therefore, to qualify our conclusion, that causes impinging upon the supply of labour affect the aggregate amount of the dividend and the aggregate real earnings of labour in the same sense, by emphasising the caution that the welfare of labour is sometimes diminished by causes that increase its wealth.

[1] Cf. Marshall, *Principles of Economics*, p. 672.

§ 16. The two broad groups of causes—those acting through the quantity and efficiency of non-labour, and those acting through the quantity and efficiency of labour—have thus been shown, generally speaking, to act harmoniously upon the dividend and the absolute share of labour. The general run of causes affecting the magnitude of the national dividend are, however, as has already been urged, contained in one or other, or in both, of these groups. It follows that the general run of causes are harmonious, in the sense that they affect the magnitude of the national dividend as a whole and the aggregate real earnings of labour in the same sense. Hence, we are entitled, not, indeed, to assert as a universal truth, but to presume, unless special reason to the contrary is shown, that the economic welfare of the community will be increased by causes which increase, and diminished by causes which diminish, the magnitude of the national dividend.

NOTE TO CHAPTER II

UNCERTAINTY-BEARING AS A FACTOR OF PRODUCTION

§ 1. It is customary in economic discussion to class together as factors of production, along with the services of Nature, waiting and various sorts of mental and manual labour. In a world, in which all future wants were perfectly foreseen, this catalogue would be adequate. In the actual world, however, some future wants are not perfectly foreseen. On the contrary, in the vast majority of enterprises, in the conduct of which resources are waited for, they are also exposed to uncertainty ; they are turned, that is to say, into a use, the result of which cannot be certainly predicted. In view of this circumstance it is, I submit, proper that there should be added to the list of factors of production enumerated above a further group comprising various sorts of uncertainty-bearing.

§ 2. The principal reason why this arrangement is not usually adopted seems to be that, in practice, uncertainty-bearing is bound up in such intimate association with waiting that the possibility of separating the two in analysis is not immediately apparent. Reflection, however, makes it plain that the connection between them is not a necessary or inherent connection,—that they are, in fact, two things generally found together, and not a single thing.

Thus, let us imagine a man in possession of a vase, which, as a vase, is worth £100, but, if broken, would be worth nothing; and let us suppose the owner to know that this vase contains something, whose value is equally likely to be anything between nothing and £250. If the owner breaks the vase, he is, then, equally likely to lose any sum up to £100, or to gain any sum up to £150. The actuarial value of his chance is, therefore, £25, and if there were a million people in his position, and they all elected to break their vases, the aggregate wealth of the world would probably be increased by about £25,000,000. In other words, the services of these million people, in bearing the uncertainty of placing £100 each in a position where it is equally likely to become anything between nothing and £250, are responsible for an addition of £25,000,000 to national wealth. This example shows that uncertainty-bearing, though generally associated with waiting, is analytically quite distinct from it. It is an independent and elementary factor of production standing on the same level as any of the better-known factors.

§ 3. In the way of this general conception there stands one serious difficulty. It is well known that the ordinary factors of production are two-dimensional, in the sense that a unit of any of them can only be expressed as a quantity of stuff multiplied by a quantity of time. Waiting consists in the provision of a given quantity of resources, and labour in the provision of a given quantity of labour, during a given period. Thus, the unit of waiting is said to be a year-pound, and the unit of labour a year-labourer.[1] It would seem, therefore, that, if uncertainty-bearing, as a factor of production, is to stand on a level with waiting and labour, it must somehow bear a relation to time analogous to that which they bear. But, uncertainty-bearing, unlike waiting and labour, is in its essence independent of time, and, so far as pure theory goes, capable of instantaneous consummation. Consequently, the provision of a given quantity of uncertainty-bearing of any sort for a given period seems at first sight a mere phrase without substantial meaning. The difficulty thus suggested is, however, obviated by the fact that, as a matter of practice, the consummation of any act of uncertainty-bearing is not instantaneous, but involves a process in time. The uncertainty-bearing, for example, which a company promoter undertakes, is not completed until the public has come in and allowed him to unload, and this, of course, will not happen till a considerable interval has elapsed. This circumstance enables us to fashion a unit of uncertainty-bearing on the same plan as the units of waiting and of labour. This unit is the

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Cf. *ante*, pp. 79-80, footnote.

exposure of a £ to a given scheme of uncertainty, in an act the consummation of which occupies a year. The exposure of a £ to a succession of like schemes of uncertainty during a year, in acts the consummation of which occupies on the average, say ten days, will thus embrace $\frac{365}{10}$ of these units. We have in this way obtained a two-dimensional unit of uncertainty-bearing analogous to the units of waiting and of labour, and the difficulty, which this section was designed to discuss, has been overcome.

§ 4. Up to this point we have taken no account of the fact that uncertainty-bearing, like labour, is a term embracing a large group of factors of production rather than a single factor. It must now be observed, however, that, just as there are many different sorts of labour, so there are many different schemes of uncertainty to which, in the course of industry, resources may be
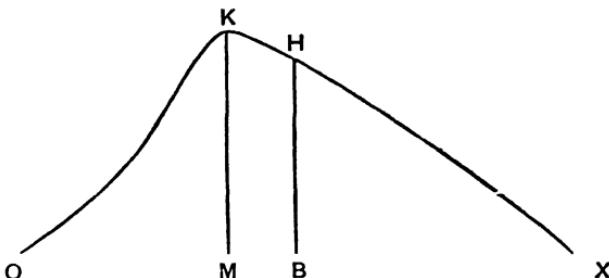
exposed. A scheme of uncertainty can be represented diagrammatically in the following manner. Along a base-line OX mark off all possible yields that may result from the exposure of a £ to the scheme in question; and, through each point on OX, draw an ordinate proportionate to the probability, on the evidence, of the corresponding return. Join the tops of all these ordinates, as in the annexed figure. It is obvious that any scheme of uncertainty can be represented by a curve formed upon this plan. Furthermore, the principal species of schemes, that are liable to occur, can be distinguished into certain principal groups. Find on OX a point B, such that OB represents the actuarial value of the chances of the returns indicated on the curve, or, in other words, such that OB is equal to the sum of the product of each several ordinate multiplied by the corresponding abscissa, divided by the sum of the ordinates; and let the ordinate through B cut the curve in H. In like manner, find on OX a point M, such that OM represents the most probable, or most "frequent," return relevant to the scheme of uncertainty under review; and let the

H

ordinate through M cut the curve in K.   On this basis, we may
distinguish, in the first place, between curves which are symmetrical,
in such wise that BH and MK coincide, and curves which are
unsymmetrical.   The symmetrical group includes schemes of such
a sort that, if r is the actuarial value of a pound exposed to any
scheme, the chance of obtaining a return $(r - h)$ is equal to the
chance of obtaining a return $(r + h)$, for all values of h.   The
unsymmetrical group includes all other schemes.   The sym-
metrical type is only possible when the conditions are such that
the exposure of a pound to uncertainty cannot yield a gain greater
than a pound, since, from the nature of things, it cannot yield a loss
greater than this.   Secondly, within the symmetrical group we may
distinguish curves which are spread out, like open umbrellas, and
curves which are narrow, like closed umbrellas.   The former sort
represent schemes in respect of which a wide divergence, the latter
schemes in respect of which only a small divergence, of the actual
from the most probable return is probable.   Thirdly, within the
unsymmetrical group we may distinguish curves in which MK lies
respectively to the right and to the left of BH.   The former sort
represent schemes, in respect of which the most probable outcome
is a moderate gain, but a large loss is more probable than a large
gain.   A scheme of this kind would be embodied in a lottery
offering a great number of small prizes and one or two blanks.
The latter sort of curve represent schemes, in respect of which
the most probable outcome is a moderate loss, but a small loss is
more probable than a small gain.   A lottery of the ordinary kind,
containing a few large prizes and many blanks, affords an example
of this sort of risk.   Within each of the groups thus distinguished
it is obvious that an indefinite number of further subdivisions
could be made.

§ 5. The great variety of schemes of uncertainty, which
uncertainty-bearing in general is thus found to include, might seem
at first sight to vitiate the attempt, which was made in an earlier
section, to treat "the factor uncertainty-bearing" and "the factor
waiting" on the same footing.   For, waiting is a single thing, while
uncertainty-bearing is a group of different things.   The meaning of
a change in the supply of waiting is therefore obvious, but how
are we to conceive of a change in the supply of uncertainty-
bearing?   This difficulty, though it is a natural one to raise,
is, however, easily overcome.   For, after all, uncertainty-bearing
in this regard stands in exactly the same position as labour.
Labour in general includes an immense variety of different sorts
and qualities of labour.   This circumstance does not prevent us
from making use of the general concept labour alongside of the
concept waiting.   In order to render this procedure legitimate, all

that we need do is to select in an arbitrary manner some particular sort of labour as our fundamental unit, and to express quantities of other sorts of labour in terms of this unit, on the basis of its comparative value in the market. In this way all the various sorts of labour supplied or demanded at any time can be expressed in a single figure, as the equivalent of so much labour of a particular arbitrarily chosen grade. Exactly the same device is available in the case of uncertainty-bearing. The exposure of a pound to a particular arbitrarily chosen scheme of uncertainty can be selected as a fundamental unit, and the exposure of resources to any scheme of uncertainty can be reduced, on the basis of comparative market value, to its equivalent in terms of this unit. In this way the last obstacle to the assimilation of the factor uncertainty-bearing to the other factors of production can be successfully overcome.

§ 6. So much being understood, it is evident that this factor is liable, like any other, to expand in quantity or to improve in technical efficiency. Furthermore, it so happens that, in modern times, influences have come into play, by which both these sorts of change have been promoted. The influence affecting quantity may conveniently be examined first. In primitive times enterprises, for which capital had to be provided by several people, were, in general, worked on the partnership plan, so that all those concerned submitted the resources invested by them to the same scheme of uncertainty. Consequently, it might well happen that much of the uncertainty-bearing that industry required was of a sort which the public were not willing to supply, while much of the uncertainty-bearing which the public were willing to supply was of a sort not required in industry. Consequently, the quantity of uncertainty-bearing that actually became available in industrial enterprise was probably much smaller than it might have been, had adjustment between the two sorts been fully made. In the modern world this difficulty has been, in great part, overcome by the device, which joint-stock companies now invariably adopt, of raising capital by means of different grades of security. Instead of an arrangement, under which every pound invested in an enterprise is submitted to the same scheme of uncertainty, we have systems of capitalisation combining debentures, cumulative preference shares, non-cumulative preference shares, ordinary shares, and sometimes further special sub-varieties. Each of these classes of securities represents a different scheme, or sort, of uncertainty-bearing. As a result, the number of sorts of which industry can make use is much increased, and a good deal of uncertainty-bearing, which the public were formerly willing but unable to provide, can now find a market. Hence, the quantity of uncertainty-bearing that is in fact provided is increased.

§ 7. The modern influence by which the technical efficiency of uncertainty-bearing has been improved is probably of greater importance than the above. The central fact upon which it depends is that forecasts based upon existing knowledge are, in general, more certain, when they are made about collections than when they are made about individual members of collections. This fact is expressed in technical form in the important corollary to the normal law of error, which asserts that the "precision of an average is proportional to the square root of the number of terms it contains."[1] It implies that, if there is an even chance then the investment of £100 in one assigned venture will yield a return greater than £95 and less than £115, there is an even chance that £100 scattered among a hundred similar investments will, if all the causes affecting the different investments are independent, yield a return lying between £104 and £106. If only some of the causes are independent and some common, the range within which it is more probable than not that the return will lie, will be greater than that enclosed between £104 and £106, but it will still be smaller than that enclosed between £95 and £115. But, the exposure of £100 to a scheme of uncertainty, whose range is narrow, is easily seen to have a smaller value in the market than the exposure of this sum to a scheme whose range is broad; for it is a fact of experience that, not merely the utility derived from an extra unit of commodity, but also the rate of diminution of this utility, diminishes as the quantity of units of any commodity in our possession grows. It follows that, in general, the investment of a sum of money in equal parts in a hundred similar enterprises involves less uncertainty-bearing than the investment of the same sum in one of these enterprises. It follows further, that, if out of a hundred people, each of whom has £100 to invest, every one divides his investment among a hundred enterprises, the aggregate amount of uncertainty-bearing undertaken by the group is smaller than it would have been had every investor concentrated on a single enterprise. The physical result of the investments taken together must, however, be the same in the two cases. Therefore, whenever more or less independent uncertainties are combined together, a given result can be attained by a smaller amount of uncertainty-bearing, or, to put the matter otherwise, the factor uncertainty-bearing has been made technically more efficient.[2] The principle thus explained is fully recognised by

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[1] Bowley, *Element of Statistics*, p. 305.

[2] This circumstance, of course, permits the release, partly for immediate consumption and partly for investment, of resources which must otherwise have been stored. For example, the combination of the community's reserves in banks

business men, and has long lain at the root both of insurance and of much speculative dealing on 'Change. In modern times, however, the range of its applicability to industrial undertakings has been greatly extended by two important changes that have recently occurred. Of these the one is a legal change, namely, the concession to joint-stock companies of the privilege of limited liability ; the other a natural change, namely, the development in the means of transport and communication. The ways in which these two changes have facilitated the application of the above principle may, therefore, now be examined.

§ 8. So long as liability was unlimited, it was often against a man's interest to spread his investments ; for, if he did so, he multiplied the points from which an unlimited call on his resources might be made. The English Limited Liability Act of 1862 and its foreign counterparts enabled investments to be spread, without evoking this danger. Since 1862 the paid-up capital of joint-stock companies has quintupled, while the number of registered shareholders has increased in still greater proportion ; and this conjunction probably means that the same names have come to appear among the shareholders of many different companies.[1] Furthermore, intermediary organisations have been developed, capable of spreading investments on behalf of persons whose resources are too small to allow of their spreading them for themselves. Since the minimum share in industrial enterprises is seldom less than £1, the small investor's capacity for direct spreading is, even under limited liability, strictly limited. Savings banks, friendly societies, trade unions, building societies, co-operative societies, trust companies, and so forth are able, however, to put him in a position as favourable in this respect as is occupied by the large capitalist. Now, the spreading of investments obviously means a combination of uncertainties on the part of all investors who hold shares in more than one company. But, spreading, on the basis of limited liability, carries with it yet another element of combination. For, in general, each business deals directly or indirectly with many businesses. If one of them fails for a million pounds, under *unlimited liability* the whole of the loss falls on the shareholders or partners ; but, under *limited liability* a part of it is scattered among the shareholders or partners of a great number of businesses. Hence, any shareholder in one business combines with the uncertainty proper to his own business some of that

lowers the amount of aggregate reserve necessary, increases the capital available for investment, and *pro tanto* lowers the rate of interest. (Cf. H. Y. Brown, *Quarterly Journal of Economics*, 1910, p. 743 *et seq.*)

[1] Cf. Goschen, *Essays and Addresses*, pp. 256-257.

proper to other businesses also. It follows that the range of uncertainty, to which a normal £100 invested in industry is subjected by reason of failures is still further diminished in amount. This advantage is additional to, and quite distinct from, any direct national gain which limited liability may give to a country by throwing a part of the real cost of its unsuccessful enterprises upon foreigners.

§ 9. The development in the means of communication facilitates the combination of uncertainties in one very simple way. It puts investors into contact with a greater number of different openings than were formerly available. This effect, though of great importance, is so obvious and direct that no comment upon it is required. There is, however, a more subtle way in which the development in the means of communication works. Dr. Cassel has observed that industrial firms have, in recent times, been lessening the quantity of stock that they carry in store, waiting to be worked up, relatively to their total business. The improvement in this respect applies all round. As regards production, " there is, in the best-organised industries, very little in the way of material lying idle between two different acts of production, even if these acts have to be carried out in different factories, perhaps at great distances from each other. A modern iron-works has no large stock either of raw materials or of their product, yet there is a continuous stream of ore and coal entering, and of iron being turned out of it." [1] In like manner, factories are coming to keep a smaller amount of capital locked up in the form of reserve machines not ordinarily in use. The same tendency is apparent in retail trading. The ratio of the average amount of stock kept to the aggregate annual turn-over is smaller than it used to be. As Mr. Inglis wrote to the Railway Conference : " Under modern conditions the trade of the country is conducted on a retail system which is growing year by year. The practice of keeping large stocks has almost ceased, and goods are ordered in quantities only sufficient to meet the current demands." [2] One reason for this, again to quote Dr. Cassel, is the improvement in the means of communication. Thus, he writes: "The trunk lines of America, with their widespreading branches, enable merchants in the cities and the larger towns to replenish their counters and shelves every day. Stocks, therefore, need not be so large as of old, when, let us say, a whole winter's goods were laid in by October. . . . The inter-urban roads are extending these advantages to the village store-keeper, who, in the morning, telephones his wants to Toledo,

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[1] *The Nature and Necessity of Interest*, p. 126.
[2] *Report of the Board of Trade Railway Conference*, vol. i. p. 33.

Cleveland, or Detroit, and, in the afternoon, disposes the ordered wares on his shelves." [1]   Now, *prima facie*, this change of custom would seem to be of little significance.   After all, a reduction in the amount of finished goods held by retailers, of reserve machinery held by manufacturers, and so on, does not necessarily imply a reduction in the aggregate amount of these things held by the whole body of industrialists.   On the contrary, we are naturally inclined to suggest that the wholesaler and the machine-maker must increase their stocks *pari passu* with the decrease in the stocks of their clients.   As a matter of fact, however, this suggestion is incorrect.   The reason is that the wholesaler and the machine-maker represent points at which uncertainties can be combined.   The development of the means of communication, therefore, in so far as it directly transfers to them the task of bearing uncertainty, indirectly lessens the amount of uncertainty that needs to be borne.   Uncertainty-bearing, in short, is rendered more efficient.   The same result as before can be achieved with a smaller quantity of it, or, what comes to be the same thing, with a smaller quantity of waiting designed to obviate the need for employing it.

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[1] Iles, *Inventors at Work*, p. 483.

CHAPTER III

§ 1. A FULL discussion of the various causes that operate
on the magnitude of the national dividend would involve
little less than a complete treatise on production. It would
include an analysis of the influences determining the supply
schedules of waiting, brain-power and labour, together with
an account of the development of ideas and technical devices,
in respect both of mechanism and of the organisation of
industry. It is impossible that anything of this kind should
be attempted here. The general conditions enumerated above,
the supply schedules of the various sorts of services and the
" places " open to them, are at the outset taken as given, and
it is on that basis that enquiry is made into the principal
circumstances determining the size of the dividend. This
inquiry may conveniently start from the highly optimistic
theory of Adam Smith, that the national dividend, in given
circumstances of demand and supply, tends " naturally " to a
maximum. He held,—and that not merely on grounds of
governmental incompetence—that " any system which en-
deavours, either by extraordinary encouragements, to draw
towards a particular species of industry a greater share of the
capital of the society than what would naturally go to it ; or,
by extraordinary restraints, to force from a particular species
of industry some share of the capital, which would otherwise
be employed in it . . . retards, instead of accelerating the
progress of the society towards real wealth and greatness ;
and diminishes, instead of increasing, the real value of the

annual produce of its land and labour." [1]   The theoretical
ground of this view may be stated in the form of two pro-
positions.   The first is that the dividend necessarily stands at
the maximum attainable amount when the marginal net products
of resources is equal in all uses, the second that self-interest, if
not interfered with, tends to make these marginal net products
equal.   The latter proposition is the one with which, in the
following pages, we shall be principally concerned.   The present
chapter, however, will be devoted to a study of the former.

§ 2. This proposition stands in need of two important
qualifications.   Of these the less serious is required, even if
we assume that the quantity of resources in existence is
rigidly fixed, and is not liable to be influenced in any way by
the rate of remuneration.   On this assumption, it is, indeed,
easily shown that the dividend cannot reach the maximum
attainable amount, *unless* the marginal net products of resources
in all uses are equal.   For, if they are not equal, the dividend
may always be increased by a transference of resources from
the margin of some uses to the margin of others.   It does
not follow, however, that, when the marginal net products in
all uses are equal, the dividend *must* attain an unequivocal
maximum.   For, if increasing returns prevail in any use, the
condition of equal marginal yields may be fulfilled by several
schemes of distribution.   All such schemes imply what may
be called a *relative maximum* for the dividend; but only one
of these maxima is the unequivocal, or absolute, maximum.
Furthermore, it is not necessary that all positions of relative
maximum should represent larger dividends than all positions
which are not maxima.   On the contrary, a scheme of dis-
tribution approximating to that which yields the absolute
maximum, but not itself fulfilling the condition of equal
marginal yields, would probably imply a larger dividend than
most of the schemes which do fulfil this condition, and so
constitute relative maxima of a minor character.   Hence, it
need not always happen that the removal of causes, which
keep the marginal net products of resources in different uses
unequal, will enlarge the national dividend.   We cannot say
more than that this result will come about generally.

[1] *Wealth of Nations*, bk. iv. ch. ix. third paragraph from the end.

§ 3. When the assumption, that the quantity of resources available for employment is rigidly fixed, is removed, our proposition stands in need of a more serious qualification. The reason is that, in some circumstances, a divergence between the marginal net products of investment at different points may make the aggregate quantum of resources available for investment larger than it would have been, had the net products been everywhere the same. Suppose, for example, that the demand for capital is extremely elastic in agricultural, and extremely inelastic in manufacturing, districts, that the elasticity of supply is similar in the two districts, and that, apart from communication between them, the rate of interest, that is to say (as we may suppose) the marginal net product of capital, would be much higher in the manufacturing than in the agricultural districts. In this case, after a decrease in the divergence between marginal net products in the two sets of districts, such as would be brought about by the development of banking, the amount of capital required in manufacturing districts would remain practically unchanged ; but, the amount required in agricultural districts would, on account of the increase in cost, be greatly diminished. On balance, therefore, there would be a smaller aggregate of capital in the two districts together than before. A general analysis of the problem shows that there is no reason for thinking that a random divergence between the marginal net products at two points is *more or less likely than not* to lead to the production of an enhanced aggregate of resources at the two points jointly.[1] Since,

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[1] The condition required in order that the aggregate quantum of a factor coming into being may be increased by impediments, that hinder its movement, has been investigated by Cournot. It may be found otherwise as follows :—
When there is no communication between two markets,

Let the demands be $\phi_1(p_1)$ and $\phi_2(p_2)$
and the supplies $f_1(p_1)$ and $f_2(p_2)$.

Then we have the equations

$$\phi_1(p_1) = f_1(p)_1 \qquad . \qquad . \qquad \text{(I.)}$$
$$\phi_2(p_2) = f_2(p_2) \qquad . \qquad . \qquad \text{(II.)}$$

When communication is introduced, we have the equation

$$\phi_1(p_3) + \phi_2(p_3) = f_1(p_3) + f_2(p_3) \qquad . \qquad \text{(III.)}$$

Let the root of (I.) be a, of (II.) b, of (III.) $a+k$, where k is such that $a+k+h=b$.

however, the divergence, on the assumption here made, is certain to render some of the units of resources that come into existence less productive than they need be, the dividend may be diminished by it, even in cases where the quantum of resources is increased. Hence, it is still true that, in most cases, divergence will make for a contraction of the dividend, and a reduction of divergence for expansion. The proportion of cases in which this will happen is, however, smaller in actual life than it would be in those artificially simplified conditions where the quantity of resources available is supposed to be fixed.

§ 4. The discussion of this chapter shows that the proposition we have been discussing ought to run as follows: "When the marginal net products of resources in all uses are equal, some acts of governmental or other interference, calculated to render them unequal, might augment the national dividend, but the majority of possible acts of interference,

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Let it be assumed that all the functions involved are linear, so that all differentials beyond the first are equal to zero.

Then it is easily proved that

$$h = \frac{(b-a)(\phi_1' - f_1')}{\phi_1' + \phi_2' - f_1' - f_2'}$$

Hence,

$$a + k = \frac{a(\phi_1' - f_1') + b(\phi_2' - f_2')}{\phi_1' + \phi_2' - f_1' - f_2'},$$

a value intermediate between a and b.

It is also easily proved that the increase in the amount of the factor in question, when communication is opened up,

$$= \{f_1(a+k) + f_2(a+k)\} - \{f_1 a + f_2(a+k+h)\}$$
$$= k f_1' - h f_2'$$
$$= \frac{b-a}{\phi_1' + \phi_2' - f_1' - f_2'} \{f_1' \phi_2' - f_2' \phi_1'\}$$

This may be either positive or negative. In order that it may be negative,

$$\{f_1' \phi_2' - f_2' \phi_1'\} \text{ must be positive,}$$

$$i.e. \frac{f_1'}{\phi_1'} > \frac{f_2'}{\phi_2'}$$

If the elasticities of supply and demand in the two markets respectively are written e_1, η_1, e_2, η_2, this condition becomes $\frac{e_1}{\eta_1} > \frac{e_2}{\eta_2}$, or, in other words, that the elasticity of supply bears a higher ratio to the elasticity of demand in the market where, before communication, price was lower, than in the other market. There is, obviously, no reason for thinking that this condition is either more or less likely than not to be fulfilled. Nor would our ignorance be in any way lightened, if the assumption that all the factors involved are linear was abandoned.

having this tendency, would be likely to diminish the national dividend." In other words, it is *probable* that a departure from equality of marginal net products in all uses, not specially adjusted with a view to making the dividend larger, would, in fact, make it smaller than it would naturally be. In general, therefore, the more nearly equal marginal net products in all uses are, the larger the dividend is likely to be.

CHAPTER IV

HINDRANCES TO EQUALITY OF MARGINAL NET PRODUCTS
DUE TO IMPERFECT MOBILITY

§ 1. The second of the two propositions, into which, in the
preceding chapter, we distinguished Adam Smith's classical
thesis, is to the effect that self-interest, if not interfered
with, tends to make the marginal net products of resources
equal in all uses.   In later chapters it will be necessary to
examine with care the limits within which this proposition
is valid.   In the present and two following chapters I
shall assume the existence of the tendency, and shall con-
centrate attention upon certain important circumstances which
control the measure of its realisation.   These circumstances
may be summarised roughly under the name " impediments to
mobility."   For, it is generally recognised that, just as the
tendency of water to find its own level may be counter-
acted by the presence of interposing obstacles, so also may the
tendency of marginal net products to attain equality in all
uses.   The matter stands, roughly, in this wise.   A number of
men and a number of machines, more or less specialised to
particular tasks, are in existence at any time.   The men are
trained in a particular way and the machines are constructed on
a particular pattern.   Into the world so constituted a stream
of new people, new uncertainty-bearing, and new waiting is
continually flowing.   The units comprising, alike the old
stock and the new flow, of the various factors are impelled by
self-interest to quit points of low marginal productivity in
favour of points of high marginal productivity.   But, their
mobility is impeded in various ways and, consequently, absolute

equality at all margins is never in fact attained. I propose to study this general doctrine in greater detail.

§ 2. Popular economists are accustomed to signify by "mobility," tendency to move in the direction which enlightened self-interest commends, and to embrace under the conception "impediments to mobility," as separate and independent factors, at once false judgments and the various costs which hinder movement, including, of course, the losses due to enforced idleness during the time occupied by the act of movement. A given measure of false judgment is supposed to be responsible, in all circumstances, for a given amount of inequality between the marginal net products of resources at different points; and a given measure of costs of movement to be responsible, in like manner, for a further given amount of inequality. This conception is, however, easily seen to be erroneous. The effect of a given measure of false judgment will be different if the costs of movement are large, from what it will be if they are small; if they are infinite, for example, it will not matter in the least whether judgments are wholly false or wholly true. Again, the effect of a given measure of costs will be different according to the character of the judgments that prevail. Let it, for example, be the fact that the marginal net product of resources at A is larger than at B. If people's judgment on this matter conforms to the fact, a reduction of the costs of movement between A and B means an increase of mobility and a diminution in the inequality of the marginal net products at A and at B. If, however, people's judgment is contrary to the fact, a reduction of costs means a decrease of mobility and an enhancement in the inequality between marginal net products. Hence, it is plain that our discussion of the relation of false judgment and of costs of movement to mobility ought not to follow the ordinary popular lines. In the following paragraphs I shall attempt a more accurate analysis.

§ 3. It is obvious that conditions will frequently be such that the marginal net products of resources at any two points A and B will, apart from movement between them, be different. Even in a "stationary state" resources, whether they be waiting, uncertainty-bearing, or labour, come to birth at

various points, and there is no reason to suppose that the point of birth will, in general, be also the point of greatest productivity.   In the actual world, with its large and frequent fluctuations, the matter is still more obvious; for, in order to continued equality of marginal net products in different uses, in respect of which demand fluctuates, the quantity of resources invested in these uses must fluctuate correspondingly.   So much being understood, let us suppose that the marginal net product of resources invested at A is x and at B $(x + h)$.   Our problem is to determine, as precisely as possible, the way in which false judgments and costs of movement affect the value of h.

§ 4. To solve this problem, let us suppose that judgments are false, in such wise that, when comparing the marginal net product at B with that at A, people always attribute to it an excess over its actual value measured by k.   Thus, when, as a matter of fact, the marginal net product at A is equal to x, and at B to $(x + h)$, people judge that at B it is equal to $(x + h + k)$. And let us suppose, further, that the costs of movement between A and B can be equated to an annual sum, spread over the period during which the unit that has moved may be expected to find profit in staying in its new place.   The task of calculating this annual sum presents some difficulty.   First, we have to observe that the costs of movement are not the same in respect of all units liable to move.   Old workmen with families are, for example, rooted more firmly to their homes than young unmarried men.   This fact does not, indeed, concern us greatly, since the movement, in which we are interested, is the movement of those units whose movement costs least—not fluidity in general, but fluidity at the edges.   But, secondly, the costs of movement of those units, whose movement costs least, is itself different according to the number of units that are moving.   For complete accuracy we should need to treat these costs, not as a constant, but as a function of the quantity of the factor that has moved.   For purposes of approximation, however, it is generally sufficient to take rough *discontinuous* groups, for which different fixed costs of movement can be set out.   Thus, whether A and B represent different places or different

occupations, and whether movement means movement in space or the acquisition of a new trade, we can take for our costs those proper to the movement of young men without family encumbrances. These rough methods are generally sufficient for the purpose. It should, indeed, be noted that, as a trade or place decays and the young men gradually leave, the relevant costs of movement gradually rise, because the age distribution of the population is modified.[1] Evidently, however, this complication is one of detail rather than of principle. Thirdly, the costs of movement between A and B, that are relevant to our discussion, are not necessarily the actual costs, but may be a lesser amount, which I shall call the " virtual," costs, and which consist of the sum of the costs of movement along each one of the separate stages that lie between A and B. When the costs in view are merely costs of physical transport, this point is not, indeed, likely to be important. For, in general, long-distance journeys are cheaper per mile than short-distance journeys, and, therefore, there will not exist a virtual cost smaller than the actual cost. If, however, the costs in view are those arising out of the need of learning particular accomplishments, the case is quite different. The costs of transport, in this sense, between the occupation of agricultural labourer and that of master manufacturer may be infinite ; but those between agricultural labourer and petty shopkeeper, between petty shopkeeper and large shopkeeper, between large shopkeeper and departmental manager, between departmental manager and general manager, between general manager and master manufacturer, may all be small. The same class of consideration is applicable, when the cost is due

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[1] Statistical confirmation of the above argument is afforded by a study of age groups in various trades and places. Thus, Mr. Booth shows how in decaying trades the proportion of old men is above the normal and becomes greater and greater as the decay proceeds (*Life and Labour, Industry*, vol. v. pp. 43 and 49). In like manner, Lord Dunraven observes that "Ireland has a larger population of aged than any other country in the king's dominions" (*The Outlook in Ireland*, p. 21). It must be noted, however, that we cannot *infer* decay or expansion unreservedly from such considerations, because, in some industries, the *normal* age distribution differs widely from the average. Messengers are young men who expect to become something else, and lighter-men are generally retired sailors. Furthermore, some industries have an abnormal proportion of old, simply because they are abnormally healthy or attract abnormally healthy people.

to such things as the subjective burden of · leaving one's home and settling elsewhere. Probably *this cost*, in respect of a movement of a thousand miles, greatly exceeds that involved in two hundred movements of five miles each. So far as frontier inhabitants between two countries are, in general, familiar with both languages, the obstruction due to difference of language is similarly diminished in efficacy. A good illustration is afforded by the following account of mediæval France. "If Lyons had need of workmen, it called upon Chalon-sur-Saône, which supplied them. The void made at Chalon was filled by men drawn from Auxerre. Auxerre, finding that less work was offered than was required, called to its aid Sens, which, at need, fell back upon Paris. A weekly officer, known as a *rôleur*, registered the demand everywhere, made himself acquainted with the departures and arrivals that occurred, and assured himself that all the men enrolled had previously fulfilled the conditions of their engagement. Thus, all the different places were stirred at once by a demand for labour, however distant that might be, just as a regiment in column, marching in one piece and only advancing a few paces, would be."[1] This class of consideration is obviously of great importance. Fourthly, when the capital cost of movement is given, the annual sum, to which we have to equate it, is not fixed, but is larger, the shorter is the period during which the unit that has moved may be expected to find profit in staying in its new place. For example, from the standpoint of a man who is considering whether or not to move away from a point of slack demand, this sum will be larger if the depression is likely to pass away rapidly than if it is likely to continue for a long time. This consideration, has, furthermore, a more extended application. For, in general, when depressions are spasmodic, optimism naturally expects them to be short-lived ; but, when they are seasonal, there is no such expectation, and, consequently, the annual sum equivalent to the capital charge of movement is smaller in respect of seasonal workers than of others. Finally, it must be observed that the costs of movement from A to B are not necessarily equivalent to the costs from B to A. For

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[1] De Foville, *Transformation des moyens de transport*, p. 396.

example, "transport acts more easily down than up hill or stream . . ., the barrier of language acts more strongly from England to Germany than *vice versa*."[1]   Bearing these various considerations in mind, let us suppose that the annual sum representing costs of movement is measured, as from A to B by m, and as from B to A by n.

§ 5. Our problem, as stated at the end of § 3, is to determine the precise influence exerted by the values of k, m, and n upon the value of h.   It is obvious that they shut off a region, outside of which it is impossible for the value of h to pass. The region is determined in this wise.   Since people judge the marginal net product at A to be x and at B to be $(x + h + k)$, movement will take place from A to B, so long as $(h + k) > m$; and movement will take place from B to A so long as $-(h + k) > n$.   It follows that, whether k be positive or negative, the value of h must lie within the limits $(-k + m)$ and $(-k - n)$.   For simplicity, let us suppose that m and n are equal.   Then, whatever is the value of k, h necessarily lies between $(-k + n)$ and $(-k - n)$.   It is equally likely to have any one value or any other value inside these limits.   It is most likely, however, to have the value of one of the limits themselves, because these values will emerge, not only out of those initial distributions of resources which are appropriate to them, but also out of those initial distributions which lie beyond, and compel movement towards, them.   When k is zero, the limits become $+ n$ and $- n$: when n is zero, they coalesce in the point $- k$.

§ 6. The clearest result that emerges from this analysis is that, in cases where the costs of movement are negligible, since h becomes equal to $- k$, the amount of divergence between the marginal net products of resources at A and B necessarily and always varies directly with the measure of falseness in people's judgment.   The most important examples of this class of case have to do with the choice that workpeople make for themselves and their children between certain rival occupations. From a long-period point of view, we need not concern ourselves with the transference of established workpeople from one occupation to another, but only with the choice made by,

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[1] Macgregor, *Industrial Combination*, p. 24.

or for, new workpeople as they grow up.   There are, thus,
no costs of movement involved, and false judgments, so far
as they prevail, operate in isolation.   In the industrial world
of to-day two principal forms of such false judgments are
prominent.   On the one hand, as it seems, workpeople over-
estimate the advantages of dangerous, unhealthy and fluctuat-
ing trades, as against safe, wholesome and steady trades ;
on the other hand, they overestimate the advantages of
trades, which yield a large immediate wage with little train-
ing of capacities, as against trades which yield a smaller
immediate wage and more training.   Both these forms of
over-estimation arise, in the main, out of a common cause,
namely, the fact that people can grasp more easily the
obvious which forces itself, than the more remote which
has to be dragged, into the field of vision.   The wage-rate
that is paid anywhere is obvious in this sense ; but, the
chances of accident or unemployment, and the prospect of
future gains through enhanced industrial capacity, cannot
be fully realised without enquiry and a deliberate act of
attention.   Furthermore, the exaggerated view, which work-
men hold of the advantages of dangerous, unhealthy and
fluctuating industries—the problem of training *versus* non-
training industries is deferred for separate treatment in
Part III.—is enhanced by the circumstance that, in nearly
all men, there is a kind of subconscious feeling that they
personally are somehow superior to the " average " man
situated similarly to them.   *They* do not need that machinery
should be fenced ; *their* constitution is not so feeble that
deficiencies of light, air and sanitation in their place of
work will injure them ; *they* are not the sort of men who
will lose their job in bad times.   It is obvious that this
personal optimism towards the facts enhances the effect due
to the difficulty of learning fully what the facts are.   So far
as these tendencies prevail, the factor labour is pressed into
dangerous, unhealthy and fluctuating trades, till its marginal
net product there falls short of its marginal net product else-
where, by the excess of the imagined advantage, which false
judgments attribute to them, over their actual advantage ;
and, so far as false judgments are corrected, the inequality

of marginal net products is correspondingly reduced. This is part of the economic justification for Workmen's Compensation Acts and State coercion towards insurance against industrial accidents, industrial diseases and unemployment, in dangerous, unwholesome and fluctuating trades. In one form or another, these devices exhibit the remote and inobvious chances of injury, illness, or unemployment in the obvious form of reductions in wages or immediate payments out of wages.[1] By reducing k to zero, they reduce h to zero also, and thus bring the marginal net product of labour in dangerous, unwholesome and fluctuating trades to equality with the marginal net product of labour in general.[2] State bounties, so arranged as to *persuade* people

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[1] Whether the funds required to meet compensation or insurance claims are collected from the employers in proportion to the wages they pay, or whether workpeople pay a part and employers another part, is, from a long-period point of view, a matter of small importance, just as it is a matter of small importance whether local rates are collected from landlords or from tenants. The employers' demand for labour varies in accordance with the proportion of the burden that is thrown on them, in such wise that, when they provide the compensation fund, wages are less by the amount of that fund than they would have been if the workpeople had provided it. The Austrian law requires one-tenth of the necessary funds to be raised by workpeople and nine-tenths by employers; the British workmen's compensation law (1897) and the German accident insurance law require the whole funds to be raised by the employers. Of course, it is not a matter of indifference whether the arrangements are or are not such that the employer stands to gain by improving his mechanical arrangements so as to reduce the probability of accident. In Germany each mutual association "determines for itself the danger class to which each of the contributory establishments belongs, and is authorised to levy a premium according to hazard. It is also empowered to enforce rules and regulations" (Frankel and Dawson, *Working Men's Insurance in Europe*, p. 96). Employers neglecting the rules may be put into a higher hazard class (*ibid.* p. 115). In Austria "it is to the interest of each employer to cut down the number of accidents in his establishment, as his annual contribution may then be apportioned on the basis of a lower danger coefficient. This is the chief factor in the campaign of accident prevention in Austria, insurance institutions not being permitted to make prevention regulations, as is the case in the trade associations of Germany" (*ibid.* p. 120). A device on the same lines, designed to encourage preventive measures against unemployment, is found in the English National Insurance Act. This Act, in effect, imposes a reduced rate on employers, so far as they engage men for long terms and so far as they meet periods of depression by working "short time."

[2] For a further discussion of Insurance, cf. Part IV. Chapter II. It should be added that, since there is evil in uncertainty as such, the invention of insurance and compensation devices incidently renders to dangerous, unhealthy, and fluctuating trades a greater benefit than it renders to other trades. The effect is similar to that of the invention of a machine applicable in one field

to expend more money on insurance, serve, though less effectively, to promote the same object.[1]

§ 7. A second clear result emerges from our analysis, in respect of cases in which people's judgments are wholly free from falseness. In these cases there is, as it were, in the notation of § 5, a *locus* of possible values of h extending from $+n$ to $-n$. If the cost of movement is reduced below n by a quantity p, the *locus* is reduced in magnitude, and, thereafter, extends from $+(n-p)$ to $-(n-p)$. Now, we cannot say that this contraction of the *locus* is *certain* to carry with it a diminution in the value of h; for, it obviously will not do this, unless, before the change, h happened to have a value intermediate, either between $+n$ and $+(n-p)$, or between $-n$ and $-(n-p)$. Since, however, before the change, h evidently *may* have a value conforming to these conditions, we can say that the contraction of the *locus* carries with it a chance of diminishing the value of h, while there is no reason for expecting it to increase the value of h. Moreover, the greater the value of p relatively to n, the greater does this chance become. Hence, a diminution in the costs of movement carries a chance of a diminution in inequality between marginal net products, which becomes larger the larger is the diminution in costs. Since, in real life, false judgments are never wholly absent, it is not possible to furnish a practical illustration of this case.

§ 8. This confession brings us to the more complex problems that emerge when falsity of judgment and costs of movement both prevail at the same time. For the solution of these problems it is easiest to make use of a geometrical construction. Take any point O on a straight line X Y. Let distances measured from O towards the right represent

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of industry and not elsewhere. By altering general conditions, it brings it about that a different distribution of workpeople among industries is fitted to maximise the national dividend from the distribution which would have been fitted to do this apart from the invention. This effect is obviously *additional* to the effect, discussed in the text, of approximating the actual distribution towards the most favourable distribution that is possible under existing general conditions. We have to deal, in practice, with a change, which both alters the position of a target and alters the mean deviation of shots from the bull's eye. In the text attention is paid to the latter effect only.

[1] Cf. Part IV. Chapter II. § 8.

excesses of marginal net product at A over marginal net product at B; and distances measured from O towards the left excesses in the opposite sense.   Let O M represent the value $-k$, M Q the value $+n$, and M P the value $-n$.   It is then obvious that the value of h, that is to say, the actual excess of marginal net product at B over marginal net product at A, is indeterminate, in such wise that it may be represented

$$\begin{array}{ccccccc} & P & & M & & Q & & \\ X & \cdot & & \cdot & & \cdot & & Y \\ & & & & & & O & \end{array}$$
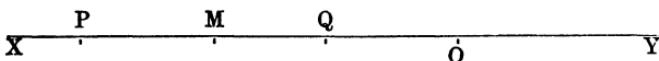
by the distance from O to any point between Q and P on the line X Y.   An inspection of the above figure shows that situations are possible, in which a diminution in the falsity of judgment brings about an *increase* in the divergence between marginal net products at A and B.   For, if Q lies to the right of O, a diminution in the value of k will, *ceteris paribus*, move it still farther to the right.   When, however, the conditions are such that resources are flowing from B to A, h is equal to O Q and grows when it grows. Inspection also shows that situations are possible, in which a diminution in the costs of movement brings about an increase in the divergence between marginal net products. For, if Q lies to the left of O, a diminution in the value of n will, *ceteris paribus*, move it still farther to the left, and, therefore, when conditions are such that resources are flowing from B to A, must, as before, increase the value of h.

§ 9. It may, perhaps, be thought that these possibilities are of academic interest only.   That, however, is by no means the case.   On the contrary, the latter of them, at all events, is beginning to assume an important rôle in practice.   It is more and more being felt that, where much ignorance prevails, a mere cheapening of the costs of movement—and, in this connection, I include under the term "cheapening" a reduction of costs to the mover through the assumption of a part of them by a third party—may easily prove socially injurious rather than beneficial.   In our own country, for example, with a view to ensuring that travelling benefit may really help men to situations, and not to mere aimless wandering, the method of paying it has, of late years, undergone

some transformation. "Travelling benefit was originally intended for men travelling in search of work: it is now mainly used to enable men to reach places in which work has actually been found for them." In like manner, in continental countries, the State bounties on movement are coming more and more to be organised in such wise that help is given, not to movement in general, but rather to movement to definite vacancies. The relief stations in Germany regularly attempt to control the route followed by the workmen assisted by them, making use for this purpose of an elaborate system of tickets and passes. Furthermore, "both the Herberge and the Verpflegungsstationen make considerable efforts to find work for, or to learn of positions for, the unemployed." [1] With this object these rest-stations are coming to be worked in close connection with the Labour Bureaux, which supply information to travellers. The Bureaux, again, provide railway tickets at preferential rates, not to work-seekers in general, but to those for whom they themselves have found definite situations.[2] In Würtemberg "the State railways grant to all workmen seeking work a 50 per cent reduction on third-class fare (making it about half a cent per mile), provided that orders for this are given the workmen by the employment Bureaux. Stuttgart in 1904 gave out 1960 such orders. The results have been most satisfactory." [3] A similar tendency is observable in the modern attitude towards the movement of capital. It is held, for example, by many writers of authority that the great mass of the peasantry in India is so lacking in the "economic virtues," that to make uncontrolled loans to them easy would be definitely injurious. Sir Theodore Morison writes: "It is useless, however amiable, to believe that the ryot is only thirsting for capital in order to invest it at once in the improvement and development of his estate." [4] Again, in the Report on the working of the Co-operative Credit Societies Act in Burma, issued in 1907, it is urged that "in Burma borrowing is mostly due to habit and want of forethought and not

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[1] *United States Bulletin of Labour*, No. 76, p. 757.
[2] *Report of the Royal Commission on the Poor Laws*, p. 401.
[3] *United States Bulletin of Labour*, No. 76, p. 770.
[4] Morison, *The Industrial Organisation of an Indian Province*, p. 110.

to necessity ; that the capital really required to finance culti-
vation (apart from luxury) is very much less than what is
generally supposed, and that mere provision of cheap money
through co-operative societies or otherwise tends, owing to the
existing state of public feeling, to induce waste of income
rather than thrift; and lastly, that in Burma very special
care will be necessary to see that the societies are managed
in such a way that the prevention of waste and inculcation
of thrift are effectively impressed on the members' minds." [1]
In this class of case it may even be held an act of sound
policy for the State deliberately to make borrowing difficult.
This is actually done in the Punjab—though to do it is
not the motive of the enactment—by a law rendering the
peasant legally incapable of pledging his holding for debt.[2]
There is, indeed, some danger that laws of this kind may
fail seriously to check injurious borrowing, and may only
succeed in attaching to it more onerous terms.   This result
seems to have followed, in France, upon the imposition of im-
pediments to the recovery of loans to peasants.[3]   The danger
may be partly met by provisions, such as those prevailing in
Germany, Austria and England, against usurious interest.
The most adequate defence, however, and that to which opinion
seems to be tending, consists in the adoption, as regards
capital, of the policy which I have already described in
reference to labour—encouragement, namely, not to movement
in general, but to approved movement only.   This sort of
encouragement can easily be given through the agency of
People's Banks, prepared to offer loans on cheap terms for
specific works conducted under their own supervision.   When
the banks are co-operative in character, they are specially
well adapted for the task of controlling their clients' operations,
because the lenders are neighbours of the borrower and
easily know what he is doing.   There is no reason in the
nature of things why the specific works, in favour of which
loans are made, should not include improvements in the

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[1] Report, p. 15.
[2] Morison, *The Industrial Organisation of an Indian Province*, p. 116.   As
the same law makes the holding inalienable, the real motive behind it is easily
understood.
[3] Cf. Nicholson, *Report on Land and Agricultural Banks*, p. 46.

borrower's personal efficiency as well as improvements in his material appliances. It is obvious, however, that the administration of a system of this character is likely to prove difficult.

§ 10. The result established and illustrated in the two preceding sections seems, at first sight, subversive of old-established beliefs in the equalising effects of improved information and cheapened means of communication. These things, it has been shown, may actually bring about increased inequality of marginal net products, and, if they do that, they are likely, as the preceding chapter proved, to make the national dividend smaller and not larger. Such a conclusion suggests that the efforts we expend upon developing Labour Exchanges, spreading information, lessening the costs of movement, and so on, are wasted labour, as likely to bring about bad results as good. This pessimistic inference, however, is not justified. All that we have proved is that situations are *possible*, in which a diminution in the falsity of judgment or a diminution in the costs of movement will make marginal net products more unequal. When, however, we are contemplating, from a general point of view, the consequences of these diminutions, it is not the *possible*, but the *probable*, effect that concerns us. Many things may prove injurious in particular selected instances and yet be beneficial in general. It can be shown that this is the case with diminutions in the falsity of judgment or in the costs of movement. For, let us consider again our geometrical construction, and imagine, in turn, a diminution in the values of k and n. First, a diminution in the value of k is represented by a movement of the point M towards O. It is then evident that every diminution in the value of k makes impossible a given value of h, at the expense of making possible a given smaller value (either positive or negative) which was before impossible. This proves that, over the mass of many cases, diminutions in the value of k are likely to reduce the value of h. In other words, diminutions in the falsity of judgments are likely, in general, to make the marginal net products of resources at A and B less unequal. Secondly, a diminution in the value of n is represented by a movement on the part of the two points P and Q towards M. So long as the values

of k and n are such that P and Q lie on opposite sides of O, it is obvious that these movements make impossible the largest values of h that were possible before, and have no other effect. When, however, P and Q lie on the same side of O, they make impossible both the largest values of h that were possible before and also the smallest values. This double change seems equally likely to increase or to diminish the value of h. Hence, if it were the fact that the points P and Q always lay on the same side of O, we could not infer that diminutions of the value of n would be likely to affect the value of h either way. In fact, however, it must often happen that P and Q lie on opposite sides of O. When account is taken of these cases as well as of the others, we can infer that, over the mass of many cases, diminutions in the value of n are likely to reduce the value of h. In other words, diminutions in the costs of movement are likely, in general, to make the marginal net product of resources at A and B less unequal. But, the *probability* that diminution in costs will do this is somewhat smaller than the probability that diminution in the falsity of judgment will do it. Hence, in passing, we may draw the inference that, if there is a choice between reducing k and reducing n to an equal extent, it is better to operate on k.

§ 11. Our more elaborate analysis being thus concluded, we find that, though following a somewhat different line from that popularly adopted, it leads in the end to the same practical conclusion. This conclusion is that anything, which, either improves judgment as to the comparative advantages of production in different parts of the industrial field, or lessens the costs of movement from one part of that field to another, is likely to mean increased mobility in the popular sense, greater equality of marginal net products, and, hence, indirectly, an enlargement of the national dividend. We need not, therefore, refuse any of the popular doctrines. The dividend tends to be increased when firms employing similar workpeople are planted near together, since, with the diminution of distance, the cost of movement from one to the other is also diminished; and the gain is especially great when the firms are such that the fluctuations in demand for their

different services are, like those for bricks and for gas supply, more or less compensatory.[1]   The dividend tends to be increased when increasing speed of travel enables workpeople to change the seat of their work without having at the same time to change their homes.[2]   For, when this is possible, there is eliminated from the cost of movement from place to place the sacrifice of local attachments, the sacrifice of the goodwill of shopkeepers to whom the workman is known, and the loss of wages to members of his family who are obliged to give up local wage-earning occupations.   The dividend tends to be increased when movement from trade to trade is cheapened by affiliation arrangements between kindred unions.   For, apart from such arrangements, if a man abandons the trade union concerned with his former work, " he is penalised by the immediate loss of unemployed and other benefits, and he is not for some time qualified for the trade union benefits of the trade into which he transfers his labour " :[3] whereas, if he

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[1] The gain under this head is obviously raised to the highest point when firms experiencing complementary fluctuations and employing similar labour plant themselves so close together that they actually coalesce.   It is, therefore, interesting to read in a recent Board of Trade report: " The more competent and thoughtful (employers) endeavour to overcome the natural fluctuations due to the seasons by superior organisation.   With the manufacture of jam and marmalade they combine the making of sweets and the potting of meats.   They thus occupy the time of the majority of their employees.   An artificial florist, employing over 200 girls and women in a trade which occupies six months of the year, has introduced a second trade, the preparing of quills for hat trimming, and now the workers are employed all the year round.   In Luton, where the staple trade is straw-hat making, and where work is always slack during six months of the year, felt-hat making has been introduced ; and it is now very usual to find the two trades carried on by the same firm, employing the same workpeople at different periods of the year." (*Cost of Living of the Working Classes*, Cd. 3864, 1908, p. 284 ; quoted in the *Report of the Royal Commission on the Poor Laws*, p. 338.)   This kind of relation tends in some measure to come about through deliberate action in accordance with ordinary business motives.   It is clearly cheaper for one factory to work all the year round than for two to be built to work, one in one part, and the other in another part, of the year.   Hence, wherever practicable, there is a tendency for employers to adapt their factories—if they are engaged in seasonal production— to the production of several different seasonal things, in such wise that they may be in use all the year round ; and, when this is being arranged for, it will probably pay to select things that are so far complementary as to permit of the use of the same machinery and staff.   To the economic motive for this must also be added the altruistic motive of rendering the conditions of life of the firm's employees more satisfactory.

[2] Cf. Mahaim, *Les Abonnements d'ouvriers*, p. 170.

[3] *Report of the Royal Commission on the Poor Laws*, p. 398.

does not abandon his trade union, he is unable, on account of inter-union jealousies about " demarcation," to do work outside a limited range of jobs. For example, a bricklayer is not allowed by his union to do stonemason work, or a pattern-maker to do joiners' work. The dividend tends to be increased, whenever the movement from trade to trade is cheapened by an assimilation of the processes of different trades, in such wise that a man or machine adapted to one trade is, by that very fact, practically adapted, without substantial change or training, for others also. An example of assimilation is to be found in the textile industries. Thus, Mr. Clapham writes : " The light women's dress goods have very generally a cotton warp and a worsted weft. They often approach cotton goods in character ; and the quite narrow looms on which they are mostly made can readily be used for the weaving of pure cotton fabrics, linings, and so forth, and constantly are so used when wool is dear, or when, for any other reason, fashion turns towards cotton." [1] Assimilation of this sort tends to come about, in the case of workpeople, more and more markedly the further the division of labour is carried. For, division of labour means the splitting up of complex operations, formerly executed as wholes, into their elementary parts, and it so happens that a comparatively small number of elementary parts, when combined in different ways, make up nearly all the wholes. Consequently, the range of mobility of workmen helping to produce any given article, while " narrowed as regards the power of interchange among themselves is, as a rule, widened as regards the power of interchange with those performing corresponding processes of other trades." [2] As M. de Rousiers well observes : " More and more the constantly developing applications of machinery are approximating the type of the mechanic to that of the shop assistant. The shop assistant passes readily from one kind of commerce to another, from drapery to provisions, from fancy goods to furniture, so much so that, at the present time, retail shopkeeping, in the hands of men of superior ability, is no longer confined to one or another single branch, but takes

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[1] *The Woollen and Worsted Industries*, p. 144.
[2] Llewellyn Smith, *The Mobility of Labour*, p. 19.

on the form of the large general store.   Manufacture cannot
yet pretend to so large a range, but, just as an assistant passes
easily from one counter to another, so the workman passes
easily from the supervision of one machine to the supervision
of another machine, from the loom to boot-making, from paper-
making to spinning, and so forth."[1]   The dividend tends to be
increased by the development of the inquiry office aspect of
trade unions, of interconnected systems of Labour Exchanges,
and of other organisations that help working-men out of
employment to learn where their services are required.
Finally, the dividend tends to be increased by any develop-
ment in that great engine for promoting the mobility of
capital, the banking, bill-broking, stock-broking, company-
promoting and underwriting systems, which at once provide
information to those persons who wish to invest capital, and
cheapen for them the process of transferring their capital to
the points selected for investment.

§ 12.   In conclusion, it is necessary to introduce a caution.
I have argued that improvements in the machinery of mobility
are likely, on the whole, to render the marginal net products
of resources in different uses less unequal, and, thereby, in
conformity with the reasoning of the preceding chapter,
to increase the national dividend.   This argument, we have
now to observe, does not justify the inference that *every*
kind of cheapening, whether of knowledge or of movement,
is likely to have this effect.   In a sense, knowledge and
movement are cheapened, when a part of the costs of them
is taken over by some one other than the person who is
to reap the benefit of the movement.   This sort of cheapening
to the individual affected, which is not accompanied by a
corresponding lessening of aggregate costs, does not, *prima
facie*, involve an increase in the dividend.   Rather, it causes
a greater quantity of resources to be invested in the work
of securing knowledge and effecting movement than would
normally be devoted to that work.   It, therefore, *probably*
causes the marginal net product of resources employed in that
work to be smaller than the marginal net product elsewhere,
and so *probably* makes the dividend smaller than it would

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[1] *La Question ouvrière en Angleterre*, p. 334.

otherwise have been. There is not a little reason to suspect that this kind of waste actually occurs, to some extent, as a result of the system of artificially cheapened workmen's tickets, that has been introduced on the Belgian railways. The following passage from Dr. Mahaim's interesting monograph is strongly suggestive of this conclusion : " A villa had to be built in the suburbs of Liége, where, assuredly, there was no lack of labour. The contract was secured by a builder from Nivelles. He employed exclusively Brabant work-people, who came in, some every day and some every Monday. Not one iota of the general labour required was executed by Liége men." [1] There are other passages of like effect, suggesting that the bounty,—for such in effect it is—which the State pays upon workmen's tickets, tempts employers in one place, when they are given work to do in another, to have workmen transported there, despite the fact that suitable labour can be found for the job in the place where it has to be done. This leads to something very like a double transference of gold—a process that is necessarily wasteful to the community as a whole, whether or no the fiscal arrangement in vogue makes it wasteful to the individuals undertaking it. The presumption thus established against the grant of a bounty to the industry of promoting mobility is, however, merely a special case of the general presumption against the grant of a bounty to any industry. In the present instance, as in all other instances, it may be overthrown if there is reason to believe that, in the absence of a bounty, investment in the industry in question would not be carried far enough to bring the marginal net product of resources invested in it down to the general level. As regards the industry of promoting mobility of workpeople between different parts of the country, there does seem reason to believe this.

[1] Mahaim, *Les Abonnements d'ouvriers*, p. 157 ; cf. also *ibid.* p. 111.

NOTE TO CHAPTER IV

MOBILITY AND UNEMPLOYMENT

The reasoning of the preceding chapter shows that, in general, the removal of impediments to movement increases the national dividend and, therewith, the absolute share of labour. It should be noted, however, that such removal may conceivably have an incidental effect partially countervailing the good effect of these changes upon welfare. For, it may conceivably involve an increase in the quantity of involuntary idleness among workpeople, and, hence, diminished evenness of distribution within the ranks of labour, either as between people or as between times, or as between both people and times. The reason it may have this effect is that facilities for movement not only enable those people who move to move more quickly, but also cause more people to find it worth while to move. For example, it has been said, in regard to boy labour, that the very fact that boys can secure a new job with ease makes them abandon jobs light-heartedly.[1] Similarly, Mr. Heath suggests that the Labour Exchanges in Germany are having the effect of increasing the extent to which men are employed for short periods.[2] In these circumstances, it is uncertain whether the numbers involuntarily idle, because they are in course of movement from one place to another, will be increased or diminished by improved mobility. An extreme case will illustrate the difficulty. If there is complete absence of convention or artificiality in the wage-level, both perfect mobility and perfect immobility will mean that no one at all is out of work; in the former case, men displaced at A find work instantaneously at B, and, in the latter case, nobody is displaced at A. In intermediate cases it is probable that an improvement in mobility will, in some circumstances, add to, and, in others, contract, the number of the unemployed.[3] This

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[1] Cf. Jackson, *Report on Boy Labour*, p. 14.

[2] Cf. *Economic Journal*, 1910, p. 345.

[3] Let the cost of movement from A to B be equivalent, before mobility is improved, to the diminution of the wage by C.

After mobility is improved, let it be equivalent to a diminution by $C(1-h)$.

Furthermore, let these diminutions be due to the period that is absorbed in idleness during the passage from A to B: so that the actual quantity of unemployment that takes place is, before the improvement, mC times the number of men displaced from A, and, after the improvement, $mC(1-h)$ times the number displaced.

Let the wage in both A and B stand originally at W; and let the wage in B be raised somehow to a level $W + q$.

peculiar complication is not, however, as I conceive the matter, of great relevance to practice. The incidents, with which we are concerned, are short-period incidents, and, from the point of view of a short period, I should imagine that the wage-level in no part of the industrial field is likely to be free from a conventional or artificial element. Freedom from this element is, however, essential to the case that we have just been considering. When convention is present, harmony and not disharmony emerges. The number of vacancies, which employers wish to fill at any point, is determined by the wage, and any men assembled at the point in question in excess of this number will be out of work. The quantity of involuntary idleness is equal to the number of men wishing for work at the conventional wage, *minus* the number of vacancies employers wish to fill at that wage, *plus* the number that they are unable to fill. This last number is the only item that is variable, and it is necessarily smaller, the greater is the speed with which a vacancy occurring at A can be filled from elsewhere. This result implies that the aggregate of involuntary idleness occurring in any assigned industrial field is smaller, the more perfect is mobility within that field.

In these circumstances, before mobility is improved, the wage in A will be raised to $(W + q - C)$; after mobility is improved, to $\{W + q - C(1 - h)\}$.

Let η be the elasticity of the demand for labour at A, and k a constant. Then the number displaced at A, before mobility is improved,

$$= \eta \left\{ \frac{q - C}{W} \right\} k \; ;$$

after mobility is improved

$$= \eta \left\{ \frac{q - C(1 - h)}{W} \right\} k.$$

∴ the *unemployment involved* before mobility is improved

$$= mC\eta \left\{ \frac{q - C}{W} \right\} k \; ;$$

after mobility is improved

$$= mC(1 - h)\eta \frac{\{q - C(1 - h)\}}{W} k.$$

∴ the excess of unemployment after the improvement, over that before the improvement,

$$= \frac{mC\eta}{W} [(1 - h) \{q - C(1 - h)\} - (q -$$

This is positive or negative, according as $\{C(2 - h) - q\}$ is positive or negative. That is to say, an improvement in mobility is more likely to diminish unemployment, the larger are the fluctuations that start movement, the smaller was the cost of movement before the improvement, and the larger is the reduction of this cost consequent on the improvement.

CHAPTER V

HINDRANCES TO EQUALITY OF MARGINAL NET PRODUCTS DUE TO IMPERFECT DIVISIBILITY OF THE UNITS IN TERMS OF WHICH TRANSACTIONS ARE CONDUCTED

§ 1. CLOSELY associated with imperfect mobility, in the sense discussed in the preceding chapter, is a further circumstance hindering the tendency to equality of marginal net products from fully realising itself. A pure mathematical treatment of economic problems always assumes that, when there is opportunity at any point for the profitable employment of given quantities of several factors of production, each factor can be received there in units that are indefinitely small and are capable of being separated completely from units of any other factor. In so far as this assumption is not warranted, it is readily seen that the tendency to equality of marginal net products is likely to be imperfectly realised. For, on the one hand, if an enterprise is only financed, in respect of any one factor, by means of units, each of which has the value of £1000, it is obvious that, though the transference of £1000 worth of the factor to or from elsewhere could not, when equilibrium is established, bring about an increased aggregate return, the transference of any sum less than £1000 might have this effect. In short, when the units, in terms of which transactions are made, are not indefinitely small, the tendency to equality of marginal net products in all uses degrades into a tendency to limitation of inequality—a limitation the extent of which is diminished with every increase in the size of the units. On the other hand, if an enterprise is only financed, in respect of any two factors, by means of units which combine factor A and factor

B in a definite proportion, it is obvious that, though the transference of one of those complex combined units to or from elsewhere could not, when equilibrium is established, bring about an increased aggregate return, the transference in isolation of some quantity of either of the two factors might have this effect. Hence, when the units, in terms of which transactions are made, are compounded of fixed proportions of two or more factors, the tendency to equality of marginal net product in all uses again degrades into a tendency to limitation of inequality. It follows that largeness or complexity in the units, in terms of which transactions are made, acts in the same way as impediments to movement. In general, they obstruct the tendency of self-interest to make the marginal net product of each several factor of production equal in all uses.

§ 2. At one time it may have been the case that the units, in which transactions in respect of capital were made, were noticeably large. Of recent years, however, the size of those units has been greatly reduced in two ways. Of these one is obvious, the other relatively obscure. The obvious way is the diminution in the value of individual deposits which banks will accept—the Savings Bank, for example, allows pennies to be deposited separately—and a similar, though less extensive, diminution in the value of the individual shares issued by companies.[1] The more obscure way depends upon the fact that a unit of capital is, as it were, two-dimensional. A man can reduce the quantity of capital which he provides, not only by altering the number of pounds that he lends over a defined time, but also by altering the time over which he lends a defined number of pounds. Reduction in the time-extension of the units in which capital is borrowed is of great importance in practice, because, whereas most enterprises require funds for a long period, many borrowers are only willing to cut themselves off inexorably from their resources for a short period. There have been evolved in the modern world two devices, through which the required reduction in time-extension has been affected. The first of these is the actual acceptance of loans for short

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[1] It should be observed, however, that the issue by companies of shares of low nominal value has certain incidental disadvantages, and is, therefore, in Germany, discouraged by law. (Cf. *post*, Part IV. Ch. VII. § 5.)

terms by *entrepreneurs*, in dependence, partly on the elasticity
of the wants of their enterprise, and partly on the chance of
opportunities for reborrowing elsewhere.   The second is the
organisation of the Stock Exchange, by resort to which the
funded debts of enterprises can be *transferred*, a device which
is, from the lender's point of view, the next stage to permission
to recall his loan from the enterprise itself.   Both devices are
essentially similar, for both depend on the general probability
that the aggregate willingness of the community to lend will
be less variable than that of an average individual.   In conse-
quence of them, on the one hand, a company borrows part of
its capital, on bills of exchange, for a series of short terms from
different people, thus enabling any one of them to lend for a
few months.   On the other hand, in respect of that part of
the capital that is borrowed in perpetuity, they enable a man,
who makes savings for a " treat," or to meet an accident,
instead of storing the actual object he expects to want, to
invest it, in reliance on the organisation of the Stock Exchange
to enable him to realise his capital at need.   These devices are
not perfect.   In times of stress the discounting of new bills
may prove very difficult and costly, and the realisation of
capital by the sale of shares may not be possible except at
heavy loss.   They have availed, however, to bring about a
large and important reduction in the time-extension of the
units in terms of which capital transactions are conducted.
As regards the other two factors, labour and land, it is plain
enough that the units are fairly small.   Hence, in the modern
world, the only field, in which largeness in the units of
transactions obstructs the tendency of self-interest to bring
about equality of marginal net product in all uses, would seem
to be that of employing power.   The average wielder of
employing power cannot be regarded as indefinitely small, as
compared with the aggregate quantity of employing power that
is in action in any use.   This fact probably brings it about
that the marginal net products of employing power in different
uses are checked from approaching, under the influence of self-
interest, very closely towards equality.

§ 3. Let us next consider complexity, or compound char-
acter, in the units in terms of which transactions are made.

Here, as before, the case, which calls for the greatest amount of discussion, has to do with capital. For, capital, as ordinarily conceived in business, is not a single factor, but a combination, in varying proportions, of two factors, namely, waiting and uncertainty-bearing. Under primitive conditions, if an enterprise was undertaken by more than one person, it was practically necessary for *each* of the several contributors to furnish waiting and uncertainty-bearing in the proportions in which these factors were required in the aggregate. They would, in effect, pool their capital, taking upon each £ lent an equal measure of uncertainty-bearing. They would be partners, or, if we wish to suppose them in the enjoyment of limited liability, joint shareholders in a company whose capital consisted entirely of ordinary shares. In modern times, however, this is no longer necessary. An enterprise that requires, say, x units of waiting *plus* y units of uncertainty-bearing, need no longer obtain from each subscriber of one unit of waiting $\frac{y}{x}$ units of uncertainty-bearing also. By the device of guaranteed loans its demand can be separated into two streams, in such wise that waiting alone is drawn from one set of people and uncertainty-bearing alone from another set. Guaranteed loans may assume a great variety of forms. They are given to industrialists by insurance companies, which undertake, for a consideration, that the industrialists' earnings shall be unaffected by fire or accident. They are given by Exchange Banks, such as those which, in India before 1893, bought importers' and exporters' bills at the time of their bargain, and so, for a price, insured them against loss (or gain) from any fluctuations in the exchange, which might occur in the interval between the bargain and the realisation of the bills. Where industrialists have to do with staple goods, for which grading permits the establishment of future markets, they are given, in respect of the more general risks of business, by speculators. For, a miller or cotton merchant, undertaking an order to supply flour or cotton goods, can buy the speculator's promise to provide him with his raw material in the future for a stipulated sum, irrespective of the price which may then

prevail in the market. Like guarantees are given to a banker preparing to discount a bill for an industrial enterprise, when a second banker, or a bill-broker or some independent person consents to accept or endorse the bill, or, as is usual in the case of cash credits in Scotland, to stand surety for the original borrower.[1] They are given finally, to a Central Bank, when a People's Bank, working, either on unlimited liability or with a subscribed capital of guarantee, in effect borrows money on behalf of its local clients.[2] In all these cases, the guarantor provides the uncertainty-bearing required, and the person whose loan is guaranteed, the waiting. This separation of functions is, in general, made practicable by the fact that the guarantor is able to support his guarantee by a deposit of " collateral " security. By far the most effective form of such security consists in the stock and share certificates of industrial enterprises. For, the deposit of these, unlike the deposit of chattel security, involves no present loss to the depositor, while their ultimate assumption, unlike the foreclosure of a mortgage, threatens no difficulty to the person in whose favour the deposit has been made. Now, in recent times, partly in consequence of the supersession of partnerships by joint stock companies,[3] the proportion of national wealth represented by stocks and shares, and, therefore, available as collateral security, has enormously increased. According to Schmoller's estimate, whereas 100 years ago only a very small proportion of any country's wealth was in this form,

[1] The essential character of the guarantee given by the acceptor's signature is the same whether the bill is drawn in respect of goods received, or is an accommodation bill endorsed by an accepting-house, which lends its name for a consideration. The variety of accommodation bill known as " pig-or-bacon," where the acceptor is a branch of the drawing house under an *alias*, is, of course, different, because such bills, in effect, bear only one name ; and the same thing is substantially true when the fortunes of the endorsing house and the original borrower are so closely interwoven that the failure of one would almost certainly involve the failure of the other.

[2] The controversy between the advocates of limited and unlimited liability has sometimes been keen. In the ordinary banks and in the Schulze Delitsch People's Banks limited liability is the universal rule. On the other hand, in the People's Banks of Italy and in the Raiffeisen Banks of Germany (except that the law insists on some *small* shares) the method of unlimited liability has been adopted, for the reason that the poor people for whom the banks are designed would find difficulty in becoming shareholders to any substantial extent.

[3] Cf. Fisher, *The Rate of Interest*, p. 208.

to-day in Germany 17 per cent, and in England 40 per cent, of it is covered by paper counterparts.[1]   According to Mr. Watkins's investigations in respect of residents in the United Kingdom, 77 per cent of the capital value, on which estate duty was levied in 1902-3, was "personalty," and, out of personalty, 70 per cent was paper property.[2]   As a natural consequence, the area, over which the device of the guaranteed loan can be employed, has been greatly extended.   The broad result of this and other modern developments has been to break up into simpler parts the compound units, in terms of which it was formerly necessary for " capital " transactions to be conducted.   In respect of transactions in labour or in land there has never been any complexity in the units employed.   It is, indeed, still the case that enterprises often require employing power to be provided in association with a certain amount of waiting and uncertainty-bearing.   The advent of salaried managers, working on behalf of joint stock companies has, however, done much to break down the complex unit in this field also.   In general, therefore, we may conclude that, in the modern world, neither large size nor compound character in the units, in terms of which transactions are conducted, obstruct to any important extent the tendency of self-interest to bring about equality of the marginal net product of each several factor of production in all its uses.

[1] Quoted by Watkins, *The Growth of Large Fortunes*, p. 42.
[2] *Ibid.* pp. 48-9.

CHAPTER VI

HINDRANCES TO EQUALITY OF MARGINAL NET PRODUCTS DUE TO THE RELATIVE VARIABILITY OF INDUSTRY

§ 1. WE have now to introduce a new conception, namely, the relative variability of demand in different parts of the industrial field. This relative variability may be defined as the mean of the relative variations of demand, that occur between successive moments of time. If the amount of any factor of production demanded at a given price at all points collectively is constant, and the amounts demanded at the several points individually are variable, the variation of relative demand between two moments of time, say, between two years, is measured by the sum of the excesses of the amounts demanded in the second year, at those points where there are excesses, over the amounts demanded in the previous year at the same points. If the demand for the factor of production at all points collectively is not constant, the variability of relative demand is measured, either by the sum of the excesses of the amounts demanded in the second year over the amounts demanded in the previous year at the same points, or by the sum of the deficiencies of the amounts so demanded over the corresponding amounts of the previous year, *according as the one or the other of these sums is the smaller.*

§ 2. On the basis of this description, it can readily be shown that the influence of impediments to movement, in causing departures from equality of marginal net products, is, in general, greater, the greater is the relative variability of demand in the sense just explained. For, let attention be concentrated upon those impediments, which are not adequate to prevent equalisation of marginal net products

in "the long run," but suffice to prevent the movement
required to bring such equalisation about immediately. Impedi-
ments of this order will permanently prevent the required
equalisation, if the various parts of the industrial field are
fluctuating relatively to one another, because, before equilibrat-
ing forces can evoke the ultimate effects of any cause, some
other cause will have set up a new disturbance. Mill's illus-
tration from wave movements on the ocean is wholly apposite.
Under the influence of gravity, there is a constant tendency to
equality of level in all parts; but since, after any disturbance,
this tendency takes time to assert itself, and since, before the
necessary time has elapsed, some fresh disturbance is always
introduced, equality of level does not in fact ever occur. It
is evident that the average amount of inequality of level
depends in part on the magnitude of these disturbances. It is,
similarly, evident that the average amount of inequality of
marginal net products depends in part, in respect of any system
of impediments to movement, upon the relative variability of the
demand for capital and labour at different points of the indus-
trial field. It, therefore, becomes necessary—and this is the
task of the present chapter—to ascertain the influences upon
which the magnitude of this variability in different circum-
stances depends.

§ 3. As a first step towards a solution of the problem
thus presented, it is necessary to enumerate the principal
influences by which the variability of the absolute demand for
labour and waiting in an individual industry is determined.
These influences may conveniently be divided into two groups:
those which determine the variability of the demand for
labour and waiting in the industry, when the variability of
the demand for the commodity, which the industry makes,
and of the supply of the raw material and other co-operant
factors, which it employs, are given; and those which deter-
mine the two latter variabilities. I proceed to discuss, in
turn, the influences falling into the divisions thus distinguished.

§ 4. Let us begin by supposing that the variability of the
demand for the commodity, which an industry makes, and of
the supply of the raw material and so forth, which it employs,
are given. In these circumstances, the variability of the

demand for labour and waiting in the industry depends, in part, upon the extent to which employers are able and willing to exercise monopolistic power. It can, indeed, easily be shown that a continuous exercise of a full measure of monopolistic power tends to check output, as against the output proper to simple competition, in much the same proportion in good times as in bad, so that no increase of variability should be expected on account of it.[1] In actual practice, however, it frequently happens that monopolistic power is exercised much more rigorously in bad times than in good times. The most obvious illustration of this tendency is furnished by the practice of the master cotton-spinners of Lancashire, who, in periods of booming trade, compete freely with one another, but, in periods of depression, enter into a joint agreement to shut down for so many days per week. It is not, however, only in extreme cases of this kind that monopolistic power is exercised with unwonted stringency in bad times. The same thing happens whenever an industrial combination or other monopolistic body decides, for any reason, to prevent the price of its product from fluctuating. Partly for convenience and partly for advertisement, monopolistic bodies in fact frequently do this. For example, according to the 1907 report of the British Consul-General for Frankfort, " syndicates prevented, during the boom, the prices from rising to the level to which they would otherwise have risen ; again, during the beginning of the set-back, they have made for stability generally."[2] Again, according to the same authority, " the Coal Syndicate fixes its prices for a year, from April to April; once such base-prices have been fixed, they are only very exceptionally liable to modifications."[3] Finally, it is well known that the United States Steel Corporation have endeavoured to maintain a like policy of keeping prices stable. It is evident that a monopolistic body animated by this purpose, must act " more monopolistically " in times of depression than it does in times of boom. Hence, it must make the output of the commodity

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[1] On the assumption that the curves of demand and supply are straight lines, this statement is exactly true ; for, in good and bad times alike, the output proper to monopoly is easily shown to be one-half of that proper to simple competition.

[2] *Report* [Cd. 3727-167], p. 64. [3] *Ibid.* p. 75.

which it controls vary by a larger percentage than it would have done either under simple competition or under the continuous full exercise of monopolistic power. Hence, again, it must make the demand for labour and waiting in the industry affected vary by a larger percentage.

§ 5. Still maintaining the supposition set out in the first sentence of the preceding section, we may next observe that the variability of the demand for labour and waiting in any industry depends, in part, on the inducement which manufacturers have to make for stock in bad times. The stronger is the inducement to do this, the smaller is the variability of the demand for labour and waiting in their industry; and the weaker is the inducement, the larger is the variability. The problem, therefore, arises of disentangling the influences, by which the force of this inducement is determined.

It is evident that making for stock is less attractive, the greater is the cost of carrying a unit of the commodity affected from one point of time to another. This cost depends, of course, in part, upon a circumstance affecting all commodities equally, namely, the rate of interest. For, obviously, all carriage through time implies a loss of the interest that could be obtained by investing commodities, instead of storing them. It also depends upon a number of circumstances, which differ in character in respect of different commodities. Of these, the most obvious is the expense of storage. One important determinant of this expense is the resistance that the commodity makes to *physical* wear and tear in transit across time, or, more broadly, its durability, in respect both of decay and of accidental breakage. In this regard the precious metals and hard materials, like timber, are specially favoured. As we should expect, things that are extracted from the earth are, in general, more durable than things that are grown on it. It is interesting to note that, in recent times, the development of refrigerating and other preservative processes has rendered a number of commodities, chiefly articles of food, much more durable than they used to be. The Committee on Hops, for instance, wrote in 1908 : " At the time of the previous inquiry in the year 1856, attention was called to the fact that ' the deterioration which hops suffer when kept prevents the super-

abundance of one year from adequately supplying the deficiencies of another.' The advent of cold storage has effected an adjustment between years of plethora and years of scarcity, with the resultant effect upon prices." [1] A second important determinant of the expense of storage is the resistance that the commodity makes to *psychical* wear and tear in transit across time, or, more broadly, its steadiness of value. The contrast I have in view is between staple goods of steady, and fashion goods of unsteady, demand. Clearly, there is a higher cost of carriage and less inducement towards storage in regard to a commodity which, next week, nobody may want, than there is in regard to one for which a constant market is assured. The extreme case is given by commodities, such as ball-dresses, that have to be specially adapted to the needs of individual purchasers. It is possible that things at one time customarily made to individual order may, subsequently, become more generalised. Houses are, in some cases, built to the order of would-be private owners, and in others, as a speculation; and the boot industry has developed from an earlier stage, in which the individual order method predominated, to the present condition, in which most boots are ready-made.

The inducement which employers have to make for stock is not, however, wholly determined by the cost of carrying a unit of the commodity affected through time. In some circumstances, it is enhanced by the fact that they would suffer a special loss, if they were to diminish their output appreciably in bad times. These circumstances exist in industries, where a temporary contraction below the point of ordinary full capacity involves an addition—greater in amount the further the contraction is carried—to the cost of production in the future. This point is obviously important in regard to such an industry as iron-smelting, for, if a blast-furnace is once allowed to go out, heavy expense is involved in relighting it. It is important, again, in industries that employ a large quantity of delicate machinery. Thus, Mr. Brooks writes : "A very large proportion of capitalistic investment is now embodied in machinery of the most delicate and costly character. When the complex enginery is once started, it has to be 'tended' precisely as if

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[1] *Report*, p. x.

it were the most frail human life or plant. It is as safe to shut up and desert a hothouse of dainty flowers as to close up and desert modern machinery. Every hostile element attacks it as if bent on instant destruction. To prevent this devastation, mills are often run at a great loss when trade is dull, thus piling up the product of an overstocked market."[1] Again, in the case of coal-mining, it has been said: "So much loss and damage are incurred, or at all events risked, by the shutting down of pits otherwise healthy, that a coal-owner will rather go on year after year working at a loss than shut down at what may be a much greater loss."[2] Finally, in some instances, considerations akin to the above hold good in respect of the labour staff. If the staff is broken up in bad times, the employer runs the risk of losing their services when he most requires them. This motive applies strongly to the case of those more highly skilled workers who have a kind of quasi-rent value to a firm—unskilled workers are seldom in this position—and it affects alike small masters and large.[3] For example, Miss Black, referring to the case of a small tailor, says: "His two journeymen were at the time of our visit (in the slack season) almost unoccupied, but he kept them on, as he told us, because, if he did not, he might not be able to secure them when the busy time returned."[4]

§ 6. Let us suppose next that, in any industry, the extent to which the finished commodity and the raw material employed in its processes are made for stock, is given. In these circumstances, the variability of demand for labour and waiting in the industry depends upon the variability of the demand for the finished commodity and the variability of the supply of the raw material and other co-operant factors. These two variabilities are, of course, affected by a number

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[1] *The Social Unrest*, p. 188.　　[2] *Economist*, 25th October 1902, p. 1639.

[3] Professor Ashley suggests that, under a developed scheme of insurance against unemployment, this motive for keeping mills running in bad times would be lessened, because the effect of the insurance arrangement might be to keep men "in their homes waiting for trade to pick up—waiting for their old employers to whistle them back" (*Economic Journal*, 1910, p. 574). He also suggests that insurance, particularly if the employer were compelled to subscribe towards it, might lessen the extent to which an employer now keeps running out of a sense of responsibility towards his men ; "he will feel that he has paid for the right to engage his labour just as discontinuously as may seem expedient" (*ibid.*).　　[4] *Makers of our Clothes*, p. 23.

of influences special to each of them separately. Before these
are discussed, however, one general proposition, which can be
stated in a form apposite to both of them, may be laid down.
This proposition is to the effect that, the more numerous
and independent are the separate individual sources, on the
one hand, of purchase for any commodity, on the other hand,
of supply of the raw material and other co-operant factors
used in making it, the smaller, other things being equal,
is the relevant variability. It is a particular application
of a more general proposition familiar to statisticians, namely,
" that the precision of an average is proportional to the
square root of the number of terms it contains." [1] It will
suffice to give two illustrations. One of these, referring to
production, has to do with the commodity wheat, and is
taken from the *Economist*. It relates to the comparative
stability of the world supply of this commodity and of the
supply grown within the British Empire : " The average year-
to-year fluctuation has been, in the case of the world's crop, a
matter of some $5\frac{1}{2}$ per cent. In the case of the imperial crop
it is about 15 per cent, and the latter figure would be very
much larger if the United Kingdom itself were excluded from
the calculation." [2] My other illustration, referring to con-

[1] Bowley, *Elements of Statistics*, p. 305. Cf. Part IV. Ch. VI. § 2.
[2] *Economist*, 24th April 1909, p. 861. The details are given in the follow-
ing table :—

	World's Crop.	Per cent Increase or Decrease compared with Previous Year.	Crop of British Empire.	Per cent Increase or Decrease compared with Previous Year.
	Million Bushels.		Million Bushels.	
1898	2948	...	453	...
1899	2765	− 6·2	377	− 16·8
1900	2610	− 5·6	428	+ 13·5
1901	2898	+ 11·0	411	− 4·0
1902	3104	+ 7·1	471	+ 14·6
1903	3190	+ 2·7	572	+ 21·6
1904	3152	− 1·2	458	− 19·9
1905	3321	+ 5·3	565	+ 23·3
1906	3435	+ 3·4	565	...
1907	3109	− 9·5	412	− 27·1

The greater variability of the imperial crop is not, of course, due merely to
the relatively small area of growth. It so happens that, owing to climatic
conditions, India and Australia are liable to almost complete crop failures, while
the Canadian harvest is also extremely variable.

sumption, comes from the interesting study by M. Lazard on *Le Chômage et la profession.* Using figures from the French census of 1901, he takes the percentages of unemployment there recorded in a number of industries, and sets them alongside of the average number of men (*moyen effectif*) per establishment in the several industries, and finds, on a method of his own, an inverse correlation. Connecting large unemployment with variable demand, he explains this correlation by the relation, that he believes to subsist, between a large *moyen effectif* and *l'extension des débouchés commerciaux.* " The connection between this latter phenomenon and the size of the personnel is evident. Large establishments exist only when the markets to be served are considerable. Now, a large market must also be a relatively stable market, because, in it considerable decreases in the consumption of some customers have a chance of being balanced by increases in the consumption of others ; and this stability, implying, as it does, stability of production, implies at the same time the absence or, at all events, a diminution, of unemployment." [1] In like manner, he argues : " If unemployment seems to grow as we pass upward from primary towards finishing industries, this circumstance is explained by the fact that the industries at the top of the scale, being more specialised, have narrower markets. On the other hand, the industries that deal with raw products provide the material needed by numerous other industries, and, therefore, enjoy the advantages which a multitude of outlets confer." [2] The same principle may, of course, be applied

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[1] *Le Chômage et la profession,* p. 336-7. M. Lazard adds : "A ce premier avantage, propre aux grandes entreprises, du fait de leur organisation commerciale, il s'en ajoute d'autres, résultant du mécanisme de la production. Lorsque la direction de l'industrie est concentrée dans un petit nombre de mains, les chefs d'entreprises connaissent le marché qu'ils fournissent mieux que ne font, dans leurs sphères respectives, les petits ou moyens entrepreneurs des autres branches industrielles. Sachant sur quelle consommation ils peuvent compter, ils règlent leur production en conséquence. . . . Notre hypothèse demanderait d'ailleurs à être vérifiée, car plus d'une industrie fait apparemment exception à la règle indiquée ; on remarque, par exemple, que l'agriculture, l'industrie humaine par excellence, est assez épargnée par le chômage, bien que l'effectif moyen des établissements y soit très réduit. Il semble que l'on puisse attribuer cet état de choses au fait que les débouchés sont plus stables dans l'agriculture que dans l'industrie proprement dite ; en outre, le nombre des entreprises agricoles est naturellement limité par l'inextensibilité de la surface cultivée."—*Ibid.* pp. 337-8.   [2] *Ibid.* p. 337.

to explain the stability of the demand for railway transportation, as compared with the demand for such things as coal, sugar, or iron.

§ 7. Among the more special influences affecting the variability of the supply of raw materials and other co-operant factors employed in an industry, it is necessary to include those which determine how far the raw materials are subject to monopoly and how far they can be made for stock in bad times; for, clearly, the more easily this can be done, the smaller the variability of their supply in the market is likely to be. Apart from these influences, the bearing of which has already been examined in the fourth and fifth sections, the most important are seasonal changes of climatic conditions. For, the light and heat received from the sun are among the most important co-operant factors in the conduct of many industries. The amount of variability in the demand for labour and waiting, that results from these changes, is, in general, large in outdoor, and small in in-door, industries. Thus, there is a high degree of seasonal variability in the building trades, because the advent of frost in winter seriously interferes with brick-laying, masonry and plastering, while the shortening of the hours of daylight, by necessitating resort to artificial illumination, adds to the costs, and further handicaps such work. No doubt, recent developments, such as the substitution of cement for mortar, are doing something to mitigate the influence of climatic changes upon this industry,[1] but their influence is still of very great importance. The same remark applies to the industry of discharging cargoes at the London Docks, which is liable to serious interruptions by frost and fog. On the other hand, indoor trades and trades little dependent on weather conditions, such as engineering and shipbuilding, display a relatively small amount of seasonal variability. Thus, according to a study by Sir H. Llewellyn Smith extended over some years, the mean difference between the best month and the worst month was $3\frac{1}{4}$ per cent in the building trades and only $1\frac{1}{8}$ per cent in the engineering and shipbuilding trades.[2]

[1] Cf. Dearle, *Economic Journal*, 1908, p. 103.
[2] Cf. *Committee on Distress for Want of Employment*, Q. 4580.

§ 8. Of the more special influences affecting the variability of demand for the commodity which an industry produces, the two most important are the effects of use on the continued existence of the commodity and the nature of the purpose which it serves. The operation of the former influence may be explained thus. Commodities, which are durable in the ordinary physical sense, may be divided into two groups, according as they are or are not destroyed by being used. Wheat is an example of the one class; ships, houses, and rolling stock (to a limited extent) of the other. Now, if the demand for wheat rises for a few years considerably above the normal, and afterwards returns to the normal, the demand for labour and waiting, to invest in wheat production, becomes again pretty much what it was before the change. If, however, the demand for ships, or houses, or rolling stock rises and afterwards falls again to the normal, the restored normal demand finds itself confronted with a greatly expanded stock. Consequently, the demand for *new* ships, houses, and rolling stock, and, therewith, the demand for labour and waiting to invest in the production of these things, is much smaller than it was before the change. In short, a boom in the demand for these commodities, not only causes investment to rise above the normal during the boom, but also causes it to fall below the normal when the boom recedes. Hence, non-destructibility in use is a cause making for large absolute variability in the demand for labour and waiting, in respect of commodities possessing this quality. There remains to be considered the way in which the variability of the demand for a commodity is affected by the nature of the purpose which the commodity serves. In this connection two important distinctions may be drawn. The first is between instrumental goods and consumption goods. Besides independent causes affecting the demand for different sorts of goods, there also come into play from time to time common causes affecting the demand for all of them. Among these common causes are general variations of industrial expectations. The ultimate forces, upon which these depend, are discussed at length in Part IV. In that Part, however, no attention is paid to the fact that these general variations involve divergent changes in respect of

different industries. We have here to add, therefore, that an improvement in industrial expectations, since it implies an increased desire to invest, raises the demand for instrumental goods more than that for consumption goods; and that, in like manner, a worsening in industrial expectations lowers the demand for instrumental goods more than that for consumption goods. It follows that, if we may suppose the independent causes making for variability of demand to be about equally important in respect of both sorts of goods, the aggregate variability of demand, when the influences of common, as well as of independent, causes is taken into account, will be greater in the case of instrumental goods. The second distinction is between articles required for immediate personal use " for their own sake," and articles which are desired more largely as means to distinction through display. The demand for articles of the former sort is likely to be the more stable, because, as Jevons suggests, people's desires in respect of them are likely to be steady for a longer period. For example, we may notice the stability of the pinafore industry : " No clothing trade (in Birmingham) suffers so little from short time."[1] On the other hand, commodities that are largely display articles are liable to fluctuations of desire, as opinion transfers the distinction-bearing quality from one thing to another. It follows that the demand for labour and waiting is likely to be less variable in industries that make common objects of general use than in those that make luxuries. This distinction, it may be remarked in passing, incidentally suggests the inference that an equalisation of distribution by the transference of wealth from the very rich to the moderately well-to-do would make for industrial stability.[2]

§ 9. The principal influences, by which the variability of the absolute demand for labour and waiting in an individual industry is determined, have now been studied. In this way the first step towards the solution of the problem, proposed in the present chapter, has been taken ; for, it is obvious that, other things being equal, the relative variability on the whole of the demand for labour and waiting will be diminished or

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[1] Cadbury, *Women's Work and Wages*, p. 93.
[2] Cf. Hobson, *The Industrial System*, p. 286.

increased by anything that diminishes or increases the absolute variability of demand at any point. To complete the solution, we have now to inquire by what further influences, when the absolute variabilities of demand, in respect of the normal industries of a country, are given, the relative variability of demand in that country is governed. These further influences fall into two broad groups, which it is convenient to examine separately.

The first group is sufficiently straightforward. The relative variability of the demand for labour and waiting in the country is diminished, in so far as it is practicable and customary for industrialists subjected to a temporary boom of demand, to transfer orders to other industrialists subjected to a temporary depression. As between firms engaged in making different commodities, this kind of transference is not, of course, feasible. But, as between firms in different places, engaged in the production of the same commodity, the case is otherwise. When the pressure of demand upon any of them is exceptionally great, they can give out work "on commission" to others, who are less pressed. Under conditions of competition, transferences of demand on this pattern are, of course, considerably obstructed by mutual jealousies and other causes. When, however, a number of firms in an industry are amalgamated under one control, the management has complete freedom to redistribute orders among different establishments, in such wise as to keep their relative output approximately constant. Thus, *ceteris paribus*, amalgamation of competing firms in any country tends to lessen the relative variability of demand for labour and waiting.

The second group of further influences is somewhat more complicated in its operation. At first sight it seems obvious that the relative variability of demand is diminished by anything that diminishes the proportion in which a country's resources are devoted to industries of high absolute variability. To this conclusion, however, it may be objected that, in so far as industrial fluctuations are brought about by general movements of industrial expectations, the demand for labour and waiting in industries making instrumental goods is made to vary relatively to the demand in industries making consump-

tion goods.   It follows that, if industrial fluctuations were
brought about solely by general movements of industrial ex-
pectations, the relative variability of demand would be greater,
not in a country producing exclusively instrumental goods of
high absolute variability, but in one producing instrumental
goods of high variability, and consumption goods of low
variability, in about equal proportions.   This result shows
that the relative variability of demand for labour and waiting
in any country cannot be related simply to the proportion in
which its resources are distributed between stable and unstable
individual industries.   For, a given proportionate distribution
will affect relative variability differently, according to the nature
of the causes to which the high variability of the unstable
industries is due.   When an industry is unstable, because the
commodities which it makes are not destroyed in use, or
because the purpose which it serves is to satisfy a fashion,
every diminution in the proportion of resources devoted to that
industry is likely to lessen the relative variability of demand.
But, when an industry is unstable, because it is concerned
with instrumental goods, a diminution, beyond a certain point,
in the resources devoted to it is likely to increase this relative
variability.

It does not seem practicable to carry a general analysis
further than this.   The result obtained, when applied in
detail to the facts of particular cases, should enable us to say
in what countries the relative variability of the demand for
labour and waiting is likely to be large or small, and in what
countries, therefore, it is likely to increase by a large or small
amount the injury which impediments to movement inflict
on the national dividend.

CHAPTER VII

§ 1. UP to this point we have raised no question as to the
essential validity of the classical doctrine that self-interest, if
not interfered with, tends to make the marginal net products
of resources in all uses equal. The preceding chapters have
exhibited certain ways in which this tendency may, in practice,
be obstructed, but they have not challenged the reality of
the tendency itself. In the chapters that follow a more
searching study will be made. It will be shown that, in
certain cases, self-interest left to itself does not tend to
bring about equality of marginal net products, and that, there-
fore, in these cases certain specific acts of interference with
the free play of self-interest are likely, not to diminish, but to
increase the national dividend. This reasoning, it must be
clearly understood, involves no attack upon the view that inter-
ference with the free play of self-interest in general, interference,
that is to say, introduced purely at random, is likely to promote
inequality, and the elimination of such interference, to pro-
mote equality of marginal net products. There is no ground
for regarding the discussion that follows as contradictory to this
broad conclusion. The judgment that interference in general
is injurious is in no way incompatible with the judgment that
particular acts of interference, deliberately designed to correct
particular errors, are advantageous. It remains true that the
consumption of drugs in a general and miscellaneous manner
is likely to have detrimental effects upon health, however

clearly we may succeed in proving that particular drugs, consumed in particular quantities at particular times, are likely to prove highly beneficial. So much being understood, we may proceed to our next problem—a problem so complex that it is most conveniently attacked in stages.

§ 2. The first step is to distinguish between the true net product, or social net product, of any unit of investment and the private net product. By the " social net product " is meant the aggregate contribution made to the national dividend; by the " private net product," the contribution made to the earnings of those responsible for the industry under review. It is evident that, in general, industrialists are interested, not in the social, but only in the private, net product of their operations. Clearly, therefore, there is no reason to expect that self-interest will tend to bring about equality between the marginal social net products of investment in different industries, when the social net product and the private net product in those industries diverge. *Prima facie*, however, there does seem reason to expect that self-interest will tend, in many cases, to bring about equality of marginal private net products. In the present chapter I shall assume provisionally that it acts in this way. Assuming this, we may lay it down that the marginal social net product, in any selected industry, will exceed or fall short of the marginal social net product yielded in the generality of industries, by the amount by which it exceeds or falls short of the marginal private net product in the selected industry. I shall proceed, therefore, to examine the various circumstances, in which the social net product and the private net product of any r^{th} unit of investment in an industry diverge from one another in either direction. There are certain general sorts of divergence, that are liable to occur even under conditions of simple competition, certain additional sorts, that may be introduced under conditions of monopolistic competition, and yet others that may be introduced under conditions of bilateral monopoly.

§ 3. First, among the general sorts of divergence, may be noticed an important group, arising out of the customary form assumed by certain contracts, and usually appearing in connection with enduring instruments of production. In many fields of industry it is customary for such instruments to be owned

by one set of persons and leased out for use to another set, and it is, further, customary for the owner to renounce all responsibility for some of the many kinds of expenditure, that may be required for the purpose of maintaining or improving the instruments. How far the field of renunciation extends varies, of course, with the tradition of different places. It appears, for example, that in Ireland, owing to the poverty of many landlords, the kinds of expenditure on land, which they leave wholly to their tenants, are more numerous than in England.[1] The point of present importance, however, is that, in very many cases, *some* field of renunciation exists. In all such cases, some divergence between the private and the social net product of investment is liable to occur, and is larger or smaller in extent according to the terms of the contract between lessor and lessee.

§ 4. The social net product of an assigned dose of investment being given, the private net product will fall short of it by an especially large amount under a system, which merely provides for the return of the instrument to the owner, at the end of the lease, in the condition in which the instrument then happens to be. In this case, the private net product of any r^{th} unit of investment falls short of the social net product by nearly the whole of the deferred benefit which investment would confer upon the instrument. It need not fall short of it by quite the whole of this deferred benefit, because a tenant, who is known to leave hired instruments in good condition, is likely to obtain them more easily and on better terms than one who is known not to do this. So far, careful tenancy yields an element of private, as well as of social, net product. Since, however, separate contracts are often made at considerable intervals of time, the above qualifying circumstance is not especially important. Passing over this point, therefore, we notice that, since the effects of investment in improving and maintaining instruments generally exhaust themselves after a while, the contraction, which the form of tenancy just described brings about in private net product, is not likely to be considerable in the earlier years of a long lease. In the later years of such a lease, however, and during the whole period of a short

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[1] Cf. Bowen, *Modern Ireland*, p. 63.

lease, it may be very considerable. Indeed, in the case of
tenancies of land, it is often found that, towards the close of his
tenancy, a farmer, in the natural and undisguised endeavour to
get back as much of his capital as possible, takes so much out
of the land that, for some years afterwards, the yield is
markedly reduced.[1]

The form of tenancy just described is obviously illustrated
by that primitive type of contract between landlord and tenant,
in which nothing is provided concerning the condition of the
land at the end of the lease. It is, however, by no means
found only in this type of contract. Another very important
field, in which it is present, is that of " concessions " to gas
companies, electric lighting companies and so forth. A system,
under which the plant of a concessionaire company passes
ultimately, without compensation, into the hands of the town
chartering it, corresponds exactly to the system of land leases
without provision for compensation for tenants' improvements.
Such a system prevails in regard to the Berlin Tramways. The
Company's charter provides that, "at the end of the contract, all
property of the road located in the city streets, including poles,
wires, any waiting-rooms built on city property, and patents,
come into the possession of the city without charge." [2] From
the present point of view, this system is similar to that of the
British Tramways Act of 1870 and Electric Lighting Act of
1881, which provide for the taking over of the company's
plant " upon terms of paying the then value (exclusive of any
allowance for past or future profits of the undertaking, or any
compensation for compulsory sale or other consideration what-
ever)." For, the " reproduction cost " of the plant laid
down in any year bears very little relation to the quantity
of investment made in the business during that year. On

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[1] Cf. Nicholson, *Principles of Economics*, vol. i. p. 418. This tendency is
still more marked when the tenant has fixity of tenure, coupled with the right
to a periodical revaluation of his holding by judicial process. For, in that case,
injurious conduct is not checked by the fear of a refusal on the part of the
landlord to renew the lease. Under the Irish system of judicial rents, a remedy
is nominally provided in the form of permission to the Courts to refuse revision
in gross cases. This remedy, however, is not utilised in practice. Mr. Bowen
(*Modern Ireland*, p. 113) illustrates this : "Two brothers divided a farm into
two shares of equal value—the good husbandman got a rent-reduction from the
Courts of 7½ per cent, the bad got one of 17½ per cent."

[2] Beamish, *Municipal Problems*, p. 565.

the one hand, the cost of replacing plant at any time is likely, through the progress of industry, to be quite different from the cost of setting it up; and, on the other hand, the expenses of advertisement, including the supply of service at a loss with a view to establishing a connection and building up goodwill, are not counted in reproduction cost at all. It follows that, under the German and English plans alike, the terminal franchise system must restrict very seriously the private net product of investment in extensions and so forth, unless some plan is adopted to obviate that result.[1] Furthermore, it is obvious that the restrictive influence will be most marked towards the close of the concession period. In view of this fact, M. Colson recommends a policy, under which negotiations for the renewal of concession charters shall be taken up some 15 or 20 years before these charters are due to expire.[2]

To the class of contract just described there is a close analogy in contracts dealing with the hire of labour. For, is not a workman a durable instrument of production, and is not

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[1] Of course, the English plan is not so severe as the German in respect of investments in plant made near to the close of the lease, for, presumably, for a short time the cost of manufacturing such plant will remain fairly constant. On investment designed to create goodwill, and, through this, future business, it is, however, exactly similar. Thus, after the agreement of 1905, by which the Post Office undertook to buy up in 1911 such part of the National Telephone Company's plant as proved suitable, at the cost of replacement, the Chairman of the Company stated that " the Company would not attempt to build up business that would require nursing as well as time to develop ; it would confine itself to operations that from the start would pay interest and all other proper charges." (H. Meyer, *Public Ownership and the Telephones,* p. 309.) A device for getting over the difficulty considered in the text is embodied in the contract extending the franchise of the Berlin Tramway Company to 1919. This contract provides, *inter alia* : " If, during the life of the contract, the city authorities require extensions within the city limits, which are not specified in the contract, the company must build as much as 93 miles, double track being counted as single. But the company should receive from the city one-third of the cost of construction of all lines ordered between Jan. 1, 1902 and Jan. 1, 1907; and one-half of the cost on all lines ordered between Jan. 1, 1908 and Jan. 1, 1914. For all lines ordered after that the city must pay the full costs of construction, or a full allowance towards the cost of operation, as determined by later agreement. The overhead trolley was to be employed at first, except where the city demanded storage batteries ; but, if any other motor system should later prove practicable and in the judgment of the city authorities should appear more suitable, the company may introduce it ; and, if the city authorities request, the company must introduce it. If increased cost accrue to the company thereby, due allowance being made for benefits obtained from the new system, the city must indemnify the company."—Beamish, *Municipal Problems,* p. 563.

[2] Of. Colson, *Cours d'économie politique,* vol. vi. p. 419.

a difference made to his productive powers in the future by the
wages he receives and the conditions under which he works in
the present ?   The workman, in short, corresponds to the owner
of his bodily powers, and the employer for the time being to
the tenant.   With owners' investments we are not, of course, con-
cerned here.   It is, however, obvious that openings exist for
investments by the tenant (*i.e.* the employer) in workpeople's
capacity, which would yield considerable social net product.
Under a slave economy, since the employer could secure for
himself the whole result of increased efficiency in his work-
people and their families, the whole of the social net product
of any unit of resources invested in the improvement of
their quality would be represented in private net product.
Under a free economy, however, since workpeople are liable
to change employers, and so to deprive investing tenants of the
fruits of their investment, the private net product is apt to fall
considerably short of the social net product.   Hence, socially
profitable expenditure by employers in the training of their
workpeople, in building up their health, and in defending them
against accident does not carry a corresponding private profit.
The extent to which the private falls short of the social net
product of any r^{th} unit of investment in these things, depends
upon the prospect that there is of employers retaining the
continued service of their hands.   The difference is likely
to be smallest in respect of firms engaged in the manufacture
of proprietary goods requiring a more or less specialised kind
of labour.   Hence, it is not surprising that, in these businesses,
investments of the kind here in question are especially
conspicuous.

§ 5. The deficiency of the private as compared with the
social net product of any r^{th} unit of investment, which
arises in connection with what I have called primitive
systems of tenancy, can be mitigated in various degrees
by the elaboration of more refined systems.   The general
character of these may conveniently be illustrated from the
special case of land tenure.   The first and most obvious
refinement consists in the provision of penalties for failure
on the part of tenants to return their land to the owner in
" tenantable repair."   Such penalties may be made operative

directly, through an explicit legal contract; or they may be made operative indirectly, by a rule forbidding the tenant to depart from the local customs of husbandry; or, again, they may be made operative through a modification in this rule concerning local customs, so arranged as to free enterprising tenants from the burden which the rule in its simple form imposes, without sacrificing the purpose of the rule. Thus, under the Agricultural Holdings Act, 1906, a tenant may depart from local custom, or even from a contract, as to cropping arable land, provided that he shall make " suitable and adequate provision to protect the holding from injury or deterioration " —except in the year before the expiration of the contract of tenancy. If the tenant's action under this section does injure the holding, the landlord is entitled to recover damages, and to obtain, if necessary, an injunction against the continuation of the tenant's conduct.

Secondly, the private net product may be made to approach more nearly to the social net product by rules providing that tenants shall be entitled to compensation from the owner for improvements effected by them. Rules of this sort were at first a matter of voluntary arrangement in the yearly leases made by landlords. Mr. Taylor quotes a Yorkshire lease, in which the landlord covenants to allow the tenant " what two different persons shall deem reasonable," in respect of the capital put into the land in the course of ordinary farming operations during the last two years of the lease.[1] Gradually, compensation schemes have been given a legal status. In 1875 an Act laying down conditions for compensating the outgoing tenant in England and Wales was passed, but contracting-out was permitted. In 1883 a new Act, the Agricultural Holdings Act, was passed, in which contracting-out was forbidden. The Act distinguished between improvements for which the landlord's consent was necessary, and those for which it was not necessary.[2] Scotland is now under a similar Act. It has largely superseded the old long leases, and these are now practically being modified out of existence.[3] The adjustment between private and

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[1] Cf. Taylor, *Agricultural Economics*, p. 305.
[2] *Ibid.* pp. 313 *et seq.*   [3] *Ibid.* p. 320.

social net product made by this arrangement is not, however, perfect. It is true that a tenant can claim compensation for improvements on quitting. But, he knows that the rent may be raised against him on the strength of his improvements, and his compensation claim does not come into force, unless he takes the extreme step of giving up his farm. Hence, the private net product of investment is still checked. This result is obviated under the Agricultural Holdings Act of 1906, where it is provided that : " When the landlord, without good and sufficient cause, and for reasons inconsistent with good estate management, terminates a tenancy by notice to quit," or when the tenant leaves in consequence of a proved demand for increased rent consequent upon tenants' improvements, the tenant may claim, not merely compensation for the improvements, but also " compensation for the loss or expense directly attributable to his quitting the holding," in connection with the sale or removal of household goods, implements of husbandry and so forth.[1] A similar provision is contained in the Town Tenants (Ireland) Act, 1906. Here, under the circumstances specified, compensation may also be claimed in respect of " goodwill." [2] These provisions would, indeed, make little difference if, as a matter of fact, it was contrary to custom for farms to change hands. Thus, Mr. Rowntree attaches little importance to the lack of compensation arrangements in some districts of Belgium : " Farms in Belgium do not often change hands, and the absence of compensation to outgoing tenants will not seriously influence the farmer's actions, unless he expects, either voluntarily or perforce, to leave

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[1] It must be noticed, however, that, when the land farmed by a sitting tenant is sold by one landlord to another, the tenant, should he elect to rent the farm under the new landlord, " is liable to be rented on any improvements which he has executed, without receiving any compensation."—*Report of the Committee on Tenant Farmers* [Cd. 6030], p. 6.

[2] The argument for compensation, it should be noted, is not that it would benefit the tenant. Professor Nicholson is right when he observes " that compensation for improvements will not benefit the tenant so much as is generally supposed, because the privilege itself will have a pecuniary value ; that is to say, a landlord will demand, and the tenant can afford to give, a higher rent in proportion. Under the old improving leases, as they were called, the rent was low because ultimately the permanent improvements were to go to the landlord." —*Principles of Economics*, vol. i. p. 322. Cf. Morison's account of Indian arrangements (*The Industrial Organisation of an Indian Province*, pp. 154-5).

his farm." [1]   The willingness of landlords to refrain from
using economic power for their own advantage, when the use
of this power is permitted by law, cannot, however, always be
assumed.

Finally, the private net product of any r^{th} unit of invest-
ment in the land may be raised above the social net product by
some forms of compensation arrangement. Some kinds of "im-
provement," for example, effected upon an estate, may not add to
the enduring value of the estate the equivalent of their cost of
production. If, therefore, the compensation for these improve-
ments is based, in any measure, upon their cost, the private net
product is raised above the social net product. In practice,
this danger is largely overcome by the rejection of initial cost
as a basis of compensation value, coupled with the require-
ment of the landlord's consent to some kinds of improvement.
Under the Town Tenants (Ireland) Act, 1906, for example,
when a tenant proposes to make an improvement, he must
give notice to the landlord, and, if the latter objects, the
question whether the improvement is reasonable, and will
add to the letting value of the holding, is determined by
the County Court. In some cases, however, there still
remains a possibility of slight excess in the private net
product. In order that private and social net product may
coalesce, the value of an improvement, for compensation
purposes, should be estimated subject to the condition that, at
interchanges of tenants, the land will probably stand for
a time unlet, and that during this time the improvement
is not likely to yield its full annual value. If this is not
done, it will pay a tenant to press investment further than it
will pay either the landlord or society to have it pressed; and
hence, when, as in the case of market-gardening, improve-
ments can be made without the landlord's consent, it will
check landlords from letting land under conditions that allow
the prospect of such improvements. It is, thus, theoretically
an error in the Agricultural Holdings Act of 1906, that it
defines the compensation, which an outgoing tenant may claim
for improvements, as " such sum as fairly represents the value
of the improvements to an incoming tenant." The standard

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[1] Rowntree, *Land and Labour*, p. 129.

ought to be "the value to the landlord." When, however, as is usually the case, improvements exhaust themselves in a few years, the practical effect of this error is very slight, and the private and social net product of any r^{th} unit of investment approximately coalesce.

§ 6. Besides divergences associated with the lessor and lessee relation, there are other divergences between private and social net product, that are liable to arise in connection with contracts. These divergences come about when the form of the contract is such that the payment to an individual is made to correspond, not with the actual amount of service done by the individual, but with some rough index of this service, which does not vary as the service varies. The type of contract in question not infrequently occurs in respect of the purchase of labour. The wage-contract is often so framed that an addition to effort on the part of workpeople, beyond a certain point, though it would yield a social net product, would not yield an equivalent private net product to those undertaking it. This sort of divergence does not exist to any considerable extent under piece-wages, for, when wages are paid on that plan, additional output is rewarded by additional pay.[1] It is not *necessary* that divergence should exist under time-wages, for, by means of careful records and corresponding adjustments, time-wages can be arranged at differing rates adapted to the work of different men.[2] As a matter of practice, however, when time-wages prevail, the payment of wages adapted to the capacities of different men is exceedingly difficult to organise. Employers hesitate to pay their more efficient hands much more than the "standard" or "minimum" rate, for fear that such extra payment should be made the excuse for demands by the Union for a rise in the standard itself. This difficulty can, indeed, sometimes be got over by payments made secretly,[3] and

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[1] Even here there is some divergence, in so far as the quick worker occupies the employer's machine for a shorter time than the slow worker.

[2] Cf. for an elaborate attempt on these lines, Gantt, *Work, Wages, and Profits*, ch. iv.

[3] For example, a New Zealand employer told Mr. Aves that "he was alive to the danger of a rigid scale of remuneration, and thus to some of his men he was paying 'something extra' a day. But, this was done 'on the quiet.' The men are paid in paper and metal currency, the loose coinage being folded in the notes. The array of little packages was shown me. All are paid with great

in other ways.   Furthermore, even when adjustment to different capacities is very incomplete, the effect of time-wages, in causing the private net product of energy in work to fall below the social net product, is mitigated by the fact that the better workmen will be the last to suffer dismissal in bad times.   It is also counteracted to some extent by its tendency to stimulate the energies of the worse men.   For, these men naturally strive to screw up their efficiency, so as to diminish their chance of selection for dismissal.   Since, however, the stimulus is towards creating power, and the impediment merely towards leaving unused existing power, the effect of the latter is likely to be the larger of the two.   These mitigations are, therefore, only partial.   Time - wages, in practice, generally make the private net product of unusual energy in work less than the social net product, and, thereby, cause the supply of such energy to be less than is desirable from the standpoint of the national dividend.[1]

§ 7. Up to this point we have been concerned with divergences between social and private net product, that occur in connection with contracts.   A purchases something from B, but the contractual form is such that he fails to pay for as much as, or is required to pay for more than, he receives. It has now to be observed that divergence may also occur, when the uncharged service or disservice rendered by B accrues, not to A, with whom he is in contractual relations, but to some quite different person.   In this section I shall give examples of incidental uncompensated services.   Such services are rendered, when resources are invested in private parks in cities ; for these, even though the public is not admitted to them, improve the air of the neighbourhood.

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rapidity, and 'no one can tell what any one else receives'" (*Report on Wages Board* [Cd. 4167], p. 109).   In like manner, an English employer told the Charity Organisation Society's Committee on Unskilled Labour : "If one man is better than another, we give him 1s. or 2s. extra at the end of the week. We have to be careful that other men do not know that, or they want to know why. They cannot understand that it is because the man has served us better.   You cannot say openly, 'I will give you 2s. more.'   The man would be considered a favourite, and he would have a warm time in the stable at night" (*Report*, p. 109).

    [1] For a discussion of the relation between wages and efficiency in detail cf. *post*, Pt. III. Ch. II. §§ 2-5.

Such services are also rendered by railway developments, which enable workpeople to live in the country, though working in towns, and, thus, to bring up their children in healthy surroundings.[1] The same thing is true of resources devoted to afforestation, the beneficial effect of which on the climate often extends beyond the borders of the estates owned by the person responsible for the forest. It is true also of resources invested in such things as lamps erected at the doors of private houses, for these necessarily throw light also on the streets.[2] It is true, and this is a matter of growing importance, of resources devoted to the prevention of smoke from factory chimneys:[3] for this smoke in large towns inflicts a heavy uncharged loss on the community in respect of health, of injury to buildings and vegetables, of expenses of washing clothes and cleaning rooms, of expenses for the provision of extra artificial light, and in many other ways. It is true, again, of resources and activities devoted to the devising of good and healthy plans for the arrangement of the buildings in a town, or to the general organisation of steadiness in the employment of labour. It is true of resources and activities devoted to the perfecting of inventions and improve-

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[1] In Belgium the system of cheap workmen's tickets, which has been carried to great perfection, seems to act in this way. (Cf. Rowntree, *Land and Labour*, p. 108.) Dr. Mahaim offers some confirmation of the view that it acts so in the fact that Belgium is a land of "large towns" rather than of "great cities," a much larger proportion of the population living in communes of from 5000 to 20,000 inhabitants than is the case in France or Germany (*Les Abonnements d'ouvriers*, p. 149). At the same time, Dr. Mahaim admits that the cheap tickets have also an inverse effect. "On commence par aller à la ville ou à l'usine en revenant tous les soirs ou tous les samedis chez soi ; puis on s'habitue peu à peu au nouveau mileiu, et l'on finit par s'y implanter" (*ibid.* p. 143). In fact the cheap tickets "apprennent le chemin de l'émigration."

[2] Cf. Smart's *Studies in Economics*, p. 314.

[3] It has been said that in London, owing to the smoke, there is only 12 per cent as much sunlight as is astronomically possible, and that one fog in five is directly caused by smoke alone, while all the fogs are befouled and prolonged by it (J. W. Graham, *The Destruction of Daylight*, pp. 6 and 24). It would seem that mere ignorance and inertia prevent the adoption of smoke-preventing appliances in many instances where, through the addition they would make to the efficiency of fuel, they would be directly profitable to the users. The general interest, however, requires that these devices should be employed beyond the point at which they "pay." There seems no doubt that, by means of mechanical stokers, hot-air blasts and other arrangements, factory chimneys can be made practically smokeless. Noxious fumes from alkali works are suppressed by the law more vigorously than smoke (*ibid.* p. 126).

ments in industrial processes, since these cannot in practice be kept secret, and may not legally be patented for an indefinite length of time.   Finally, it is true of all resources devoted to purposes, a part of the fruits of which are likely to appear after the death of the investor and of those whose interest he regards as nearly equivalent to his own.   This means that, *ceteris paribus*, the private net product will always fall short of the social net product in respect of resources invested for a future return, and that the divergence will be larger the more distant the contemplated future return is.   For, the longer the delay, the more likely is it that the investor will be dead before the return accrues.[1]   Of course, the probability of death within any given time will differ according to climate, occupation and so forth.   But, in all cases it will be greater when the lapse of time is longer than when it is shorter.   Thus, the late Sir Robert Giffen wrote : " Probably there are no works more beneficial to a community in the long run than those, like a tunnel between Ireland and Great Britain, which open an entirely new means of communication of strategical as well as of commercial value, but are not likely to pay the individual enterpriser in any short period of time."   Furthermore, the more distant any part of the return is, the less likely is it that it will accrue to children, or near relatives, whom the investor regards as equivalent in some degree to himself. This point will be found subsequently to have considerable importance.[2]

§ 8. Before we pass to cases of the opposite sort, in which incidental disservices are rendered, and in which, therefore, the social net product falls short of the private net

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[1] If k be the fraction of importance that I attach to a pound in the hands of my heirs as compared with myself, and $\phi(t)$ the probability that I shall be alive t years from now, a certain pound *to me or my heirs* then attracts me now equally with a certain pound multiplied by $\{\phi(t) + k(1 - \phi(t))\}$ *to me* then.   This is obviously increased by anything that increases either $\phi(t)$ or k.

If, through an anticipated change of fortune or temperament, one pound after t years is expected to be equivalent to $(1 - a)$ times one pound now, a certain $\{\phi(t) + k(1 - \phi(t))\}$ pound of the then prevailing sort to me then attracts me equally with $(1 - a)\{\phi(t) + k(1 - \phi(t))\}$ pounds, of the now prevailing sort, to me then.   Therefore, a certain pound to my heirs will be as persuasive to call out investment now as the above sum would be if I were certain to live for ever, and always to be equally well off and the same in temperament.

[2] Cf. *post*, Part III. Ch. X. *sq.*

product of any r^{th} unit of investment, attention may be called to a very specious fallacy, which it is important to avoid. It has been argued, in effect, by Mr. Hobson that, in order to obtain the social net product of any unit of investment in new machines, it is necessary to subtract something from the private net product, so as to allow for the loss suffered by those sellers whose machines are rendered obsolescent.[1] If this argument were valid, reason would be shown for the policy of certain municipalities which, owning gas plant, shy, in the interest of the profits on gas, at the introduction of electric-lighting enterprises. The argument, however, is not valid. It is evident that the losses incurred by the owners of the old machinery are caused solely by the fall in prices, and must, therefore, be smaller than the corresponding gain to consumer's surplus. Hence, aggregate advantage grows with every addition to the resources invested in new machines, up to the point at which the net product at the margin, conceived without reference to the losses of the said owners, is equal to the net product at the margin of resources in other uses. This condition would not be satisfied in respect of net product conceived *with* reference to their losses. The condition, however, *must* be satisfied in respect of social net product as understood in this book. Hence, social net product cannot rightly be conceived with reference to the losses of the owners of existing machines, and must be conceived without such reference. That is to say, the social net product of any unit of investment in new machines is equivalent to the private net product of this unit, without anything being subtracted therefrom. For municipalities to refrain from investment in electric lighting so as to defend the earnings of their gas works is, from a social point of view, bad economy.

An attempt to avoid this conclusion may, indeed, still be made. It may be granted that, so far as direct effects are concerned, ordinary commercial policy stands vindicated. There remain, however, indirect effects. If elaborate and costly plant is liable to have its earnings reduced at short notice by new inventions, will not the building of such plant

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[1] *Sociological Review*, July 1911, p. 197.

be hindered ?   Would not the introduction of improved pro-
cesses on the whole be stimulated, if they were in some way
guaranteed against too rapid obsolescence through the com-
petition of processes yet further improved ?   In short, would
not the general adoption of the policy of municipalities with
gas plants enable the inventions, which are current in any
period, to be more extensively utilised ?   The direct answer to
this question is undoubtedly in the affirmative.   On the other
side, however, has to be set the fact that the policy proposed
would retain inferior methods in use when superior methods
were available.   Whether gain or loss on the whole would result
from these two influences in combination, is a question to
which it seems difficult to give any confident answer.   This
impotent conclusion is not, however, the last word.   The
argument so far has assumed that the rapidity, with which
improvements are invented, is independent of the policy
pursued with regard to their practical adoption ; and it is
on the basis of that assumption that our comparison of rival
policies fails to attain a definite result.   As a matter of fact,
however, improvements are much more likely to be made at
any time, if the best methods previously discovered are being
employed and, therefore, watched in actual operation, than if
they are being held up in the interest of established plant.
Hence, the policy of municipalities with gas plant indirectly
delays, not merely the adoption of improvements that have
been invented, but also the invention of new improvements.
This circumstance almost certainly turns the balance.   The
policy proper to ordinary competitive industry is, in general
and on the whole, of greater social advantage than the rival
policy.   It is not to the interest of the community that
business men, contemplating the introduction of improved
methods, should take account of the loss, which forward action
on their part threatens to other business men.   The example
of municipalities, in postponing the erection of an electric-
lighting plant till their gas plant is worn out, is not one
that should be imitated, nor one that can be successfully
defended by reference to the distinction between social and
private net product.

§ 9. Besides this imaginary case, there are, however, many

genuine cases, in which the social net product of any r^{th} unit of investment falls short of the private net product. Thus, incidental uncharged disservices are rendered to the general public, in respect of resources invested in the running of motor cars that wear out the surface of the roads. Similar disservices attend the resources invested in the erection of buildings in crowded centres; for, such buildings, by contracting the air-space and the playing-room of the neighbourhood, tend to injure the health and efficiency of people living there. The case is similar—the conditions of public taste being assumed—with resources devoted to the production and sale of intoxicants. To enable the social to be derived from the private net product of a sovereign invested in this form of production, the industry should, as Mr. Bernard Shaw observes, be " debited with what it costs in disablement, inefficiency, illness, and crime, with all their depressing effects on industrial productivity, and with the direct costs in doctors, policemen, prisons, etc., etc., etc." [1]   Perhaps, however, the crowning illustration of this order of excess of private over social net product is afforded by the work done by women in factories, particularly during the periods immediately preceding and succeeding confinement; for, there can be no doubt that such work often carries with it, besides the earnings of the women themselves, grave injury to the health of their children.[2]   The reality of this evil is not disproved by the low, and, in some cases, even negative, correlation, which is found to exist between the factory work of mothers and the rate of infantile mortality. For, in districts where women's work of this kind prevails, there is presumably—and this is the cause of the women's work—great poverty. This poverty, which is obviously injurious to children's health, is likely to be greater than elsewhere in families where the mother declines factory work, and it may be that the evil of the extra poverty is greater than that of the factory work. This consideration explains the statistical facts that are known. It obviously militates in no way against the view that, *other things equal*, the factory work of mothers is injurious. All that it tends

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[1] *The Common Sense of Municipal Trading*, pp. 19-20.
[2] Cf. Hutchins, *Economic Journal*, 1908, p. 227.

to show is that prohibition of such work should be accompanied by relief to those families whom the prohibition renders necessitous.[1]

§ 10. It is plain that divergences between private and social net product of the kind just considered cannot, like divergences due to tenancy laws, be mitigated by a modification of the contractual relation between any two contracting parties, because the divergence arises out of a service or disservice rendered to persons other than the contracting parties. It is, however, possible for the State, if it so chooses, to remove the divergence in any field by " extraordinary encouragements" or " extraordinary restraints " upon investments in that field. The most obvious forms, which these encouragements and restraints may assume, are, of course, those of bounties and taxes. Broad illustrations of the policy of intervention in both its aspects are easily provided. The private net product of investment is unduly large relatively to the social net product in respect of the production and distribution of alcoholic drinks. Consequently, in nearly all countries, special taxes are placed upon these industries. Dr. Marshall has proposed to apply the same principle to the case of resources devoted to the erection of buildings in crowded areas. He suggested, to a witness before the Royal Commission on Labour, " that every person putting up a house in a district that has got as closely populated as is good, should be compelled to contribute towards providing free playgrounds." [2] The principle is obviously susceptible of general application. It is employed in the recent enactment of a special petrol tax and motor car licence upon the users of motor cars, the proceeds of which are to be devoted to the service of the roads. It is employed again in an ingenious

[1] Cf. *Annual Report of the Local Government Board*, 1909-10, p. 57. The suggestion that the injurious consequences of the factory work of mothers can be done away, if the factory worker gets some unmarried woman to look after her home in factory hours, is mistaken, because it ignores the fact that a woman's work has a special personal value in respect of her own children. In Birmingham this fact seems to be recognised, for, after a little experience of the bad results of putting their children out to "mind," married women are apt to leave the factory and take to home work.—Cadbury, *Women's Work*, p. 175.
[2] *Royal Commission on Labour*, Q. 8665.

manner in the National Insurance Act. When the sickness rate in any district is specially high, provision is made for throwing the consequent abnormal expenses upon employers, local authorities or water companies, if the high rate can be shown to be due to neglect or carelessness on the part of any of these bodies. On the other side, the private net product is unduly small in industries such as agriculture, which are supposed to yield the indirect service of developing citizens suitable for military training. Partly for this reason, agriculture in Germany is accorded the indirect bounty of protection. In like manner, uses promising a distant return, the private net product of which is made by the fact of death unduly small, may sometimes claim the encouragement of a State loan free of charge, or, as is the case with Indian railways, of a government guarantee of interest. Finally, an extreme form of bounty, in which a governmental authority provides *all* the funds required, is given in respect of such services as the planning of towns, police administration, and, in some cases, the clearing of slum areas.

§ 11. So far we have been concerned with forms of divergence between social and private net product that are liable to occur even under conditions of simple competition. When conditions of monopolistic competition,—competition, that is to say, between several sellers each producing a considerable proportion of the aggregate output,[1]—are present, the way is opened up for a new kind of investment. This consists in competitive advertisements directed to the sole purpose of transferring the demand for a given commodity from one source of supply to another. Not all advertisement is, of course, strictly competitive. Some advertisement, on the contrary, fulfils a social purpose, in informing people of the existence of articles adapted to their tastes. It is not, however, necessary to my purpose to attempt an estimate of the proportion which strictly competitive advertisement bears to advertisement in the aggregate. That a considerable part of the advertisement of the modern world is strictly competitive is plain. This is true alike of the more obvious forms of advertisement, such as pictorial displays, newspaper para-

[1] Cf. *post*, p. 192.

graphs,[1] travellers, salesmen, and so on; and of the more
subtle forms, such as a large exhibit of jewellery in the shop
window, the according of credit, with the consequential expendi-
ture on book-keeping and on the collection of recalcitrant
debts, expenditure in keeping shops open at hours incon-
venient and costly to the sellers, and other such forms. It
is plain that, up to a point, investment of this type, in
so far as it retains or gains for the investor "a place in the
sun," yields, like expenditure upon national armaments, a
considerable private net product. A curve, representing the
private net product yielded by successive units of it, would
indicate positive values for a long distance. What relation
does this curve bear to the corresponding curve representing
the social net product of successive units?

First, it may happen that the net result of the expendi-
tures, made by the various rivals in conflict with each other,
is to leave one of them in command of the field, or to bring
about an alliance between them. In this case the expendi-
tures induced by a state of monopolistic competition are
responsible for the evolution of simple monopoly. It does
not seem possible to determine in a general way the relative
social advantage of simple monopoly as contrasted with mono-
polistic competition. Consequently, in this case, no general
statement can be made as to whether the curve representing
the social net product of successive units of investment will
indicate positive values over any part of its course.

Secondly, it may happen that the expenditures in these
directions made by competing monopolists will simply neutralise
one another, and leave the industrial position exactly as it would
have been if neither had expended anything. For, clearly, if
each of two rivals makes equal efforts to attract the favour of
the public away from the other, the total result is the same
as it would have been if neither had made any effort at all.
This point is set in a very clear light in Mr. Butterworth's
Memorandum to the Board of Trade Railway Conference. He
points out that, under competitive arrangements, the officers

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[1] Of course the "resources" invested in these things are measured by the
actual capital and labour involved in the production of the paragraphs, not by a
monopoly charge—if such is made—exacted for them by the newspaper con-
cerned.

of rival companies spend a great part of their time and energy in " scheming how to secure traffic for their own line, instead of in devising how best to combine economy with efficiency of working. At present much of the time and energy of the more highly-paid officials of a railway company is taken up with work in which the trading community has no interest, and which is only rendered necessary in the interest of the shareholders whom they serve by the keen competition which exists between companies." [1] In cases of this kind, the curve representing the social net product of successive units of investment will indicate negative values throughout.

Thirdly, it may happen that the expenditures lead simply to the substitution in a market, of goods made by one firm for the same quantity of equivalent goods made by another firm. If we suppose production, both under A's auspices and under B's, to obey the law of constant return, and to involve equal cost per unit, it is clearly a matter of complete indifference socially from which of these two producers the public buys. In other words, all units of resources expended by either producer in building up goodwill as against the other, have a social net product equal to zero. If conditions are such that a diminution in the aggregate cost of production of the commodity would be brought about by the transference of some of the orders from B to A, some units of resources employed by A to abstract orders from B would yield a positive social net product, while all units of resources employed by B to abstract orders from A would yield a negative social net product. If we suppose the more efficient and the less efficient firms to expend resources in these hostilities in about equal measure, in such wise that their efforts cancel one another and leave things much as they would have been had the efforts of both been removed, it is obvious that the social net product of any compound unit of these efforts taken as a whole is, again, zero. There is, however, some slight ground for believing that firms of low productive efficiency tend to indulge in advertisement to a greater extent than their productively more efficient rivals. For, clearly, they have greater inducements to expenditure on devices, such

[1] *Railway Conference*, p. 27.

as special packages, designed to obviate comparison of the bulk of commodity offered by them and by other producers at a given price. This consideration suggests that the curve representing the social net product of successive units of investment is likely to indicate negative values throughout.

The discussion of the preceding paragraphs makes it plain that, speaking generally, the social net product of any r^{th} unit of resources invested in competitive advertisement is exceedingly unlikely to be as large as the private net product. It remains to observe that the waste normally resulting from this circumstance might be diminished by special undertakings among competitors not to advertise, such as hold good among barristers, doctors, and members of the London Stock Exchange. Failing this, the evil might be attacked by the State through the taxation or prohibition of competitive advertisements—if these could be distinguished from advertisements which are not strictly competitive. It could be removed altogether if conditions of monopolistic competition were destroyed.

§ 12. We now turn to conditions of bilateral monopoly, that is to say, conditions under which the relations between an individual buyer and seller are not rigidly determined by a surrounding market. The presence of bilateral monopoly in this sense implies an element of theoretical indeterminateness. Instances in point are afforded by the relations subsisting between the landlords of sailors' lodging houses and their tenants, between individual employers and individual workmen in unorganised trades, between individual money lenders and their customers and between large railway companies and large shippers. In all such cases the way is open for a kind of activity, which Professor Pareto has distinguished in the following terms : " The activities of men are expended along two routes, the first being directed to the production or transformation of economic goods, the second to the appropriation of goods produced by others. In classical antiquity war was the principal means of appropriating the goods of others, and the victims were foreigners ; to-day appropriation takes place chiefly at the expense of the appropriator's compatriots." [1]   It is plain that, apart from legal penalties,

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[1] *Manuale di economia politica*, pp. 444-5.

activities or resources devoted to appropriating the goods of others, may, if successfully conducted, yield a positive private net product. It is equally plain that even the earliest dose of them cannot yield a positive social net product, and may, in some circumstances, yield a negative social net product. Apart from the employment of physical force for purposes of direct plunder, the activities here contemplated consist chiefly in the brain work of " bargaining " proper and in the practice of one or other of two sorts of deception. These latter are, first, deception as to the physical nature of a thing offered for sale, and, secondly, deception as to the future yield that it is " reasonable to expect " from a thing offered for sale, when the physical nature of that thing has been correctly described.

§ 13. Of bargaining proper there is little that need be said. It is obvious that intelligence and resources devoted to this purpose, whether on one side or on the other, and whether successful or unsuccessful, yield no net product to the community as a whole. According to Professor Carver, a considerable part of the energies of business men are devoted to, and a considerable part of their earnings arise out of, activities of this kind.[1] In so far as this is the case, the activities are wasted, and, while contributing a private, do not contribute a social net product. This conclusion does not, however, exhaust the subject. It is often pointed out that, where workpeople can be squeezed, employers tend to expend their energy in accomplishing this, rather than in improving the organisation of their factories. " Low-priced labour is a great obstacle to improvement. It discourages invention and removes or prevents the growth of a great stimulus to progress and efficiency. . . . It has been shown over and over again that, when employers are prevented from developing their business along the lines of cheap labour or bad conditions, they proceed to develop it along the lines of improved methods, and that the improved methods tend both to increased output and to greater cheapness."[2] Thus, Mr. Rowntree believes factory equipment and so forth to be worse

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[1] *American Economic Association*, 1909, p. 51.
[2] Black, *Makers of our Clothes*, pp. 185-192.

in Belgium than in England.   As the employer, he writes, " finds ready to his hand a large supply of badly organised labour willing to work very long hours for exceedingly low wages, he naturally takes the line of least resistance, and makes use of this instead of striving after improved methods and investing in labour-saving machinery." [1]   In this case, since the efficiency of the workpeople probably suffers, while that of the employers is not appreciably improved by these wage - arrangements, the social net product even of the earliest dose of resources devoted to bargaining may be, not merely zero, but negative.   In such a case, no tax that yields a revenue, though it may affect an improvement, can lead to maximum satisfaction, but absolute prohibition is required.   Attempts in this direction are made in the Particulars Clause of our 1901 Factory and Workshops Act, and in much British legislation against " truck."   By removing, as far as possible, all ambiguity from the wages contract it is hoped to narrow the field available for bargaining activity.

§ 14. Deception as to the physical nature of a thing offered for sale is practised, in respect of commodities, in all cases of false weights and measures, adulteration and misnaming of goods.   Before the days of co-operation, " the back streets of the manufacturing towns swarmed with small shops, in which the worst of everything was sold, with unchecked measures and unproved weights." [2]   To a less degree similar practices still prevail.   There is little temptation to adopt them in regard to " production goods," where the buyers are large industrial concerns, like railway companies, often possessing elaborately organised " testing " departments.   But, in regard to " consumption goods " offered for sale to poor and ignorant buyers, and even in regard to production goods, offered to less skilled buyers such as farmers, there is still some temptation.   Deception as to the future yield, which it is reasonable to expect from a thing offered for sale, is practised, in the main, by unscrupulous financiers in respect of stocks and shares. Among the methods employed are the manipulation of dividend payments, " matched orders," and the deliberate publication

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[1] *Land and Labour*, p. 530.
[2] Aves, *Co-operative Industry*, p. 16.

of false information.[1] It is evident that, up to a point, activities devoted to either of these forms of deception bring about a positive private net product, but not a positive social net product. Furthermore, they often lead to enhanced purchases and, therefore, enhanced production of the thing concerning which deception has been practised. Hence, they divert to the production of this thing resources that would otherwise have been devoted to forms of production yielding the normal marginal return. Therefore, when this indirect consequence is taken into account, the social net product, even of the earliest dose of resources devoted to deception is, in general, not zero but negative. If the thing in question is something the production of which involves no expenditure of resources, like the fictitious situations created by fraudulent registry offices, the social net product does not, indeed, sink below zero, for extra production of these imaginary entities involves no withdrawal of resources from elsewhere. In most cases, however, the social net product of any dose of resources invested in a deceptive activity is negative. In such circumstances, as in the case of bargaining, no tax that yields a revenue, though it may affect an improvement, can lead to maximum satisfaction, and absolute prohibition of the activity is required. Attempts to provide such prohibition have been made, on the one side, in various laws concerning false weights and measures and the adulteration of foods, and, on the other side, in various laws designed to control and regulate the practice of company promotion. In other fields the evil in question can be met in a more direct way by the establishment of Purchasers' Associations, in which the interests of the sellers and the buyers are unified.[2]

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[1] For a lurid account of some of these methods *vide* Lawson, *Frenzied Finance, passim,* and for an analysis of the protective devices embodied in the celebrated German law of 1884, *vide* Schuster, *The Promotion of Companies and the Valuation of their Assets according to German Law.—Economic Journal,* 1900, p. 1 *et seq.*

[2] Cf. *post,* Part II. Ch. XIV.

CHAPTER VIII

THE EQUALITY OF MARGINAL NET PRODUCTS IN DIFFERENT USES UNDER SIMPLE COMPETITION

§ 1. IN the preceding chapter it was provisionally assumed that self-interest tends to equate marginal private net products in different industries, and that it, therefore, fails to equate marginal social net products, only in so far as private and social net product diverge. We have now to consider how far this provisional assumption is justified. To simplify the exposition, I shall now ignore the fact that marginal private net product and marginal social net product are liable to diverge, and shall, henceforward, speak of " marginal net product " without qualification. The general nature of our problem can be best understood with the help of a few simple diagrams. Let it be assumed that private supply prices and social supply prices coalesce throughout. In respect of any industry, construct a demand curve DD', and let it be assumed, to obviate certain complications, that this demand curve is also a curve of marginal demand prices.[1]
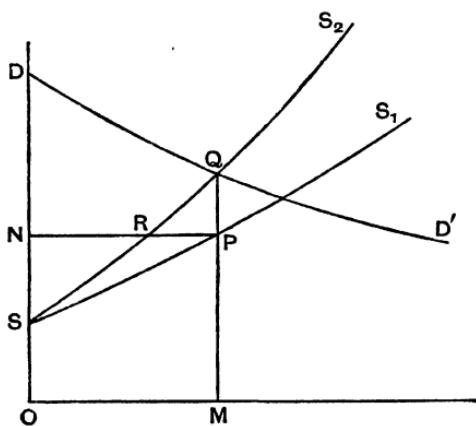
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[1] Cf. my paper on " Producers' and Consumers' Surplus," *Economic Journal*, Sept. 1910. The relation between a *demand curve* and a *curve of marginal demand*

Construct, secondly, a supply curve SS_1, of the ordinary type, a curve, namely, such that, if a perpendicular PM be drawn from any point P upon it to cut the base line in M, PM represents the price which, in the long run, tends to maintain an annual output OM. Finally, construct a curve of marginal supply prices SS_2, such that, if a perpendicular QM be drawn from any point Q upon it to cut the base line in M, QM represents the difference made to the aggregate expenses of the industry concerned by the production of the OMth unit of output.[1] Let the curve of marginal supply prices cut the demand curve in Q. Then, in order that equality may be established between the marginal net product of resources in our selected industry and in other industries, it is necessary that the output of our industry be OM units. In so far as the output exceeds OM units, the marginal net product of resources invested in that industry is less than the marginal net product in industries in general; in so far as the output falls short of OM units, the marginal net product is greater than in industries in general. In future chapters I shall inquire into the relation, under monopolistic competition and under monopoly proper, between the output— we may call it the ideal output—which would equalise marginal

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prices is analogous to that between a *supply curve* and a *curve of marginal supply prices*, to be described immediately.

[1] It must be carefully observed that "the difference made to aggregate expenses" by the production of the OMth unit of output, means the difference between the aggregate expenses of an industry when it is producing and is *fully adjusted to producing x* units, and when it is producing *and is fully adjusted to producing* $(x + \Delta x)$ units. It does *not* mean the difference made in any one year by the addition of Δx units to the output of an industry adapted to the production of x units. We start from the position that no provision is made for producing any unit, and not from the position that provision already exists for producing x units. This distinction may be illustrated from the facts of railway transportation. If provision already exists for transporting x units of traffic, an extra parcel will involve very little extra cost, a second will involve very little, until at last another extra parcel involves the putting on of another truck and has an enormous cost; the next parcel after this involves a very small cost; and so on. If, however, at the start, no provision exists, we must conceive the conditions to be adapted in every case to the quantity of transportation required. The loading of all the trucks will be different according to the total quantity to be carried. The next step after 40 overloaded trucks would not be 40 overloaded trucks *plus* one truck containing one parcel, but 41 lightly loaded trucks. In like manner, the next step after one set of overcrowded lines is not one overloaded set and one set carrying a very small traffic, but two moderately well-filled lines.

net products, and the actual output. The present chapter is concerned exclusively with conditions of simple competition.

§ 2. Under simple competition—where the output of each supplier is so small that he accepts, and does not attempt to modify, the price of the market—the exchange index necessarily stands at the point of intersection of the demand curve with the supply curve, and the output is such as to correspond with this position of the index. Hence, the actual output tends to be equal to the ideal output when the supply curve and the curve of marginal supply prices coincide, and it tends to diverge from the ideal output when these curves diverge from one another. This implies that the measure, in which the actual and the ideal output of any industry approximate to one another, is determined by the measure in which the supply curve and the curve of marginal supply prices approximate towards one another. It, therefore, becomes necessary to investigate the relation which, in different cases, subsists between these curves.

§ 3. The supply price of any quantity of output is, by definition, the price which tends to call out the production of that quantity annually. But if, in any industry, a price p_1 prevails for an output x, such that the total receipts of the industry exceed the total costs, including wages of management, interest and so forth, the resulting surplus operates as a force drawing resources into the industry. Hence, equilibrium has not been established, and p_1 is not the supply price of x units, but is greater than this supply price. On the other hand, if, in any industry, a price p_2 prevails for an output x, such that the total receipts fall short of the total costs, the resulting deficit operates as a force expelling resources from the industry. Hence, here also equilibrium has not been established, and p_2 is not the supply price of x units, but is less than this supply price. It follows that the supply price of any output x must be such that the total receipts are equal to the total costs, and that there is no surplus either of a positive or of a negative character. This result, it should be noted, is not inconsistent with the ordinary doctrine of rent, because, in the present argument, various numbers of pounds' worth of resources, *including land*, are supposed to be employed in an industry, whereas, in the accepted treatment of rent,

various numbers of pounds' worth of capital and labour are supposed to be applied *to a given area of land.* The supply price of any quantity x is, then, such that the total receipts at that price are equal to the total costs, including the cost of the use of land as well as of the other factors employed. This means that the supply price of x units is equal to the sum of the marginal supply prices of each quantity from zero units to x units, divided by x. Hence, a perfectly rigid relation exists between the supply curve and the curve of marginal supply prices in any industry. To exhibit this relation, from any point P on SS_1, draw PQM and PRN at right angles to the axes of X and Y respectively, and let PQM cut the curve SS_2 in Q. Then, if SS_2 is given, SS_1 is necessarily such that, for all positions of P and Q, the area PRQ is equal to the area SRN. It follows that, when SS_1 is a horizontal line, SS_1 and SS_2 coincide: when SS_1 is inclined positively, SS_1 lies below SS_2: when SS_1 is inclined nega-tively, SS_1 lies above SS_2. Furthermore, the rapidity with which SS_1 and SS_2 diverge from one another, as they move towards the right, is greater, the sharper is the inclination of SS_1 in either a positive or a negative direction.

§ 4. These conclusions are, in the abstract, obvious. Furthermore, as applied concretely to cases of constant and of increasing returns, they are not likely to be dis-puted. As applied, however, to cases of diminishing returns, they are apt to be regarded with suspicion. First, it is objected that negative inclination is only possible for a supply curve so constructed as to represent the cost of successive increments of produce in terms of capital and labour applied to a given quantity of land, and that, there-fore, a supply curve drawn on the plan here employed *cannot* be inclined negatively. This objection, however, ignores the fact that an increase in the output of any industry may
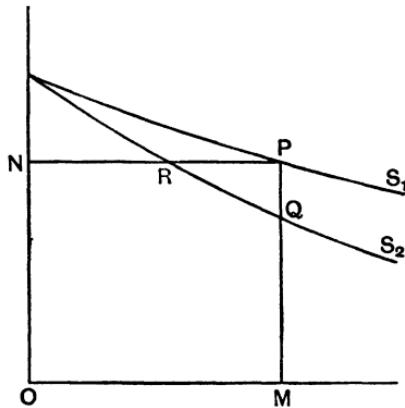
involve an increase in the price of the raw materials employed in it. When account is taken of that fact, it is easily seen to be invalid. Secondly, it is objected that, since, under diminishing returns, our argument makes the supply price of any quantity of output less than the marginal supply price, it implies that the marginal unit is continuously produced at a loss to the producer of it; and that this is impossible and absurd. This reasoning derives its plausibility from an implicit assumption that the *curve of marginal supply prices* employed here is equivalent to Dr. Marshall's *particular expenses curve.* That assumption, however, under conditions of simple competition, is not correct. The marginal supply price of x units is, on my definition, the difference between the aggregate expenses of the annual production of x units and of $(x + \Delta x)$ units respectively. When x units are being produced—and the same thing is true when $(x + \Delta x)$ units are being produced—the particular expense to the representative producer of producing any one unit, *all costs, including the hire of the necessary land, being reckoned in,* is equal to the particular expense of producing any other unit. That is to say, if p is the average full cost per unit of producing x units, the particular expenses curve, corresponding to the production of x units, is a horizontal line drawn parallel to the base line at a height representative of p. Hence, despite the fact that the *marginal supply price,* as defined above, is greater than p, it is *not* the case that some units are being produced at less than their individual cost. The second objection, therefore, like the first, breaks down, and our abstract conclusions vindicate themselves in the concrete.

§ 5. The general result is that, in industries of constant returns, the supply price and the marginal supply price of all quantities of output are equal; in industries of increasing returns the supply price is greater than the marginal supply price; in industries of diminishing returns the supply price is less than the marginal supply price. This result is, of course, equally valid, whether the supply price and marginal supply price in question refer to an operation yielding a single product or to one yielding several products jointly. It follows that, other things being equal, in industries of increasing returns the marginal net product of invest-

ment tends to exceed, and in industries of diminishing returns to fall short of, the marginal net product yielded in industries in general. Furthermore, the " error " in either case is greater, the more sharply diminishing or increasing returns, as the case may be, are acting.

§ 6. The argument of the preceding sections is complete, if we suppose that all the various producers, by whom the aggregate supply is contributed, are precisely similar. *Prima facie*, indeed, it might seem that, as regards increasing returns, we need to suppose further—a supposition incompatible with our assumption of simple competition—that only a single producer is at work ; for, with more than one supplier in the market, it is difficult to understand how stable equilibrium can exist. The difficulty, however, is apparent rather than real. Provided that certain external economies are common to all the suppliers jointly, the presence of increasing returns in respect of all together is compatible with the presence of diminishing returns in respect of the special work of each severally ; and this is sufficient to permit of stable equilibrium. Hence, no second supposition is required to validate our argument. It remains, however, to consider what results will follow if the first supposition mentioned above, that, namely, of precise similarity of all the various producers, is withdrawn. Now, in conditions of simple competition, equilibrium will be established, when the output is such that the demand price, the supply price in centre A, the supply price in centre B, and the supply price in every other centre are all equal. In order, however, that the marginal net products of resources in all parts of our industry may be equal to the marginal net product of resources in general, it is necessary that the demand price, the marginal supply price in centre A, the marginal supply price in centre B, and so forth, shall all be equal. Equality of supply prices in A and B, however, only implies equality of marginal supply prices, provided that the two centres of supply are exactly alike.[1] Hence, when the

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[1] If the two supply curves are straight lines, and if a and b are the distances above the origin, at which they respectively cut the axis of Y, it is easily shown that, for quantities of output, in respect of which A's supply price is equal to B's supply price, A's marginal supply price must exceed B's marginal supply price by $(b - a)$.

above - stated supposition is withdrawn, and attention is focused upon a market in which some of the centres of supply are dissimilar to others, it is found that simple competition involves a further element of maladjustment, additional to that which has so far been discussed. The marginal net products of resources invested in different centres of supply will diverge from the marginal net product of resources in general, not in a uniform manner, but some to a greater, and others to a smaller, extent.

§ 7. The results we have obtained lead directly to the following conclusions. When there is only one source of supply, or when all the sources are similar, it is possible to conceive, in respect of every industry obeying the law of diminishing returns, some general uniform rate of tax, the levy of which on the industry would make the marginal net product of resources in that industry more nearly equal to the marginal net product of resources in general than it would otherwise have been. In like manner, it is possible to conceive, in respect of every industry obeying the law of increasing returns, some general uniform rate of bounty, the grant of which would have this effect. If x measures the output of the industry corresponding to the intersection of the demand curve and the supply curve, and y the output corresponding to the intersection of the demand curve and the curve of marginal supply prices, all rates of tax or bounty, which cause output to move from x towards y, but not to pass to the other side of y, will make for equality of marginal net products, and *some* rates, which cause output to pass to the other side of y, will also do this. A special case of some interest arises, when the supply curve lies wholly above the demand curve, so that x is equal to zero, but the curve of marginal supply prices cuts the demand curve, so that y is a positive quantity. This special case will call for discussion at a later stage. When two or more of the sources of supply are not precisely similar to one another, it is still possible to conceive, under diminishing returns, some general uniform rate of tax, which will make the marginal net product of resources in the different centres of our industry more nearly similar to the marginal net product of resources in general than it would

have been under a regime of complete *laissez-faire*. It is not possible, however, to conceive any general uniform rate of tax, which will make the marginal net product of resources in all the centres of our industry equal to the marginal net product of resources in general. To achieve this latter purpose a system of differential taxes is necessary, under which a heavier impost is laid on those sources of supply in which the law of diminishing returns acts with the greatest force, and a lighter one on the other sources.[1]

[1] The whole of the above remarks apply to joint products as well as to commodities produced in isolation. There is, however, a special possibility in respect of a tax in kind—not an ordinary tax in money—levied on one of two joint products. If the elasticity of demand for one of them is less than unity, a tax in kind on that product will increase the output of both products, thus positively benefiting the consumers of the other product and, in some cases, adding to the aggregate sum of consumers' surplus.

CHAPTER IX

THE CONDITIONS OF MONOPOLISATION

§ 1. In the preceding chapter we supposed self-interest to act along the route of simple competition, and we inquired into its tendency to equalise marginal net products in all uses upon the basis of this supposition. The supposition, however, is not always warranted. The essential note of "simple competition" is that the supply of each seller constitutes so small a part of the aggregate supply that his advantage is best consulted if he "accepts market prices without trying, of set purpose, to modify them."[1] When any seller's output constitutes a substantial part of the whole, there is scope for various sorts of monopolistic action; and, when any sort of monopolistic action is present, self-interest does not tend to evolve an output corresponding to the intersection of the demand curve and the supply curve. In future chapters we shall be concerned to examine monopolistic action in detail. Before that is done, however, convenience suggests that some study should be made of the conditions which determine the appearance of monopolistic power.

§ 2. First, other things being equal, circumstances, which, when the aggregate scale of an industry is given, make it structurally economical for the typical individual establishment to be large, *pro tanto*, increase the likelihood that a single *seller* will market a considerable part of the aggregate output of his industrial field; for, such circumstances necessarily increase the probability that a single *establishment* will market a considerable part of that output.

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[1] Cf. Pareto, *Cours d'économie politique*, i. p. 20.

Whether any single establishment will, in fact, become big enough, relatively to the whole of an industry, to procure an element of monopolistic power, depends on the general characteristics of the various industries concerned. Such an event is more than usually likely in the case of industries concerned with fancy goods liable to become " specialities." For, in respect of these, there often exist, within the broad general market, minor markets, to a certain extent non-competitive among themselves; and, when this is so, an individual seller may supply a considerable proportion of his own minor market, without himself being of very great size absolutely. In the case of a few peculiar industries, among those concerned with staple goods and services, it may also well be that the prospect of internal economies will lead to the evolution of single establishments large enough to control a predominant part of the whole output of the industry. The most obvious and notable instance of this is afforded by the industry of railway transportation along any assigned route. In view of the great engineering cost of preparing a suitable way, it will, obviously, be much less expensive to have one or, at most, a few railways providing the whole of the transport service between any two assigned points than to have this service undertaken by a great number of railways, each performing an insignificant proportion of the whole service. Similar remarks hold good of the industries of furnishing water, gas, electricity or tramway service to a town. The existence of many separate establishments involves a multiplication of main pipes, wires, and rails. But, the whole business of any ordinary district can be worked with a very small number of these mains. Therefore, the existence of many separate establishments implies the investment of a great quantity of capital in mains, that are only employed in respect of a very small proportion of their capacity. There is an obvious economy in avoiding such investment. This economy is the *ultimate* reason for the tendency, which appears strongly in the class of industry just discussed, for individual establishments to furnish a large proportion of the total supply. The truth is partly veiled by the fact that the *immediate* reason is, in general, unwillingness, on the part of national and local governmental authorities, to allow the

right of eminent domain to be invoked, or the streets to be disturbed, on more occasions or by more people than is absolutely necessary.   It is, however, the extra expense of such procedure that lies behind this unwillingness on the part of the authorities.   In the general body of industries concerned with staple goods and services, the circumstances peculiar to railways and the allied industries are not reproduced.   Internal economies reach the limit long before the individual establishment has grown to any appreciable fraction of the whole industrial field relevant to it.   When this is the case, internal economies obviously cannot be responsible for monopolistic power.

§ 3. Secondly, other things being equal, circumstances which, when the aggregate scale of an industry and the size of the typical individual firm are given, make it structurally economical for the typical individual unit of business management — the number of establishments, for example, controlled by one authority—to be large, *pro tanto*, increase the likelihood that a single seller will market a considerable part of the aggregate output of his industry.   This proposition has, in recent times, become of predominant importance, and it is, therefore, necessary to examine carefully the various structural economies, for which large scale control may, in different situations, be responsible.

Much has been made by some writers of the fact that, when a number of parallel establishments are grouped under a single head, the different plants can be thoroughly specialised to particular grades of work ; and of the other kindred fact that the orders in any place can be met from the plant nearest to that place, and that, thus, cross freights are saved.   It does not appear, however, that a single control over many separate establishments is necessary in order to secure these economies.   Even though the different establishments were to remain separate, the industrial organism would tend, under the sway of ordinary economic motives, to evolve them.   Nor does it appear that those economies in respect of marketing, which some writers ascribe to large-scale control, are of great importance.   As Mr. Hobson quotes : " If a manufacturer is purchasing raw material, there is generally a market price for it which all must pay, and

which any one can obtain it for, so long as he buys the customary minimum quantity; while, if what he requires is a partly manufactured article, purchases amounting in value to hundreds of pounds per annum, accompanied by prompt payment, can generally be made at the cheapest possible rate. The sole advantage enjoyed by the largest concerns in the purchase of raw materials seems to me to lie in the possibility of occasionally clearing the market of raw materials or of a surplus output of partly manufactured stuff, by some purchase quite out of the power of a smaller concern to compass. Such an operation, however, partakes of the nature of a speculation, and the profit, when gained, is hardly to be called a cheapening of the cost of production, if only for the reason that the opportunity for such a special purchase cannot be relied upon to occur very often, and, when it does occur, is perhaps as likely to result in a loss as in a gain." [1] Nor, again, should much importance be attached to those advantages of large-scale management, of which Mr. McCrosty writes, such as " concentration of office work, provision of central warehouse for goods, centralisation of insurance and banking, establishment of a uniform system of accounts, enabling easy comparison to be made of the working of branches, institution of a uniform system of costing and of a central sales agency," [2] and so forth. For, these economies are scarcely practicable at all under the lower types of price-fixing kartel, which is common in Germany, and, even in fusions and holding companies,[3] are very soon outweighed by the immense difficulty of finding people competent properly to manage very large businesses.

There are, however, certain structural economies of large-scale management, which are of a different order and have

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[1] *The Industrial System*, p. 187, quoted from W. R. Hamilton, *The Cost of Production in Relation to Increasing Output.*

[2] McCrosty, *Economic Journal*, Sept. 1902, p. 359.

[3] Dr. Liefmann writes : "Einige Trusts, so der Zucker- und Spiritustrust, bildeten sich zu *einer einzigen Gesellschaft* um, also im Wege der vollständigen Verschmelzung, der Fusion, d.h. die betreffenden Unternehmungen gehen alle in einer einzigen derart auf, dass sie als besondere wirtschaftliche Organisation aufhören zu existieren. Die meisten aber nahmen in neuester Zeit nach verschiedenen Versuchen die Form der sogenannten *Holding Company*, einer *Kontrollgesellschaft*, wie wir es nennen können, an, d.h. die Gesellschaft erwarb alle oder doch die Mehrheit der Aktien sämtlicher zum Trust gehörender Einzelgesellschaften " (*Kartelle und Trusts*, p. 114).

a wider reach. A business combining many establishments is, in general, in contact with a number of different markets, in which the fluctuations of demand are, in some measure, independent. It follows that the operation of such a business involves in the aggregate less uncertainty-bearing than the operation of its parts would involve if they were separated. The general economy resulting from this fact may manifest itself in the greater facility with which loans can be obtained, or in the lower price charged for them, or in the smaller proportionate reserve fund that the concern needs to keep for equalising dividends and so forth, or in other ways. The essential point is that the general economy, however it manifests itself, is necessarily there. The larger the unit of individual control, the larger is this economy. After a point, indeed, its growth, as the unit grows, becomes exceedingly slow. But, until the unit has reached a very large size, it grows rapidly, and constitutes a powerful force making for larger units. One further point may be mentioned. In certain special cases, large - scale control not only achieves a direct economy by lessening the uncertainty that results from fluctuations in the industrial fortunes of different firms; it also achieves an indirect economy by reducing the probability that such fluctuations will occur. It does this in fields of work where public confidence is of importance, and where largeness of capital resource is calculated to create such confidence. These conditions are fulfilled in the case of banks—the more so since publicity of bankers' accounts has become common. The reason that banks differ in this respect from other concerns is, of course, that their customers are their creditors, and not, as in most trades, their debtors.

§ 4. So far, we have considered exclusively what I have called *structural* economies. There is also another sort of economy that, in certain circumstances, favours the growth of large - scale management. So long as a field of industry is occupied by a number of establishments separately controlled, expenditure is likely to be incurred by all in defending their market against the others. A large part of the expenditure made in respect of advertisements and of travellers is,

as was indicated in Chapter VII., of this character. But, when, instead of a number of competing firms, there appears, in any portion of an industrial field, a number of firms under a single authority, a great part of this expenditure can, as was also indicated in that chapter, be dispensed with. A and B being united, it is no longer to the interest of either to spend money in persuading people to prefer the one to the other. It was recently stated, in regard to railways, before the Board of Trade Conference : " It is well known that railway companies find it necessary to spend large sums of money in canvassing against one another, and, if competition were removed by judicious amalgamation, the greater part of this money could be saved." [1] This economy is, of course, liable to be largest where, apart from unification, " competitive " expenditure would be largest, namely, not in staple industries providing easily recognised standard articles, but in various sorts of " fancy " trades.[2]

§ 5. Let us next suppose that the size of the individual firm and the size of the individual unit of management in an industry have been adjusted to the structural and other economies obtainable, and that the units evolved in this way are not large enough to exercise any element of mono-polistic power. In this case, it is clear that monopolistic power will not be called into being incidentally, as a by-product of developments that take place without reference to it. There still remains, however, as an influence tending to produce it, the direct expectation of the gains to which it may lead. When promoters have reason to believe that the speculative community will think a particular monopoly likely to prove more profitable than it really will do, this fact promises extra gains to those who form amalgamated companies, because it enables them to unload their shares at inflated values. Apart from this special consideration, however, we may lay it down

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[1] *Railway Conference,* p. 26.

[2] The suggestion, that combination enables savings to be made in respect of travelling salesmen and so on, is not upset by the fact that, as Professor Jenks has somewhere noted, in many cases, after the formation of a combination, the aggregate annual wages paid to salesmen increased. For, the increase was probably due to attempts on the part of the combination to extend its market into fields not formerly occupied by any of its constituent members.

that the magnitude of the gains obtainable from monopolisa-
tion depends, the conditions of supply being given, on the
elasticity of the demand for the commodity concerned. The
less elastic this demand, the greater, *ceteris paribus*, are the
probable gains. The principal conditions of highly inelastic
demand, as given in Dr. Marshall's authoritative exposition,
must, therefore, be set out here.

The first condition is that the commodity shall be of a kind
for which it is not easy to find convenient substitutes. The
demand for mutton is made comparatively elastic by the
existence of beef, the demand for oil by the existence of gas,
and the demand for the service of trams by the existence of
omnibuses. In like manner, the demand for the service of
transport by rail is relatively more elastic in England than
in continental America, because " the long broken coast-line
of England and the great number of ports " render the com-
petition of water carriage exceedingly powerful; [1] and the
demand for the services of any particular line of railway is, in
general, fairly elastic, even where no water competition exists,
in consequence of the indirect competition of lines running to
other markets.[2] From another field a good example of the
point I am now explaining is furnished by Jevons, in his book
on the *Coal Question* : " When the Government of the Two
Sicilies placed an exorbitant tax on sulphur, Italy having, as it
was thought, a monopoly of native sulphur, our manufacturers
soon had resort to the distillation of iron pyrites or sulphide
of iron." [3] As regards the kinds of commodity, for which it
is likely that substitutes can be employed, little of general
interest can be said. It should be observed, however, that the
products of a district, or a country, whose efforts are directed to
leadership in quality, as distinguished from quantity, are less
exposed to the competition of substitutes than other products.
For example, the prime qualities of beef and mutton in Great
Britain have not been affected by the development of the
American and Australian trade to nearly the same extent as
the inferior qualities.[4] It is, therefore, a commercially important

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[1] Cf. Macpherson, *Transportation in Europe*, p. 231.
[2] Cf. Johnson, *American Railway Transportation*, pp. 267-68.
[3] *The Coal Question*, p. 135.
[4] Cf. Besse, *L'Agriculture en Angleterre*, pp. 45 and 85.

fact that English manufacturers enjoy a very marked leadership of quality in respect of wall-papers, fine textiles, and cables, whereas, in the electrical and chemical industries, they are in a decidedly inferior position.[1]   Obviously, from the present point of view, we must include among the substitutes for any commodity produced by a monopolist the same commodity produced by other sellers.   The larger, therefore, is the proportion of the total output of product that a monopolist provides in any market, the less elastic the demand for his services will be. Inelasticity of demand for monopoly goods is, therefore, promoted in industries, where importation from rival sources is hindered by high transport charges, high tariffs, or international agreements providing for the division of the field between the combined producers of different countries.[2]   Furthermore, in order that the elasticity of demand may be affected by substitutes, it is not necessary that the rival source of supply should be actually existing.   In some cases, manufacture by people who are normally purchasers is itself a possible rival source of supply.   Thus, the Committee on Home Work observe: " Unless the price at which these articles (baby linen and ladies' blouses and underclothing) are sold to the wives and daughters of the better-paid working men and small middle-class people is low, those who would otherwise be purchasers will buy the materials and make the articles at home."   The same remark seems to apply to laundry-work and charing.   The poor housewife has the power, if reason offers, to do these things for herself.   Consequently, the demand for the services of specialists at such tasks is exceptionally elastic.[3]   For example, it has been remarked of Birmingham : " The washerwomen are among the first to suffer in any period of trade depression, for, as the first economy in bad times is to do your own washing, the tiny laundry with a very local connection is soon emptied."[4]

The second condition, making for inelasticity of demand, is

[1] Cf. Levy, *Monopole, Kartelle und Trusts*, pp. 227, 229, 237.

[2] Since 1905 an international agreement of this kind seems to have existed in regard to steel rails (*ibid.* p. 250).   There is a similar agreement in the tobacco industry (*ibid.* p. 254).

[3] Cf. Chapman, *Unemployment in Lancashire*, p. 87.

[4] Cadbury, *Women's Work*, p. 172.

that a commodity shall give rise to only a small proportion of the total cost of any further commodities, in the production of which it may be employed.   The reason, of course, is that, when the proportion is small, a large percentage rise in the price of the commodity, with which we are concerned, involves only a small percentage rise in the price of these further commodities, and, therefore, only a small percentage contraction of consumption. Dr. Levy suggests that this condition brings about inelasticity of demand in respect of the ordinary raw materials of industry.[1]

The third condition is that the further commodities, if any, in whose production our commodity is employed, shall be such that substitutes cannot easily be found for them.   Thus, the raw materials of the building trade should be subject, other things being equal, to a less elastic demand than those of the engineering trade, because foreign machines can compete with English machines much more easily than foreign houses can compete with English houses.[2] A more elaborate illustration is available in respect of the particular commodity labour.   Thus, Mr. Broadhead comments on some of the effects of Australian wage regulation : " In some trades employers have not been able to cope with the extra cost of production owing to competition with the imported article.   They have, therefore, had to give up the producing part of their business and increase their importations.   In the tanning and fellmongering business some serious results have followed the fixing of a minimum wage.   I will mention two instances.   Some years ago a firm in the district of Dunedin closed down its works and removed its plant to Australia, largely owing to the conditions imposed by the Arbitration Court.   A member of a Christchurch firm has informed me that, since the Court's award in the Canterbury district was made about six years ago, a much larger proportion of sheepskins have been shipped to London, without being handled by the local fellmonger, than was formerly the case.

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[1] *Monopole, Kartelle und Trusts*, p. 280.

[2] It should be noticed, however, that, though houses as wholes cannot be imported, it is becoming always easier to import *parts* of them.   The imports of wrought stone, marble, and joinery doubled between 1890 and 1902 ; whereas, from the provinces to London the "imports" of these things have increased still more largely.—Dearle, *London Building Trades*, p. 52.

Hides which should have been tanned here have been shipped raw. Prior to the award, my informant's firm paid from £10,000 to £15,000 in wages; now the wages sheet amounts to only about £5000. The number of bales of wool scoured annually by the same firm since the award came into force has not been more than 2000; formerly the number was from 6000 to 8000."[1]

The last condition is that the other commodities or services, that co-operate with our commodity in the making of a finished product, shall be easily "squeezable," or, in technical language, shall have an inelastic supply schedule.

§ 6. The preceding considerations suggest that units of control adequate to exercise monopolistic power will often be found, even though neither structural economies nor advertisement economies dictate their formation. The tendency towards this result is opposed, in many instances, by the difficulty and cost involved in bringing about agreements among competing sellers. This difficulty and cost depend upon the following general circumstances. First, combination is easier when the number of sellers concerned is small than when it is large; for, small numbers both facilitate the actual process of negotiation, and diminish the chances that some party to an agreement will subsequently violate it. An attempt to form a Kartel in the German match trade in 1883 is reported by Liefmann to have failed, because no less than 245 separate producers had to be consulted.[2] Secondly, combination is easier when the various producers concerned live fairly close to one another, and so can come together easily, than when they are widely scattered. The reason why combination prevails in the German coal industry, and not in the English, is partly that, in Germany, the production of coal is localised, and not spread over a number of different districts, as it is in this country.[3] A similar reason probably accounts, in great measure, for the excess of combination that appears among sellers in general, as compared with buyers in general; for, it may be observed that at auctions, where buyers also are closely

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[1] *State Regulation of Labour in New Zealand*, p. 215.
[2] *Unternehmerbände*, p. 57.
[3] Cf. Levy, *Monopole, Kartelle und Trusts*, p. 172.

assembled, combination among them is not infrequent. Thirdly, combination is easier when there is a certain uniformity about the product of the various firms concerned. There is great difficulty in arranging any form of Kartel agreement in respect of goods that have to be adapted to individual tastes, or are subject to the influence of changes of fashion. Dr. Levy suggests that one reason why English firms are combined to a less extent than foreign firms is that they concern themselves, as a rule, with the higher qualities, and the more specialised kinds, of commodities, rather than with "mass goods";[1] and Mr. Walker, in like manner, attributes the greater ease with which Coke Kartels are formed in Germany, as against Coal Kartels, to the greater uniformity of quality generally found in coke.[2] Fourthly, combination is easier when the tradition and habit of the country is favourable, than when it is unfavourable, to joint action in general. When employers have been accustomed to act together in Chambers of Commerce, in agreements as to discounts and rebates, or in negotiations with unions of workpeople, the friction to be overcome in making a price agreement is evidently less than it would be if they came together for the first time for that purpose. Thus, Mr. Robinson writes: "The Association—such as the Merchants' Association of New York—has, indeed, no monopoly power, but it is, nevertheless, of very great importance, owing to its socialising effects and its tendency to prepare the way for a stronger organisation, the combination or pool."[3] In like manner, Mr. V. S. Clark suggests that the New Zealand arbitration law "forces employers into unions, for only thus can they defend themselves under the Act, and these naturally evolve into organisations for restricting competition."[4] Perhaps, the opposing friction is also somewhat smaller when the producers concerned are companies than it is when they are private firms, in whose operations the sense of personal importance plays a larger part.

§ 7. The preceding section has tacitly implied that, where the gain from unification exceeds the cost and trouble involved,

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[1] Levy, *Monopole, Kartelle und Trusts*, p. 187.
[2] *Combinations in German Coal Industry*, p. 43.
[3] *American Economic Association*, 1904, p. 126.
[4] *United States Bulletin of Labour*, No. 43, p. 1251.

unification will, in fact, occur. This implication, however, is not warranted. It is not the case that, because an opportunity for agreement advantageous to all parties exists, an agreement will necessarily be made. The reason is that mutual jealousy may cause A and B to leave the melon of common gain uncut, rather than that either should allow the other to obtain what he considers a share unduly large relatively to his own. Shall " participation " be proportional to the capacity of the several combining firms, or to their average product during recent years, or to the amount of the investment that has to be made on plant and goodwill, or to some other quantity ? " One manufacturer has patents and special machinery, which have cost him a great deal of money, and by which he sets much store. He will not enter the proposed combination unless these costs are made up to him. Another manufacturer may have a large productive capacity, fifty nail machines, for example. He may have been unable to find a market for the output of more than half his machines, but in the combination, he contends, all his capacity will become available. He, therefore, insists that productive capacity should be the basis on which the allotment of shares in the trust should be made. A third man, by the excellence of his equipment and the energy of his methods, has been able to run his plant at its full capacity, while his competitor, with a larger productive capacity but a less favourable location or a less capable body of subordinates, has operated only half time. The successful manufacturer contends that average sales should be the basis of allotment." [1] Disputes on these lines may easily prevent agreement if direct negotiation between the different firms is attempted. It should, however, be noticed that they can, in great part, be obviated, and that the difficulty of combination can be correspondingly reduced, when an amalgamation is effected gradually by the process of absorption (as in the case of English banks), or when a company promoter, undertaking to buy up and consolidate a number of competing concerns, negotiates terms separately with each of them, without stating into what arrangements he has entered with the others.

[1] Meade, *Corporation Finance*, p. 36.

CHAPTER X

MONOPOLISTIC COMPETITION

§ 1. A CONDITION of monopolistic competition exists when each of two or more sellers supplies a considerable part of the market with which they are connected. In this case, it can be shown that self-interest has no tendency to evolve an output corresponding to the point of intersection of the demand curve and the supply curve. Even, therefore, if the supply curve and the curve of marginal supply prices coincide, we have no reason to expect that the ideal output— the output, namely, tending to make the marginal net product in the industry concerned equal to the marginal net product elsewhere—will be attained. The proof of this proposition is best given by means of a diagram similar to that employed on p. 172. As before, DD′ represents the demand curve, SS₁ the supply curve, SS₂ the curve of marginal supply prices, OM the ideal output, and OM′ the output normal to simple competition. With the help of this diagram, a general argument is easily developed, on lines which I now proceed to set out.
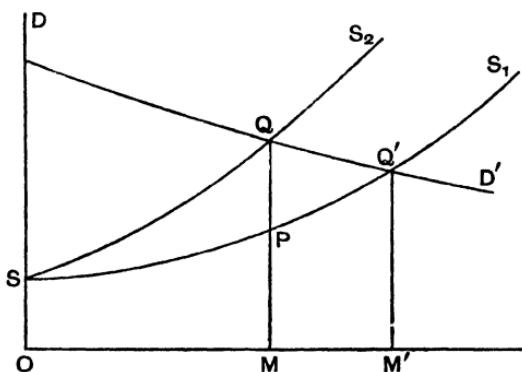
§ 2. Let us first ignore all forms of action which aim, by sacrifice in the present, at obtaining an advantage against

rivals in the future. We have, then, to do with the pure problem of "multiple monopoly." This problem assumes its simplest form, when two monopolists only are supposed to be present; and, in this form, it has been much discussed among mathematical economists. Cournot decided, as is well known, that the output under duopoly is a deter-minate quantity lying somewhere between what would have been produced under simple competition and under simple monopoly respectively. Professor Edgeworth, on the other hand, in an elaborate critique, maintains that the output is indeterminate. This latter view, which is now commonly accepted, appears to me to be the correct one. The output, which at any moment will be most profitable to A, depends on the output which B is undertaking, and *vice versa*. The output undertaken by each, therefore, depends on his judg-ment of the policy which the other will pursue, and this judgment is indeterminate. Hence, the output of each separately and of the two jointly is indeterminate. There are, however, limits, outside of which it cannot travel. At the one extreme, it cannot, in any circumstances, pay either seller to produce less than nothing. At the other extreme, it cannot, in general, pay either to produce more than it would pay him to produce if the other seller were producing nothing. Hence, the range of indeterminateness of aggregate output stretches from nothing at the one extreme, up to the sum of the output that would maximise A's monopoly revenue in the absence of B and the output that would maximise B's monopoly revenue in the absence of A. In the simplest case, when the curves of supply and demand are linear, it is easily shown that this sum is less than the output which would emerge under simple competition, if the larger of the two sources of supply were alone in existence. It is therefore, *a fortiori*, less than the output OM' corresponding to the intersection of the demand curve and the supply curve. If the curves are not linear, this result, though not certain, is still probable. Roughly, then, we may conclude that, under monopolistic competition, self-interest, so far from leading un-ambiguously to an output equal to OM, may lead to any output between nothing and some ascertainable quantity,

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which is different in different circumstances, but is, in general, smaller than OM′.

§ 3. So far, we have specifically excluded the effect of price warfare, designed to secure future gains by driving a rival from the field or exacting favourable terms of agreement from him. The indeterminateness just described exists under monopolistic competition, even when it is not the case that "one of the monopolists hopes to ruin the other by cut-throat prices."[1] In most instances of monopolistic competition, however, price warfare—or cut-throat competition—does, in fact, take place. It consists in the practice of selling at a loss, in order to inflict injury on a rival. It must be distinguished carefully from the practice of reducing prices down to, or towards, prime cost, which frequently occurs in periods of depression. This latter practice may involve large reductions of price below the "normal," and it is certain to do this when demand is variable and prime cost is small relatively to supplementary cost; but, it does not involve "selling at a loss" in the strict sense. Cut-throat competition proper occurs only when the sale price of any quantity stands below the short-period supply price of that quantity. When it occurs, the output is no longer indeterminate between nothing and some quantity smaller than OM′, but is liable to exceed OM′ to an extent determined by the opinion of each of the combatants as to the staying power of his opponent, and by other considerations of a strategical nature. There is, obviously, no tendency for it to approximate to the ideal output OM.

§ 4. The general result of this discussion is that, in industries under monopolistic competition *minus* the "cut-throat" element, the marginal net product of investment is indeterminate, but is more likely than not to exceed marginal net product elsewhere; while, in industries under monopolistic competition *plus* the cut-throat element, it is still indeterminate, but may very probably fall short of marginal net product elsewhere.

[1] Edgeworth, *Giornale degli economisti*, November 1897, p. 405.

CHAPTER XI

SIMPLE MONOPOLY

§ 1. A CONDITION of simple monopoly exists, when a single seller only is exercising monopolistic power—whether or not there are other sellers in the market who accept the price fixed by this seller—and when, allowance being made for cost of carriage and so forth, the same price rules throughout the whole of the market affected. This condition of things works out in two different ways, according as, on the one hand, the entry to the industry is so far restricted that no resources are drawn into it, other than those actually finding employment in it, or, on the other hand, entry to the industry is free. I shall discuss first the case of restricted entry.

§ 2. As in the last chapter, construct a figure, in which DD′ represents the demand curve, SS_1 the supply curve, and SS_2 the curve of marginal supply prices. Then, in accordance with previous analysis, OM is the output that would make the marginal net product of resources in our industry equal to the marginal net product elsewhere, and OM′ is the output that comes about under simple competition. The output under simple monopoly will be measured by OM″, where OM″ is such that the rectangle RFHK is a *maximum*. A study of this figure enables us to reach the following result. Under con-

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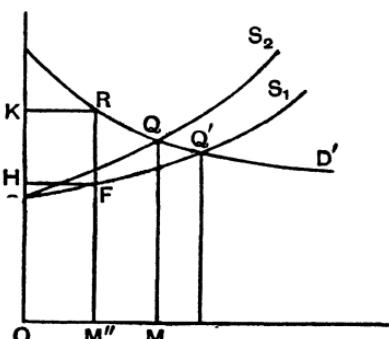
stant returns and increasing returns, simple monopoly *must* make OM″ less than both OM and OM′. Therefore, it *must* both cause the marginal net product of resources in our industry to exceed the marginal net product in industries in general, and also make this excess greater than it would be if output was determined by simple competition.[1] Under diminishing returns OM″ may conceivably be equal to OM. Hence, simple monopoly may conceivably cause the marginal net product of resources in our industry to be equal to the marginal net product in industries in general. This, however, is exceedingly improbable.[2] It is practically certain that simple monopoly will make the marginal net product in our industry either greater or less than it is in industries in general. Furthermore, under diminishing returns, OM″ will, in some circumstances, be intermediate between OM and OM′. Where this is the case, simple monopoly involves a nearer approach to equality between marginal net product in our industry and marginal net product in industries in general than simple competition would do. An intermediate position of OM″ is, however, practically certain not to be attained when diminishing returns act feebly — that is to say, when the conditions approach towards those of constant return—or when the demand is highly inelastic. Hence, we may conclude that the presence of simple monopoly in any industry will probably restrict investment there to such an extent, that the marginal net product of resources there will diverge from the marginal net product of resources in general more widely than it would do under conditions of simple competition.

§ 3. In the special case, in which monopolistic power is exercised by a combination of sellers, through the agency of a price-agreement, the restrictive influence upon invest-

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[1] The statement in the text holds good unreservedly only in the case of a process producing a single product. When two products are yielded by the same process, conditions are conceivable, under which simple competition would evolve no output, but simple monopoly, coupled with the destruction of a part of one of the products, would yield a considerable output. This case is easily represented diagrammatically.

[2] If the curves involved are straight lines, the condition required is that SS_2 should cut the demand curve half-way between its starting-point on the axis of Y and its point of intersection with SS_1. For any given position of SS_1 or SS_2, there is only one position of the demand curve that will enable this condition to be realised.

ment may be enhanced in an indirect way by one further circumstance. It is not practicable to make an agreement touching more than one or two roughly defined grades of service. Consequently, since an adapted charge cannot be made for them, the intermediate grades tend to disappear, even though numerous purchasers—some of whom, as things are, buy nothing—would have bought these grades, if they had been obtainable at a proportionate charge. Therefore, resources which, under a perfectly constructed monopoly agreement, would have been devoted to the production of these grades, are excluded by the imperfect character of actual agreements. This effect is chiefly conspicuous in respect of railway and shipping companies acting under freight-rate conventions, which compete in frequency, speed, and comfort of their trains or ships.[1] Thus, there may be a demand for slow delivery of goods at a cheap rate, but no such delivery may be available. " Vans are sent out with light loads in order to secure the earliest delivery, and, in many cases, and particularly in the suburbs of larger towns, two or three vans will be engaged in delivering light loads which could easily be conveyed in one " ; [2] first-class rapid vessels are employed to carry things for which they are quite unnecessary, because agreements preclude the offer of lower rates if slower and cheaper vessels are used ; [3] and so forth. The misdirection of resources that arises in this way is additional to the misdirection due to a simple exercise of monopolistic power.

§ 4. In the discussion so far, we have assumed the entry to industries, in which simple monopoly prevails, to be so far obstructed or restricted, that no resources are drawn into them other than those actually finding employment there. In most cases this condition is fulfilled, because, when it is not fulfilled, the trouble of forming monopolistic agreements will seldom be worth undertaking. Still, in some cases, mono-polistic agreements without restriction of entry exist. It is

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[1] The agreements, short of pooling, between railways sometimes embrace agreements as to speed ; those between the members of some, but not all, shipping conferences, agreements as to the relative number of sailings permitted to the various members. (*Royal Commission on Shipping Rings Report*, p. 23.)

[2] *Report of the Board of Trade Railway Conference*, p. 39.

[3] *Royal Commission on Shipping Rings Report*, p. 108.

easy to show, that, in all cases of this kind, the national dividend suffers more than it would do, if the same monopolistic price policy prevailed in conjunction with restriction of entry to the industry. For, broadly speaking, what happens is this. The marginal net product of resources actually finding employment in the monopolised industry is the same as it would be under a system of restricted entry. But, besides these resources, other resources have been drawn away from employment elsewhere and have become attached to the industry. These extra resources will either be all idle themselves, or will make a corresponding quantity of resources already in the industry idle. The dividend, therefore, will be reduced below what it would have been under a system of restricted entry, by the normal yield, in industries in general, of the difference between the resources required to produce x units in our industry, and the resources for which x units multiplied by that industry's demand price for x units would constitute normal earnings. This consideration does not, of course, prove that restriction of entry to an industry, in which monopoly prevails, is socially desirable; for, it may well happen that free entry will compel the monopolist to change his policy, and to adopt one approximately equivalent to that dictated by competition. It only proves that restriction is advantageous in those—probably exceptional—cases, where the removal of restriction cannot affect the monopolist's price policy.[1]

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[1] Attention may be called here to a peculiar case. Suppose the same process to yield two joint products, one of which is controlled monopolistically but the other is not. Then, as shown above, if entry to the industry can be restricted, simple monopoly will make the output of both products less than it would be under simple competition. The whole of the non-monopolised joint product that is produced will be sold, but a part of the other product will probably be thrown away. If, however, entry to the industry is not restricted, more resources will flow into it than would so flow under simple competition. This will mean that the output and sale of the non-monopolised joint product is larger than it would have been under simple competition. It is possible that the net result may be to evolve a larger sum of consumers' surplus than simple competition would allow. Thus, if we regard the manufacture of cotton in good times and in bad times as, in some measure, joint products, it is not certain that the practice of organised short time in periods of depression, coupled with free entry into the cotton industry, will be socially injurious, even in conditions under which this practice, coupled with restricted entry, would be thus injurious. Such a result, though not certain, seems, however, in the general case, to be probable. (Cf. *ante*, Ch. VIII., final footnote.)

CHAPTER XII

DISCRIMINATING MONOPOLY

§ 1. Up to this point we have supposed that monopolisation, when it occurs, will be of the simple form which does not involve discrimination of prices as between different customers. We have now to observe that this variety of monopolisation is not the only possible sort. Discriminating power will sometimes exist alongside of monopolistic power, and, when this is the case, the results are affected. It is, therefore, important to determine the circumstances in which, and the degree to which, monopolists are able to exercise, and find advantage in exercising, this power.

§ 2. The conditions are most favourable to discrimination, that is to say, discrimination will yield most advantage to the monopolist, when the demand price ruling in respect of any unit of a commodity is independent of the price of sale of every other unit. This implies that it is impossible for any one unit to take the place of any other unit, and this, in turn, implies two things. The first of these is, that no unit of the commodity sold in one market can be transferred to another market. The second is, that no unit of demand, proper to one market, can be transferred to another market. The former sort of transference needs no description, but the latter is somewhat subtle. It would occur, if the promulgation of different rates, for transporting coal originating in A and coal originating in B, enabled the more favoured district to increase its production of coal and, therefore, its demand for carriage, at the expense of the less favoured district. In order that the conditions most favourable to discrimination may prevail, this

sort of transferability, as well as the other, must be excluded. Under the monopolistic arrangements practicable in real life the above kinds of transferability are absent or present in varying measures. I propose to set out a series of cases illustrative of different degrees of transferability under each of the heads just distinguished.

§ 3. Units of commodity are entirely non-transferable when the commodity in question consists of services applied directly by the sellers to the persons of their customers, such as the services of medical men, barristers, teachers, dentists, hotelkeepers and so forth. A medical man's offer to charge any one set of persons less than any other set cannot lead to the one set becoming middlemen in respect of the services which the other set desire. Complete non-transferability also exists in respect of services applied directly by the seller to commodities handed to them for treatment, such as the service of transport in respect of different articles. A railway's offer to charge one price for a ton-mile of transport service to copper merchants and a lower price to coal merchants cannot lead to any middleman device, because it is physically impossible to convert copper into coal for the purpose of transport and afterwards to reconvert it. A slightly, but only slightly, lower degree of non-transferability exists in the case of services of such a kind that they are normally rendered in physical connection with the private dwellings of purchasers. Gas and water supplied to private houses are instances in point. Here transference is not entirely excluded, because it is *possible*, at sufficient cost of money and trouble, to detach the commodities from the distributing plant along which they are brought and to carry them elsewhere. Lesser degrees of non-transferability exist in the case of commodities, whose transference is obstructed merely by high costs of transportation or by tariff charges. The measure of non-transferability in these circumstances may, obviously, be large or small, according as the distance or the rate of customs duty that separates two markets, between which discrimination is attempted, is large or small. In like manner, various degrees of non-transferability can be brought about artificially by the enforcement upon purchasers of contracts that penalise

re-sales. For example, in the Ruhr coal district, the agreement made by the syndicate with industrial purchasers provides " that re-sale to railways, gas works, brick works or lime-kilns, or any reshipment from the original point of destination, shall be penalised by an addition of 3 marks per ton to the selling price."[1] If no agreement of this kind, no cost of carriage and no tariff exist, complete transferability will prevail.

§ 4. Units of demand are almost completely non-transferable from one market to another, when the commodity concerned is something ready for final consumption, and when the markets, between which discrimination is to be made, are distinguished according to the wealth of the purchasers. It is clear, for instance, that the willingness of doctors to charge less to poor people than to rich people does not lead to any rich people, for the sake of cheap doctoring, becoming poor. In like manner, the provision of the service of transport at different rates to coal merchants and to copper merchants does not lead to any copper merchants, for the sake of the cheap transportation, becoming coal merchants. No doubt, in both these cases some slight transference *may* be achieved through successful fraud, such as a pretence on the part of rich people that they belong to the poorer group, and the smuggling of copper in the guise of coal ; but this kind of thing is of no practical importance. A smaller degree of non-transferability exists between the markets for hotel accommodation in the season and out of the season ; for, heavy discrimination might cause a considerable number of people to change the time of their holiday. A still smaller degree of non-transferability exists between the markets for railway transport from A to B, which are provided respectively by traders in A wishing to send a given commodity direct to B, and by traders in C wishing to send this commodity to B through A. For, in this case, a large difference in the rates charged would cause production, that would normally occur at the less favoured, to take place instead at the more favoured, point. Perfect transferability exists when the markets are distinguished by some badge, the attachment of which involves no cost, as, for example, if railways charged one fare to passengers carrying

[1] Walker, *Combination in the German Coal Industry*, p. 274.

pencils and another fare to passengers without pencils. The immediate effect of discrimination, in such a case, would be the transference of *all* demands from the less to the more favoured market, and discrimination would yield *no* advantage to the monopolists.

§ 5. When a measure of non-transferability, of commodity units on the one hand, and of demand units on the other hand, sufficient to make discrimination profitable, is present, the relation between the monopolistic seller and each buyer is, strictly, one of bilateral monopoly. The terms of the contract that will emerge between them is, therefore, theoretically indeterminate and subject to the play of that "bargaining" whose social effects were analysed in Chapter VII.[1] When we are concerned with a railway company arranging terms with a few large shippers, the indeterminate element may have considerable practical importance. In most cases, however, in which discriminations are of interest, the opposed parties are, not a single large seller and a few large buyers, but a single large seller and a great number of relatively small buyers. In such cases, the loss of an individual customer's purchase means so much less to the monopolistic seller than to any one of the many monopolistic purchasers, that, apart from combination among purchasers, all of them will almost certainly accept the monopolistic seller's price. They will recognise that it is useless to stand out in the hope of bluffing a concession, and will buy what is offered, so long as the terms demanded from them are such as to leave to them *any* consumers' surplus. In what follows I assume that the customers act in this way. So assuming, we may distinguish three degrees of discriminating power, which a monopolist may conceivably wield. The ideal degree would involve the charge of a different price against all the different units of commodity, in such wise that the price exacted for each was equal to the demand price for it, and no consumers' surplus was left to the buyers. A second degree would obtain if a monopolist were able to make n separate prices, in such wise that all units with a demand price greater than x were sold at a price x, all with a demand price less than x and greater than y

[1] Cf. *ante*, p. 169.

at a price y, and so on.   A third degree would obtain if
the monopolist were able to distinguish among his customers
n different groups, separated from one another more or less
by some practicable mark, and could charge a separate monopoly
price to the members of each group.   This degree, it will be
noticed, differs fundamentally from either of the preceding
degrees, in that it may involve the refusal to satisfy, in one
market, demands represented by demand prices in excess of
some of those which, in another market, are satisfied.

§ 6. These three degrees of discriminating power, though all
theoretically possible, are not, from a practical point of view, of
equal importance.   On the contrary, in real life, the third degree
only is found to emerge.   No doubt, we can imagine cases, in
which discrimination even of the first degree could be achieved.
If all consumers had exactly similar demand schedules, it
could be achieved by the simple device of refusing to sell
in packets of less than the quantity which each consumer
required per unit of time, and fixing the price per packet at such a rate as exactly to absorb the whole consumers' surplus proper to it.   Thus, if the demand schedule of every demander is represented by the curve DD', the monopolist may make his unit of sale OM physical units, and charge
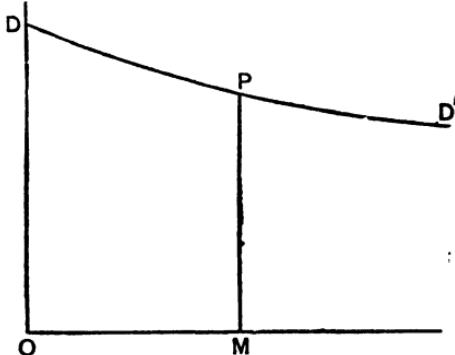
for this unit a price represented by the area DPMO.   If there
is no combination among the buyers, and if each buyer takes
only a small part of the monopolist's output, the number of
units sold will be substantially the same as would have been
sold at a price PM per physical unit, and, in effect, the
physical units satisfying demands of different keenness will
have been sold at different prices.   In practice, however, this
method of discrimination, whether in a complete or a partial
form, is rendered impracticable by the fact that the individual
demand schedules, of which the market demand schedule is
made up, are, as a rule, very far indeed from being similar.

For this reason an analysis of the method is of academic interest only.[1]   Apart from this method, ideal discrimination might still conceivably be established by detailed separate bargaining with every separate customer.   It is obvious, however, that this method involves enormous cost and trouble. Furthermore, since it implies separate bargains with individuals, it opens the way, not only to error, but also to the perversion of agents through bribery.   These considerations are, in general, sufficient to make monopolists themselves unwilling to adopt the method ; and, even if they were not thus unwilling, it would be hardly possible for the State, in view of the large opportunities for "unfair" competition which the method affords, to leave their hands free.   " Whatever financial advantage there may be in charging against each act of transport a rate adapted to its individual circumstances, the arbitrary nature of a system of rates arranged on this plan implies so much uncertainty and lends itself to such serious abuses, that we are compelled to condemn it." [2]   Thus, a powerful influence is always at work persuading or compelling monopolists to act on general rules, with published tariffs, guarded, as effectively as may be, against the undermining influence of unpublished rebates.   This means that they cannot, except in extraordinary circumstances, introduce either the first or the second degree of discrimination, and that the third degree is of chief practical importance.

§ 7. Monopoly *plus* discrimination of the third degree is not a determinate conception.   It is theoretically possible to divide any market in an indefinitely large number of different ways, of which some would be more, and others less, advantageous to the monopolist.   If the said monopolist had an absolutely free hand in the matter, the division he would choose would be such that the lowest demand price in sub-market A exceeded the highest demand price in sub-market B, and so on throughout.   If the aggregate demand of the markets collectively had an elasticity greater than unity throughout, the resulting system would be identical with

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[1] For such an analysis, cf. my paper "Monopoly and Consumers' Supply," *Economic Journal*, September 1904.

[2] Colson, *Cours d'économie politique*, vol. vi. p. 211.

that proper to the second degree of discrimination, for the lowest demand price in each group would also be the price calculated to yield maximum monopoly revenue in respect of that group. If the aggregate demand had not an elasticity greater than unity throughout, the maximising price in some groups would be greater than the lowest demand price in those groups, and the system would, therefore, be different from the above. In any event, the separation of markets, in such wise that the lowest demand price in the first exceeds the highest demand price in the second, and so on, would obviously be better, from the monopolist's point of view, than any other kind of separation. In practice, however, the monopolist's freedom of action is limited by the need, already referred to, of acting on general rules. This consideration makes it necessary that he shall choose, for his sub-markets, groups that are distinguishable from one another by some readily recognisable mark. Furthermore, since a hostile public opinion might lead to legislative intervention, his choice must not be such as to outrage the popular sense of justice. Thus, he will not distinguish and bring together entirely new groups, but will make use of distinctions already given in nature. He cannot hope to find a series that conforms to his ideal altogether, but he may find one, in which only a comparatively small number of members of the first group consist in demand prices lower than the highest demand price of the corresponding second group, and so on throughout all the groups.

§ 8. I now pass to an analysis of consequences, and, as in the preceding chapter, I shall begin with the case in which entry to the monopolised industry can be restricted. The analysis, to be complete, would need to take account of the fact that, in real life, the demand of one purchaser for any r^{th} unit of a commodity is often, in part, dependent upon the price at which this commodity is being sold to other purchasers. When this sort of interdependence of markets is present, diagrammatic treatment necessarily gives place to algebraic treatment. I do not, however, find that the broad results proper to the more complicated case differ in character from those proper to the simpler case, though, no doubt, a greater measure of uncertainty attaches to them. Con-

sequently, in the following pages I shall assume that the quantity demanded in each sub-market depends only on the price ruling in that sub-market. This procedure enables resort to be had, as hitherto, to the method of simple diagrams.

§ 9. As already explained, practical interest centres upon monopoly *plus* discrimination of the third degree. Before examining this case, however, we may, with advantage, glance at the simpler problem presented by the two higher forms of discrimination. Construct figures similar to those already employed, it being understood, in the first instance, that the point D shall stand above the point S. It is evident that, under monopoly *plus* ideal discrimination, output will be
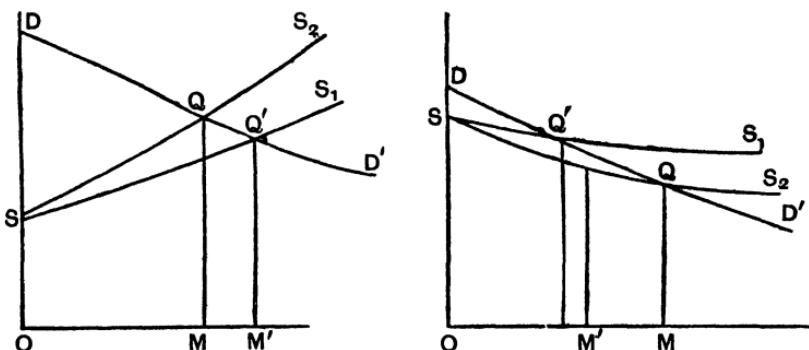
equal to OM units, the quantity, namely, which corresponds to the intersection of the demand curve and the curve of marginal supply prices. This means that, in any industry operated under conditions of monopoly *plus* ideal discrimination, the marginal net product of investment is equal to the marginal net product of resources invested in industries in general. In cases of constant returns the result is exactly the same as that attained under simple competition, but in cases of diminishing and of increasing returns, that is to say, in the generality of cases, it is both different and socially more advantageous. Furthermore, the advantage involved is necessarily greater the more elastic is the demand for the commodity in question. It is also necessarily greater, the further SS_2 diverges from the horizontal, that is to say, the more markedly the conditions of supply depart

from constant return, either on the side of diminishing, or on the side of increasing returns.

§ 10. In the case just taken it has been assumed that the point D lies above the point S. Let us now consider the case in which D lies below S. If DD′ lies throughout below both SS₁ and SS₂, it is obvious that no output can occur under monopoly *plus* ideal discrimination, just as none can occur under simple competition; whereas, if DD′ passes through both SS₁ and SS₂ once, it must also pass through them both a second time, and the conditions are substantially equivalent to those discussed in the preceding section. It may happen, however, in certain cases of increasing returns, that DD′ passes through SS₂, but does not pass through SS₁. Let DD′ cut SS₂ in R and Q. Then, under conditions of simple competition, it is obvious that no output can occur. Under conditions of monopoly *plus* ideal dis-

crimination, however, provided that the area RQ is greater than the area DRS, an output OM will yield aggregate receipts in excess of aggregate costs and will, therefore, be forthcoming. When these conditions prevail, the marginal net product of resources invested in our industry, which would, under simple competition, have been non-existent, is brought by monopoly *plus* ideal discrimination into conformity with the marginal net product of resources in general.
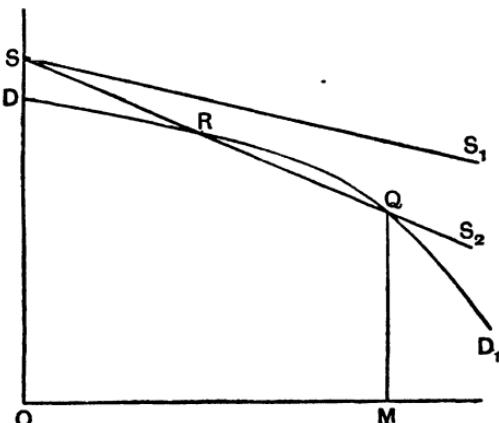
§ 11. It is readily seen that monopoly *plus* discrimination of the second degree approximates in its effects towards monopoly *plus* discrimination of the first degree, as the number of different prices, which it is possible for the monopolist to charge, increases; just as the area of a polygon inscribed in a circle approximates to the area of the circle, as the number of its sides increases. Let us call the output

proper to ideal discrimination a. Then, monopoly of the second degree would lead to an output less than a, but approaching more nearly towards it, the larger is the number of the different price groups which the monopolist is able to form ; and the marginal net product of resources invested in our industry, would, in like manner, approach more nearly towards equality with the marginal net product elsewhere the larger is this number.[1]

§ 12. The study of monopoly *plus* discrimination of the third degree is more complicated than that of either of the two higher forms. Throughout the discussion of these, we were able to make use of a simple relation between the aggregate output, which comes about in various circumstances, and the ideal output, represented in the preceding figure by OM. According as output exceeds, falls short of, or is equal to OM, we could conclude that the marginal net product of resources invested in our industry falls short of, exceeds, or is equal to the marginal net product in industries in general. Under monopoly *plus* discrimination of the third degree, however, the relation between actual output and ideal output no longer suffices for a criterion. The reason is that, when a demand represented by a demand price p is satisfied, it is not necessary, as it has been necessary so far, that all the demands represented by demand prices greater than p shall have been satisfied. On the contrary, the monopolist may, in one market, be satisfying all demands represented by demand prices higher than p, while, in another market, he is refusing to satisfy any demands whose demand prices fall short of $(p + h)$. It follows that the resources invested in the industry fall into a number of different parts, each of which has a

[1] Let n be the number of different price-groups. On the hypothesis that DD′ and SS_2 are straight lines, it can be shown that, when the supply of the commodity obeys the law of constant returns, so that SS_2 lies horizontally, the output will be equal to $\dfrac{n}{n+1}a$ for all values of n. That is to say, if one price only can be selected, the output will be $\dfrac{1}{2}a$: if two prices can be selected, $\dfrac{2}{3}a$, and so on. When the supply of the commodity obeys the law of increasing returns, the output, if n is equal to 1, will still be equal to $\dfrac{n}{n+1}a$, but, if n is greater than 1, it will be somewhat less than this.

different marginal net product.   Consequently, we have no longer to ask how the marginal net product of resources invested *in the industry* is related to the marginal net product of resources in industries in general, but how the various marginal net products of resources invested *in the industry in respect of each several market* are related to that standard. Our ideal output ceases to be a single output of the whole industry, and becomes a number of separate outputs to be sold in separate markets.   A given output of the whole industry may be broken up in different ways as regards the separate markets, and the conditions of marginal net product will be different according to the way in which it is, in fact, broken up.   Hence, a study of the effects, which monopoly *plus* discrimination of the third degree produce upon output, is at best only a first step towards a full study of its effects. Nevertheless, it is well that such a study should be made. To facilitate it, let us take the simplest case, in which the demands for the product of an industry can be broken up into two groups or markets, A and B, between which price discrimination is feasible.

§ 13. It is *possible* that conditions may be such that monopoly *plus* discrimination of the third degree evolves an output equal to the so-called ideal output OM, just as it is *possible* that simple monopoly may evolve this output.   Such a result would, at best, be a happy accident.   Under conditions of constant returns and increasing returns it is impossible, and under conditions of diminishing returns it is exceedingly improbable.   That result is obvious.   The principal questions which we have to answer are, however, more obscure.   Granted that output under this order of discriminating monopoly will not, in general, agree with the ideal output, will it approach more nearly towards it than output under simple monopoly or output under simple competition would do?   As a means towards answering these questions, I shall first inquire whether output under discriminating monopoly of the third degree will be absolutely greater or smaller than output under simple monopoly and simple competition respectively.

§ 14. To compare the output proper to discriminating

monopoly of this degree with that proper to simple monopoly, we may conveniently make use of a series of hypothetical cases.

First, let us suppose the circumstances to be such that, under simple monopoly, some of the commodity, in which we are interested, would be consumed in both A and B.   Under conditions of constant returns we obtain the following results. If the curves representing the demands in the two markets are concave to the axis of X, a monopolist with power to discriminate between them will produce less than a monopolist without discriminating power would do.   If one of the curves is concave and the other convex, he may produce either less or more.   If both of the curves are straight lines, he will produce the same quantity.   If both are concave, he will produce more.   Since there is reason to believe that demand curves are, in general, concave, it follows that the monopolist with discriminating power will *probably*, under conditions of constant returns, produce more than a monopolist without discriminating power.   A similar result seems to hold good under conditions of diminishing and conditions of increasing returns.

Secondly, let us suppose the circumstances to be such that, under simple monopoly, some of the commodity in question would have been consumed in A, but none in B.   In this case, it is impossible that the introduction of discriminating power should lead to diminished output.   On the contrary, if there is any demand in B at all, it must lead to increased output. The amount of the increase will be specially great if the demand in B is elastic, and if the supply of the commodity obeys the law of increasing returns.   These conditions are often fulfilled in respect of Kartels selling regularly at specially low rates in markets, foreign and other, where they are exposed to competition.

Finally, let us suppose circumstances to be such that, under simple monopoly, none of the commodity would have been consumed in either A or B.   In this case, it is obviously impossible that the introduction of discriminating power should lead to diminished output.   It is possible that it may lead to increased output.   The condition for this is the same

as the condition, mentioned in the next paragraph, that enables discriminating monopoly of the third degree to yield some output, though simple competition would yield none.

§ 15. We have now to compare the output proper to discriminating monopoly with that proper to simple competition. Under conditions of constant returns and diminishing returns it is, obviously, impossible for discriminating monopoly of any sort to make output greater than it would be under simple competition. Discriminating monopoly of the third degree must make it smaller than it would be under that system. When, however, increasing returns prevail, the question is more complex. It has been proved in an earlier section that, in this case, monopoly *plus* ideal discrimination must raise output above the quantity proper to simple competition. Furthermore, it is evident that discrimination of the third degree approximates towards ideal discrimination, as the number of markets into which demands can be divided approximate towards the number of units for which any demand exists. Hence, it follows that, under increasing returns, monopoly *plus* discrimination of the third degree *may* raise output above the competitive amount, and is more likely to do this the more numerous are the markets between which discrimination can be made. Sometimes, but not, of course, so frequently as with ideal discrimination, cases will even occur in which discriminating monopoly of the third degree evolves some output while simple competition would have evolved none. In view, however, of the limitation, which practical considerations impose, alike upon the number of markets that can be formed, and upon the monopolist's freedom to make up the several markets in the way most advantageous to him, it appears, on the whole, exceedingly improbable that, in an industry selected at random, monopoly *plus* discrimination of the third degree will yield an output as large as would be yielded by simple competition.

§ 16. In the preceding paragraphs we have compared output under discriminating monopoly of the third degree with output under simple monopoly and simple competition respectively, as regards absolute amount. From the results obtained we can easily proceed to a comparison as regards

approximation towards the ideal output. For, in cases of diminishing returns, an output less than that proper to simple monopoly is likely to diverge more from the ideal output than either the output of simple monopoly or the output of simple competition ; and an output intermediate between that of simple monopoly and that of simple competition may or may not be nearer to ideal output than either the one or the other of these. Under increasing returns, an output less than that proper to simple monopoly is certain to diverge further from the ideal output than either the output of simple monopoly or that of simple competition : an output intermediate between these two will be nearer to the ideal than that of simple monopoly, and further from it than that of simple competition ; and an output greater than that of simple competition will be nearer to the ideal than either of the rival outputs. Hence, we conclude that, both under diminishing and under increasing returns, discriminating monopoly of the third degree will not improbably yield an output closer to the ideal output than simple monopoly yields ; that, under diminishing returns, it may, but is unlikely to, yield one closer to the ideal output than simple competition yields ; and that, under increasing returns, it may, but is *very* unlikely to, yield one closer than this.

§ 17. We have now to return to the considerations suggested in § 12. It was there pointed out that the measure of correspondence between the actual aggregate output of an industry and the ideal output does not, when discriminating monopoly of the third degree is in question, carry the same implication as in other circumstances. Suppose, for example, that discriminating monopoly of this degree brings about an output closer to the ideal output than either simple monopoly or simple competition. The marginal net product of resources invested in those parts of the industry, that satisfy the demand of markets, to which discriminating monopoly accords a lower price than simple monopoly or simple competition would do, exceeds the marginal net product of resources in industries in general by less than it would do under either of the rival systems. But, *per contra*, the marginal net product of resources invested in those parts of the industry, if there are

any such, that satisfy the demands of markets, to which dis-
criminating monopoly accords a higher price than simple
monopoly or simple competition would do, exceeds the marginal
net product of resources in industries in general by more than
they would do under these systems.   Hence, even where dis-
criminating monopoly makes aggregate output more nearly
conformable to the ideal than simple monopoly or simple com-
petition would do, it will still frequently happen that it does
not, on the whole, involve greater equality between marginal net
products in our industry and elsewhere.   There are, however,
two cases to which this qualification does not apply.   The
first arises when discriminating monopoly is being compared
with simple monopoly, and the conditions are such that, under
simple monopoly, no output at all would occur in one of the
two markets ; the second, when discriminating monopoly is
being compared with simple competition, and the conditions are
such that, under simple competition, no output would occur in
either of the two markets.   With regard to these two cases, it
is evident that, if discrimination of the third degree evolves an
output closer to the ideal output than either rival system, it
must also bring about a closer approximation between the
marginal net product of resources in our industry and elsewhere.

§ 18. So far, we have supposed that discriminating
monopoly is coupled with power to restrict the entry to the
monopolised industry.   When this is not the case, reasoning
analogous to that employed at the close of the preceding
chapter is applicable.   Let us suppose that tacit understand-
ings of a quasi-monopolistic type determine, not the absolute,
but the relative, prices, which sellers shall charge to different
classes of customers.   The effect of free entry to the industry,
in this class of case, may be illustrated thus.   Imagine the
monopolistic understanding to be sufficiently refined to permit
ideal discrimination of prices in respect of all the units of
commodity that are sold.   Then, if the entry to the industry
can be restricted, output will be carried up to the point
at which it corresponds to the intersection of the demand
curve and the curve of marginal supply prices, and no idle
resources will stand attached to the industry.   If, however,
the entry to the industry is not restricted, the output must be

such that the aggregate price obtained for it is equal to its amount, multiplied by the supply price of that amount.   Draw the demand curve DD′, the supply curve SS₁ and the curve of marginal supply prices SS₂.   Then, under ideal discrimination *plus* restriction of entry, output will be equal to OM, which, as already is explained, is the ideal output, or the output most advantageous to the dividend.   Under ideal discrimination without restriction of entry, output will be carried to an amount OM″, where M″ is such that, M″QP being drawn perpendicular to the axis of X, the area PQR is equal to the area DRS. This output—unless, by an extraordinary chance under increasing return, it happens to equal the output OM —is necessarily less favourable to the dividend than that output.   Under diminishing and constant returns, it is also necessarily less favourable than the output OM′, which is the output proper to simple competition.   Under increasing returns it may, according to circumstances, be either more or less favourable than this latter output.   For less perfect degrees of discrimination, reasoning of a like general character holds good.   Discrimination unaccompanied by restriction of entry to an industry implies, in effect, the imposition of taxes on the purchases of one group of customers and the employment of the proceeds of these taxes in bounties to the purchases of another group.[1]
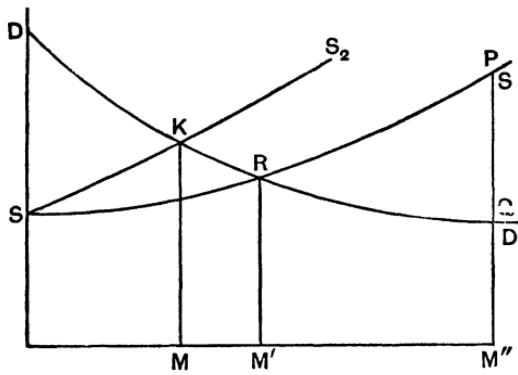
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[1] We must not forget that, even when increasing returns do not prevail, and when, therefore, in accordance with the above argument, some units of service are necessarily produced at a money cost exceeding their money value, they still need not be produced at a real cost exceeding their real value. For example, discriminating prices *plus* free entry to the profession of doctor, lead to a loss of dividend in terms of money. They imply, however, cheap medical service to the poor, for whom a small money benefit means a large psychic benefit. So far as the steamships on any route are unrestricted in number, so that their discriminating rates involve a bounty to steerage passengers at the cost of saloon passengers, the same argument applies.

CHAPTER XIII

THE SPECIAL CASE OF RAILWAY RATES

§ 1. THE discussion of the preceding chapter has necessarily been somewhat abstract. The considerations there set out have, however, a practical application of the very greatest importance in regard to the rates chargeable by railway companies. Considerable controversy has taken place between those who hold that these rates should be based on " the cost of service principle," and those who would base them on the " value of service principle " or, as it is sometimes called, the principle of " what the traffic will bear." The " cost of service principle " is, in effect, the simple competition discussed in Chapter VIII. : " the value of service principle " is discriminating monopoly of the third degree. In the light of what has been said, the issue between them can be clearly set out. I propose to exhibit their meaning in concrete form, and, thereafter, to compare their respective social consequences.

§ 2. Before this is attempted, however, the ground must be cleared of a popular confusion, which, as it seems to me, vitiates the great bulk of modern discussion of the railway rate problem. This confusion has reference to " joint supply." Two products are supplied jointly, when a unit of investment expended upon increasing the normal output of one *necessarily* increases that of the other also. Now, it is almost universally held that transportation of coal and transportation of copper along a railway, from any point A to any point B, are joint products ; and, in like manner, it is almost universally held that the transportation from A to B of commodities to be consumed at B, and the transportation from A to B of com-

modities to be carried forward to C, are joint products. Both these opinions are, in my view, incorrect. They are both based upon the same general ground, which is set out by Professor Taussig as follows : " Whenever a very large fixed plant is used, not for a single purpose, but for varied purposes, the influence of joint cost asserts itself. Of this the most striking instance appears in the adjustment of railway rates." [1] And again : " The labour which built the railway—or, to put the same thing in other words, the capital which is sunk in it— seems equally to aid in carrying on every item of traffic, and represents joint cost for the whole of it. . . . Not only the fixed capital of a railway, but a very large part, in fact much the largest part, of the operating expenses, represents outlay, not separate for each item of traffic, but common to the whole of it or to great groups of it. Operating expenses also form a joint cost, and necessitate an accommodation of rates to demand rather than to specific cost." [2] I proceed to examine, in turn, the two opinions to which this reasoning provides the foundation.

§ 3. The proposition that the transport of copper and the transport of coal are joint products can, I think, easily be shown not to follow, even if the general thesis, upon which Professor Taussig bases it, is accepted. For, this writer himself admits that the use of a very large fixed plant *for varied purposes* is essential to the operation of joint cost. He states in express terms : " Where a large plant is used for producing one homogeneous commodity—say steel rails or plain cotton cloth—the peculiar effects of joint cost cannot, of course, appear." [3] A sufficient answer to his thesis, therefore, is to observe that the carriage of tons of different things from A to B *is* a single homogeneous commodity, on precisely the same footing as plain cotton cloth. The fact that some " carrying of tons " is sold to copper merchants and some to coal merchants does not imply that two different services are being provided, any more than the fact that some plain cotton cloth is sold in England and some is sold abroad implies that two different

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[1] *Principles of Economics*, vol. i. p. 221. Cf. also vol. ii. p. 369.
[2] Taussig, " Theory of Railway Rates," in Ripley's *Railway Problems*, pp. 128-9.   [3] *Principles of Economics*, vol. i. p. 221.

commodities are being provided. For, the fact that one sort of thing is sold for two purposes, or to two different groups of people, does not turn it into two sorts of things. There remains one sort of thing and one only. Joint supply, however, implies the presence of at least two sorts of things ; since, obviously, no commodity can be supplied jointly with itself.[1] Hence, not only is it proved that jointness is absent in fact from the case in hand, but it is proved further that its absence is a *logical* necessity. The popular acceptance of the contrary view can only be due to the fact that we happen to speak of "transport of copper" and "transport of coal," instead of speaking of transport sold to copper merchants and transport sold to coal merchants. An accident of language has caused an important field of economic inquiry to be dominated by a doctrine which is essentially unsound.[2]

§ 4. When transportation from A to B and from B to C are conducted by different agencies, an answer exactly analogous to the above can be given to the proposition that transport from A to B of goods to be consumed at B and of goods to be carried forward to C are joint products. The fact that some units of such transport are sold to people, who want also to buy transport from B to C, and some to people, who do not want to do this, does not render transport from A to B

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[1] It is possible to reply that the conception of joint supply is applicable to cases in which only one sort of commodity is produced, provided that the units of process, by which the commodity is made, are large relatively to the units of commodity. When, for instance, the marginal unit of process produces 100 units of product, it may be argued that 100 units must yield a price sufficient to remunerate one unit of process, but that it is immaterial to the suppliers by what combination of individual prices the aggregate price of 100 units is made up. This suggestion, however, ignores the fact that 100 units of product can be removed, not only by abstracting one unit from the fruit of each of a hundred units of process, but also by abolishing one unit of process, and that, under free competition, if any units of product were refused a price as high as $\frac{1}{100}$th part of the supply price of a unit of process, this latter method of abstraction would naturally be employed. This shows that physically identical products, yielded by the same process at the same time, cannot rightly be regarded as joint products, even though the marginal unit of the process of production is large.

[2] It must be noticed, however, that the argument of the text is not applicable to the case of one sort of thing produced at two different times. In so far as the service of carrying passengers is mainly required by day, while the service of carrying goods is mainly required by night, the day service and the night service may reasonably be regarded as jointly supplied, just as electricity furnished by day for power and electricity furnished by night for light may be so regarded.

other than a single homogeneous thing, which cannot be provided jointly with itself. When, however, transport from A to B and from B to C are conducted by the same agency, this answer is not sufficient. For, in that case, it becomes possible that transport from A to B may be supplied jointly with transport from B to C. If this is so, the quantity of transport from A to B, sold in respect of goods to be consumed at B, is a factor in determining the total cost of transporting goods from A through B to C, to those who desire this kind of transport. In substance, therefore, joint supply between transport from A to B and transport from B to C is equivalent to joint supply between transport from A to B of goods to be consumed at B and of goods to be carried forward to C. As a matter of fact, however, transport from A to B and transport from B to C are not, in any appreciable degree, joint products. It is true that much of the rolling stock, engine power and staff of a railway is employed *in common* on all sections of its line, and, therefore, that the condition for joint cost laid down by Professor Taussig, namely, a very large fixed plant used for varied purposes, is fulfilled. This condition, however, is not a true condition of joint supply. The mere fact, that certain instruments are used in common for transport from A to B and for transport from B to C, does not imply that a unit of investment expended upon increasing the normal output of transport from A to B *necessarily* increases the normal output of transport from B to C also. All that it implies is that such a unit of investment is responsible, either for x units of the one kind of transport and y units of the other, or for $(x + h)$ units of the first kind and no units of the second, or for no units of the first kind and $(y + k)$ units of the second. This is not joint supply. Hence, the use of plant in common over the various sections of a line gives no reason for predicating joint supply. Nor is the presence of such joint supply demonstrated, even when we add to Professor Taussig's argument the further consideration, that transport from A to B and transport from B to C can both be conducted more cheaply if they are provided together by one company than if they are provided separately by two. This fact implies that a unit of investment would yield more

of either product, if they were manufactured together, than it would do, if they were manufactured separately, but it does not imply that such a unit necessarily adds to the output of *both*. The fallacious general argument of Professor Taussig must, therefore, be eliminated. When this is done, it becomes apparent that the supply of transport from A to B and of transport from B to C are not joint in any appreciable degree. It follows that, just as there is no jointness, as between the transport from A to B, of copper and of coal, so there is no jointness, as between the transport from A to B, of commodities for consumption in B and of commodities to be carried forward to C.[1]

§ 5. The ground being thus cleared, we may proceed to describe what in practice is meant by the adoption of a rating system conformable to simple competition, or "the cost of service principle." If all tons carried from A to B were exactly the same, and did not imply any variable incidental services, our discussion could be confined to a few sentences. The rate per ton would be uniform throughout, and would be such that demand price and supply price would coincide. The actual level of this rate would depend on the general circumstances affecting the line of railway concerned. *Ceteris paribus*, a specially high rate would be appropriate, if the route

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[1] It must not be inferred from the preceding argument that no element of joint supply is to be found anywhere in railway service. On the contrary, in one department of that service—the department which deals with the to-and-fro movement of *vehicles* between any two points A and B—joint supply is certainly present. The organisation of a railway or steamship company requires that vehicles running from A to B shall subsequently return from B to A. The addition of a million pounds to the expenditure on moving vehicles necessarily increases both the number of movements of vehicles from A to B and the number of movements from B to A. This implies true jointness. It follows that a competitive system of railway or shipping rates would not, in general, make the vehicle charges the same for journeys from A to B and from B to A, but the direction, in respect of which the demand was higher, would be charged a higher rate. This is, of course, the reason why outward freights from England are in most cases low, relatively to inward freights for commodities of similar value ; our imports being largely food and raw materials, and our exports, apart from coal, mainly finished manufactures, the former naturally make a greater demand for shipping accommodation. If it were not for our coal exports, the disparity would be much greater than it is. The case is similar in regard to freight—though not in regard to passengers—between eastward and westward travel in the United States, because "those who supply the world with foods and raw materials dispose of much more tonnage than they purchase" (Johnson, *American Railway Transportation*, p. 138).

lay through districts, where, as is the case with mountain railways, the engineering costs of making a line are specially great, or where the traffic is very irregular from one time to another;[1] because, in these cases, the supply prices of all quantities of transportation along the route is specially high.　In like manner, *ceteris paribus*, a specially high rate would be appropriate, if the route lay through sparsely populated regions where little traffic can be obtained, or through regions where the configuration of the country renders water transport a readily available substitute for land transport; because, in these cases, the demand schedule is specially low, and the supply schedule indicates increasing returns—the expenses involved in building and working a railway, adapted for a small amount of traffic, being proportionately greater than those involved in the production of transport service on a large scale.　It is, no doubt, in recognition of these considerations that the *maxima*, imposed in connection with the British Parliamentary freight classification, are made different for different lines, though the classification itself is, of course, the same for all of them.

Since, in practice, it generally happens that some buyers of a ton of transportation require, along with this, other incidental services involving expense, a brief further discussion is required.　It is necessary to adjust the rates to different buyers according to the cost of these other services.　The adjustments required are exactly analogous to the adjustments made in the price of plain cotton cloth delivered c.i.f. to buyers, who live at different distances from the seat of manufacture.　Thus, rates should be low in respect of the transport of given goods, when the method of packing adopted is convenient to the railway.　It is more costly, other things being equal, to carry small consignments than large.　" Small consignments mean to a railway three distinct sources of serious additional expense : separate collection and delivery, separate handling, invoicing, accounting, etc., at the terminal stations ; and bad loading in the railway waggons."[2]　It is, therefore, proper that, in the English parliamentary classification, goods, which are placed in class A,—the cheapest class,—when loaded in lots of 4 tons,

[1] Cf. Williams, *Economics of Railway Transport*, p. 212.
[2] Acworth, *Elements of Railway Economics*, p. 120.

are raised to class B, when despatched in quantities between 2 and 4 tons, and to class C when despatched in loads of less than 2 tons. On a like principle, it is proper that English railway companies should voluntarily make arrangements, under which certain goods are put into a class lower than the parliamentary classification requires, on condition that they are loaded in certain quantities or packed in certain ways. Further, when the method of packing is given, it is proper that rates per ton should vary with conditions that affect the cost of handling, such as bulk, fragility, liquidity, explosiveness, structure and so on ; and also with the speed and regularity of the service required.[1] This point is clearly brought out in one of the decisions of the United States Railway Commissioners. They declared : " Relatively higher rates on strawberries appear to be justified by the exceptional character of the service connected with their transportation. This exceptional service is necessitated by the highly perishable character of the traffic, requiring refrigeration *en route*, rapid transit, specially provided trains, and prompt delivery at destination. There is also involved in this service extra trouble in handling at receiving and delivering points, the ' drilling ' of cars in a train, reduction of length of trains to secure celerity of movement, partially loaded cars, the return of cars empty, and perhaps other similar incidentals." [2] Finally, it is proper that the rates for carrying from A to B goods that are to go forward to C on the same line should, in general, be less than the rate for so carrying goods destined for consumption at B. In so far as terminal charges are paid for in the rate, this is obviously the case, because, in regard to the former class of goods, terminal charges at B are saved altogether. Even apart from terminals, however, the journey from A to B, as a part of a longer journey, is less costly than the same journey undertaken as an isolated whole. The reason is that, roughly speaking, the interval of idleness for engines and plant, following upon any journey, involves a cost properly attributable to that journey, and the length of the interval does not vary with the length of the journey which it follows. Thus, " long

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[1] Cf. Haines, *Restrictive Railway Legislation*, p. 148.
[2] *Quarterly Journal of Economics*, November 1910, p. 47.

hauls get more mileage out of engines, waggons, train-staff, etc., than a number of short hauls, necessarily with waits between; engines and waggons are better loaded, and the line is more continuously utilised." [1]   This consideration points to some form of tapering rate for the actual service of carriage, apart from terminal charges.   The English classification of merchandise acts on this scheme.   It provides for one maximum ton-mile rate for the first 20 miles, a lower maximum for the next 30 miles, a still lower one for the next 50 miles, and the lowest of all for further distances. This scale does not include terminal charges, these being fixed independently of distance.[2]

§ 6. The meaning in practice of " the value of service principle," or monopoly *plus* discrimination of the third degree, is a more complicated matter.   It was shown in the last chapter that a monopolist adopting this principle will divide the total market served by him into a number of minor markets, by discriminating between which he may make his aggregate advantage as large as possible.   It was shown, further, that the kind of division best calculated to promote this end is one, under which the separate markets are arranged, so far as practical considerations allow, in such a way that each higher priced market contains as few demands as possible with a demand price lower than the highest demand price contained in the next market.   When once the minor markets have been separated, the determination of the rates to be charged in them presents no analytical difficulty, and can be expressed in a simple mathematical formula.[3]   It is not, indeed, the case, as is sometimes supposed, that the relative rates charged to different markets will depend, if this plan is adopted, simply upon the comparative elasticity (at some

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[1] Acworth, *Elements of Railway Economics*, footnote, p. 122-3.

[2] Cf. Marriott, *The Fixing of Rates and Fares*, p. 21.

[3] Thus, let $\phi_1(x_1)$, $(\phi_2)x_2$ . . . represent the demand prices of n separate markets and $f(x)$ the supply price.

The prices proper to the separate markets under monopoly *plus* discrimination of the third degree are given by the values of $\phi_1(x_1)$, $\phi_2(x_2)$ . . . that satisfy n equations of the form:

$$\frac{d}{dx_r}[x_r\{\phi_r(x_r) - f(x_1 + x_2 + \ .\ .\ .)\}] = 0.$$

These n equations are sufficient to determine the n unknowns.

point unspecified) of the different demand curves, nor yet that they will depend simply upon the comparative height above the axis of X of some point (at an unspecified distance from the axis of Y) upon them. The true determinant is more complex, namely, the total shape and position of the curves. It is only when the curves are straight lines that this complex determinant dissolves into a simple one, namely, the relative demand price for those units which are most keenly demanded in each of the several markets.[1] Still, though the determinant is, in general, complex, when once the constitution of the different markets has been settled, it is precise. The real difficulty concerns the choice, limited, as it is, by practical conditions, which a railway company has to make between various possible systems of minor markets. The search for the most advantageous system —from the company's point of view—has evolved, in practice, elaborate schemes of classification in respect, on the one hand, of passenger traffic, on the other hand, of goods traffic. To show the application of the value of service principle in practice, some description of these schemes is required.

In respect of passengers, railway companies find the value of service principle most nearly satisfied by a classification based, in the main, on the relative wealth of different groups of persons, the presumption being that most of the demands for the transport of richer people have demand prices higher than most of the demands for the transport of poorer people. Since it is impracticable to make a classification founded directly on differences of wealth, various indices or badges, generally associated with varying degrees of wealth, are employed. Thus, in the United States, certain railways make specially low rates for immigrants—lower than those required from native Americans, even though the latter are willing to travel in immigrant cars.[2]   In certain colonies there is a discriminating rate according to the *colour* of the traveller, black men, who are

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[1] This simplification can be made especially precise in the case of constant returns, because then, if all the demand curves are straight lines, the monopoly price proper to each market can be shown to be equal to one half of the difference between the supply price and the demand price of the unit that is most keenly demanded there.

[2] *Quarterly Journal of Economics*, November 1910, p. 38.

supposed, in general, to be less well-to-do, being charged lower fares than white men.[1] Again, in England, and still more markedly in Belgium,[2] railway companies charge specially low rates for workmen's tickets. This procedure is exactly analogous to that of the London shopkeepers, who charge to customers with "good addresses" prices different from those charged to others, and of the Cambridge boatmen who charge a collective customer of five persons 5s. for the hire of a boat for an afternoon, while to a single person they will let the same boat for one shilling. A classification based on indices of wealth alone is, however, somewhat crude, since people of the same wealth will desire a given journey with very different intensities on different occasions. In recognition of this fact, railway companies have constructed a variety of cross-groupings, based on such incidents as the degree of comfort or of speed with which, or the hour at which, journeys are undertaken, or the presumed purpose which these journeys serve. Thus, the fares for first-class accommodation, or for conveyance by certain express trains, are made to exceed those for inferior accommodation or lower speed by more than the difference in the cost of providing these different sorts of service ;[3] and specially low fares are sometimes charged in respect of journeys made in the early morning.[4] In like manner, attempts are made to separate holiday journeys, of presumed low demand, from necessary business journeys by the supply, on special terms, of tourist, week-end and excursion tickets.

In respect of goods, railway companies find the value of service principle most nearly satisfied by a classification based, in the main, upon the relative value of the different commodities claiming transport, the presumption being that most of the demands for the transport of a more valuable group of goods have demand prices higher than most of

[1] Cf. Colson, *Cours d'économie politique*, vol. vi. p. 230.
[2] Cf. Rowntree, *Land and Labour*, p. 289.
[3] M. Colson suggests that a plan, under which all trains should take third-class passengers, the fast trains charging a supplement, would be superior to the present continental plan, under which a passenger, who wishes to travel fast, has to pay the whole difference between third and second class fare.
[4] Cf. Mahaim, *Les Abonnements d'ouvriers*, p. 12.

the demands for the transport of a less valuable group. The reason for this presumption is as follows. The demand price for the transport of any n^{th} unit of any commodity from A to B is measured by the difference between the price of that commodity in A and B, which would prevail if the said n^{th} unit were not transported. But, on any law of distribution, the probable difference between the price of any article in A and B respectively, which would arise if these two places were not connected by the assigned act of transport, is greater, the greater is the absolute price that would prevail in either of them; just as the probable difference in the heights of poplars in A and B is greater than the probable difference in the heights of cabbages. There is no reason to expect that the percentage difference will be greater for valuable than for cheap commodities, but there is reason to expect that the absolute difference will be greater. A study of the details of the classification adopted for British railways under the Railway Rates and Charges Act shows that, in the main, the value of the commodities concerned has been taken as a basis. Broadly speaking, the lower the position of any class in the list, the cheaper are the goods that it contains.[1] In like manner, several of the decisions of the United States Railway Commissioners have been founded on the proposition that less expensive articles ought not to be put in a higher class than more expensive articles—chair materials than finished chairs, raisins than dried fruits, and so on.[2]

Sometimes it is practically inconvenient for a company or a regulating authority to group goods directly in accordance with their value. When this is the case, a like result can be obtained indirectly by grouping them according to indices, whose differences are likely to correspond to differences of value. Thus, since the valuable qualities of any commodity are generally packed better than the cheap qualities, rates are sometimes made to vary with the elaboration of the packing employed. For example, in France, where good wines are generally packed " en barriques de 220 à 230 litres,"

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[1] Cf. Marriott, *The Fixing of Rates and Fares*, p. 27 *et seq.* for these lists.
[2] Cf. *Quarterly Journal of Economics*, November 1910, pp. 13, 15, and 29.

common wines " en demi-muids de 650 à 700 litres ou en wagons-réservoirs," [1] wines in " barriques " are charged on a higher scale.

It must be added that, as in the case of passenger service, so also in that of goods service, a classification based exclusively on the value of the commodities transported is necessarily somewhat crude. In consequence of this, cross-groupings based upon other incidents have also been employed. Thus, within each group of commodities of given value transported from A to B, a subdivision is made between those which B can easily make for itself or obtain elsewhere than from A, and those which it cannot so make or obtain ; and a higher rate is charged to the latter group. Again, within a homogeneous group made up of units of the same commodity, sub-groups are constructed. For example, vegetables imported from Germany to England, during the weeks before the English crop is ready, are charged more than vegetables imported from Germany to England, after this crop has appeared ; and the same thing is true of vegetables sent from the south to the north of France.[2] More important is the subdivision according to ultimate place of destination. Thus, commodities sent from A to B, to be consumed at B, are placed in a different group, and charged, in respect of that act of transport, a different rate, from commodities sent from A to B to be forwarded from B to C. The reason is that different parts of the world do not differ in nature in proportion as they differ in distance. There is not much ground for expecting *a priori* that the costs of producing a given commodity in B will differ from the cost in A to a greater extent if A is 500, than if it is 100, miles away. Consequently, the demand for any r^{th} mile's worth of carriage is probably less in respect of long transports of goods than in respect of short transports. This consideration applies with especial force to articles of food and raw material, which are physically adapted to growth over a wide range of temperature and climate. It has some relation, however, to all sorts of goods and is, no doubt, partly

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[1] Colson, *Cours d'économie politique*, vol. vi. p. 227.
[2] Cf. *ibid.* p. 227.

responsible for the systems of tapering rates for goods,—but not for passengers,—that prevail in England, France and Germany.[1] The case is, however, much stronger, when A is connected with C by direct water transport, as well as by a railway from A to B *plus* either more railway or water from B to C.   In these circumstances, the demand price of *many* units of transportation from A to B, of any commodity to be consumed at B, is likely to be much higher than the demand price of *any* unit of transportation from A to B, of the same commodity to be carried on from B to C.[2]   Grouping in accordance with this fact is responsible for the occurrence of rates from Cheshire to London, for goods imported through Liverpool, much below the rates for corresponding goods originating in Cheshire.   On the same principle, " special rates have been granted by the Prussian State Railways for the conveyance of grain traffic from Russia to oversea countries (Sweden, Norway, England, etc.), and the rate per ton per kilometre from the frontier to the German harbours, Königsberg, Danzig, etc., is lower than the charge for German grain between the same points. . . . It was pointed out that this specially low rate was granted with the object of securing the traffic to the Prussian railways, as it need not necessarily pass over the Prussian lines, but could go via Riga, Reval, and Libau, and would have done so without this reduction in the rates."[3]   Where joint supply in respect of transport from A to B and from B to C has been proved absent, and where the cost of carriage from A to B, in isolation and as a part of a longer journey respectively, is the same, the principle just described cannot warrant the charging of a lower aggregate rate for a longer than for a shorter *included* journey over the same line in the same direction, for, in these circumstances, such charging would imply a negative, and, therefore, necessarily unprofitable charge for transport from A to B, in respect of the goods destined to proceed to C.   It

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[1] Cf. Marriott, *The Fixing of Rates and Fares*, p. 43.

[2] In the case of passengers, it sometimes happens that the demand for the short journey is keener in respect of people for whom it constitutes only a part of a larger whole, than in respect of those whose requirement is limited to the short journey.   Thus, fares for the boat-train from London to Dover exceed ordinary fares for that journey.

[3] *Report of the Railway Conference*, p. 99.

has been pointed out, however, in an earlier section that, in general, the journey from A to B, when it is part of a longer journey, costs less than when it is complete in itself. Hence, it is not impossible that cases should arise, in which our principle would justify some departure from the strict letter of the long and short haul clause. The elastic interpretation placed upon that clause by the Interstate Commerce Commission appears, therefore, to be well grounded.[1]

§ 7. We are now in a position to compare the principle of cost of service and the principle of value of service from the point of view of the national dividend. It is well known that, in common opinion, the determination of railway rates by the value of service principle, or, in the alternative phrase, by what the traffic will bear, is unquestionably superior to its rival. The popular view, however, as I understand it, rests, in the main, upon two confusions. The first of these is a verbal confusion. The transport of copper and the transport of coal, and the transport from A to B when further transport respectively is, and is not, required, are, as was explained earlier in this chapter, falsely supposed to be joint products; and the charging to joint products of rates adjusted to comparative marginal demand is falsely supposed to be charging according to the value of service principle. On this basis, arguments, which prove that arbitrary interference, compelling the same price per pound to be charged for beef and

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[1] After the revising Act of 1910, "the Commission's opinion in this matter is handed down in the cases 'Railroad Commission of Nevada v. Southern Pacific Co.,' 'City of Spokane v. Northern Pacific Railway Co.,' and others. In these, the Commission offers the first interpretation of the new long and short haul section that has yet been presented. It determines to direct a rearrangement of rates affected by this new provision, and, in order to carry out its ideas, divides the country into five 'zones,' within which difference of rates in favour of points protected by water competition may not exceed specified percentages of variation. For example, it orders that traffic originating at Chicago and the territory tributary thereto, moving to interior points, shall not be charged a rate more than 7 per cent higher than that charged on freight originating at the same points, and destined for the coasts. From the Buffalo-Pittsburg region the rates to intermediate (interior) points may rise above those demanded from the same points to the coast terminals by not over 15 per cent, while from New York and tributary territory the rates charged shall not exceed 25 per cent over and above terminal rates. Shipments from interior points west toward the Pacific coast may not be made to pay higher rates than are permitted to be charged on freight moving to the coast, save to the extent made standard in the various zones by the new order" (*Economist*, August 12, 1911).

for hides, would diminish the dividend, are supposed to prove that railway companies will benefit the community by adopting the value of service principle in preference to the cost of service principle. A confusion of this magnitude, though it is countenanced by no less an authority than Principal Hadley,[1] does not need, I think, further detailed criticism. The second confusion is also in the nature of an *ignoratio elenchi.* Arguments are advanced to prove that the value of service principle, in the proper sense of discriminating monopoly, is superior to simple monopoly. Thus, it is pointed out that, when the conditions are such that the rate most advantageous to himself, which the monopolist can make, subject to the condition that equal rates shall be charged for the transport of copper and of coal, will prevent any coal from being transported, the national dividend could be increased by permission to discriminate between the two rates.[2] Such an argument, it is obvious, though valid in its own field, is wholly irrelevant to the question whether discriminating monopoly of the third degree is superior, not to simple monopoly, but to simple competition. When these confusions are swept away, the issue between the value of service principle and the cost of service principle in respect of railway rates is seen to constitute a special case of the general issue, set out in the preceding chapter, between the said discriminating monopoly of the third degree and the said simple competition.

§ 8. The result of the discussion on that issue was to the effect that simple competition is, in general, more advantageous.[3]

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[1] Cf. Hadley, *Railroad Transportation*, p. 113 and footnote. All arguments to the effect that the charging of abnormally low rates on one kind of traffic, " by contributing something towards the profits of the consumer, reduces the amount that will have to be so contributed by the other class of traffic " (Erickson, *American Economic Association Publications*, 1908, p. 100) embody this confusion.

[2] Cf. the preceding chapter, §§ 16 and 17.

[3] At this point it is desirable to consider the view that discrimination, in respect of carriage, between manufacturers trading from B to A, and those trading from C through B to A is, in general, more injurious than discrimination between copper merchants and coal merchants. The ground for this view is that the manufacturers in C and B, being rivals for A's market, have demands for carriage which are not independent, while the demands of copper merchants and coal merchants are independent. Thus, it is

There emerged, however, one clear case, in which the advantage lies with its rival. This case appears when the conditions are such that, while no uniform price can be found, which will cover the expenses of producing any quantity of output, a system of discriminating prices is practicable, which will do this. It has been illustrated in detail by Principal Hadley, with special reference to discriminations between the charges for carriage from A to B, made in respect of goods going to B for consumption at B, and goods going to B for further transport to C. "Suppose," he writes, "it is a question whether a road can be built through a country district, lying between two large cities, which have the benefit of water communication, while the intervening district has not." To meet water competition, the charge for carriage from one extreme A to an intermediate point B must be low for goods to be carried forward to the other extreme C; so low that, if it were applied to all carriage from A to B, it would make the working of this part of the road unprofitable. But, the demand for carriage from A to B, in respect of goods to be retained at B, is so small that this alone cannot support the road, no matter how low or how high the rates are made. "In other words, in order to live at all, the road must secure two different things—the high rates for its local traffic, and the large traffic of the through points, which can only be attracted by low rates. If they are to have the road, they must have discrimination."[1]   It is obvious that an exactly

argued, discrimination of the first sort involves a special and extra injury, in that it requires the costs to be undertaken of carrying from C to B units of commodity, which would otherwise have been produced at B, and so would have required no carriage over that section. The argument, stated in this way, appears to be fallacious ; for, it tacitly assumes that, when the general demand schedule for a service, on the assumption of uniform prices, is given, the system of discriminating prices most profitable to the monopolist will be the same, whether the demands constituting this market are or are not independent. As a matter of fact, however, this is not at all likely to be the case. For example, if two sub-markets, into which the general demand for a service can be divided, are perfect rivals, it will not pay the monopolist to discriminate between them at all, since the only effect of so doing would be to empty altogether the less favoured of the two. Thus, though, where the demands are rival, a part of the injury due to discrimination is likely to come about through unnecessary carriage from C to B, we are not entitled to conclude that the amount of this unnecessary carriage measures the difference in the aggregate loss due to discrimination in the case of rival and independent demands respectively.

[1] *Railroad Transportation*, p. 115.

analogous argument in favour of the value of service principle
can be constructed in respect of discriminations in the ton-mile
rate charged on different commodities, when the conditions
are such that, apart from discrimination, there would be
no quantity of transportation units, the proceeds of whose
sale would cover their expenses of production. I have no
quarrel with the proposition that this kind of case *may* occur
in practice. Principal Hadley and his followers, however, not
content with demonstrating that fact, implicitly add, without
argument, that this case is typical of the whole railway world,
and suppose themselves, therefore, to have proved that the
value of service principle ought to be followed in the deter-
mination of all railway rates. Such an unargued inference is,
plainly, illegitimate. A careful inquiry is necessary concern-
ing the range over which our clear case, justifying the value
of service principle, is likely to extend in practice.

§ 9. From an analytical point of view, the situation is
simple. As explained in the preceding chapter, in order that
monopoly *plus* ideal discrimination may create an output
where simple competition fails to do so,—I take the simplest
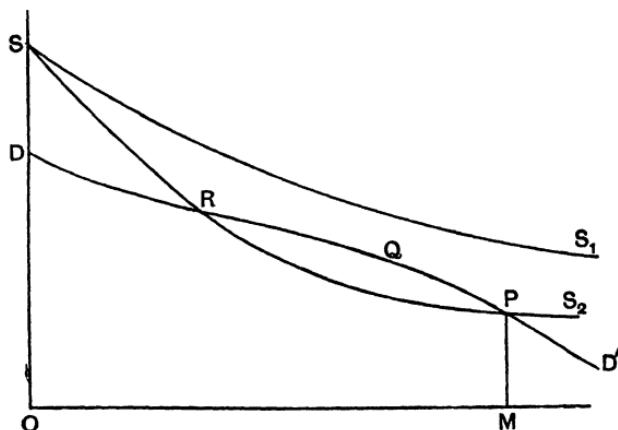
case, in which the demand in one market is independent of
the price in the other—it is necessary, in the annexed figure,
that the supply curve SS_1 lies throughout above the demand
curve DD', and that the curve of marginal supply prices SS_2 cuts
DD' twice, in such a way that the area RQP is greater than the
area SRD. In these conditions, output under simple competi-

tion will be zero; but, output under monopoly *plus* ideal discrimination will be equal to OM.   The conditions enabling monopoly *plus* discrimination of the third degree to lead to this result are less precise.   Circumstances, in which ideal discrimination will only just succeed, will not, in general, enable discrimination of the third degree to succeed.   We may conclude, roughly, however, that discrimination of the third degree will have a good chance of succeeding—a chance that is better, the more numerous are the markets between which discrimination is made, and the more satisfactory, from the monopolist's standpoint, is their constitution—when the area RQP is considerably greater than the area SRD.   Our problem is to determine how far this condition of things is likely to occur in practice.   In attempting to answer that question, we have to consider both the shape of each of the two curves and also their comparative position.

First; if the supply curve slopes downward steeply, there are more forms of demand curve, that would enable the required conditions to be fulfilled, than there would be if the supply curve only sloped downward slightly.   In the special case of railways, there is reason to expect that the supply curve, in its earlier portions at all events, will slope steeply.   The reason is that the fixed plant of a railway cannot, in practice, be so made as to be capable of effecting less than a certain considerable minimum of transportation. The aggregate costs of arranging for rail transport for one ounce per week are very nearly as great as those of arranging for the transport of many thousand tons.   In either case, the same heavy expenditure must be made in respect of surveying and legal charges, bridging valleys and torrents, tunnelling through rock, erecting stations and platforms, and so on. This implies a supply curve sloping steeply at first and afterwards less steeply.   So far, therefore, the conditions of railway service are more favourable to the occurrence of a case, in which discriminating monopoly would prove superior to simple competition, than are the conditions of some other industries.

Secondly ; if the conditions of supply are given, and if it is known that the demand curve cuts the axis of Y at a given

distance below the point at which the supply curve cuts it, our condition is more likely to be fulfilled, the more nearly the demand curve lies parallel to the supply curve. Hence, since we have seen that the supply curve in the case of railway service slopes steeply at first and afterwards less steeply, circumstances will be specially favourable, if the demand curve has a similar form. As a matter of fact, there is reason to suppose that it is likely to have such a form. There are a comparatively small number of goods, for the transport of which, for some purposes, very high demand prices prevail, and a comparatively large number for the transport of which, for other purposes (*e.g.* for further transport to a point also joined to their starting place by water), moderate demand prices prevail. This condition does not, indeed, go far towards suggesting that the demand curve is likely to lie parallel with the supply curve, since the transitions from steepness to less steepness need not occur at corresponding points on the two curves; but, it does go a little way in this direction. Here too, then, it may be said that railway service is situated more favourably for the occurrence of a case of the kind we are considering than some other industries.

Granted, however, that the shapes of the demand and supply curves are specially favourable, it will not happen that discriminating monopoly will prove capable of evolving an output, where simple competition would prove incapable of doing this, unless the relative position of these curves is also favourable. If the discrimination prevailing is of the ideal sort, a sufficient condition is that the supply curve lies above the demand curve, but does not lie so far above it that the curve of marginal supply price lies above it also. Thus, on the one hand, the district affected must not be too busy and thickly populated; on the other hand, it must not be too little busy and sparsely populated. There is a certain intermediate range of activity and population that is needed. This range, compared with the total range of possibility, is, clearly, a narrow one. Though, therefore, we are able to point to special circumstances, in which discriminating monopoly would be more advantageous to the dividend than simple monopoly, the probability that these circumstances will be present in

regard to any railway, selected at random, at any time, seems to be small.

§ 10. Though, however, this is the case, we may note an important modifying circumstance. As population and aggregate wealth in any country expand, the demand schedule for railway service, along any assigned route, gradually rises. Hence, though, at any moment selected at random, it is improbable that the conditions affecting any route, selected at random, are such that a railway rate system, based on the " value of service principle," would be more advantageous to the dividend than one based on the " cost of service principle," it is not improbable that any route, selected at random, will *pass through a period* during which the conditions are of this kind.   Such conditions tend to emerge when one point in the growth of wealth and population has been reached, and to disappear when another somewhat later point has been reached. If the " cost of service principle " were enforced universally, and if no State bounties were given, certain lines would not be built till the arrival of the later point, despite the fact that they could have been built, with advantage to the community, on the arrival of the earlier point.   The inference is that discrimination, or the " value of service principle," should be adopted when any route is in the intermediate stage between these two stages, and that this principle should give place to simple competition, or the " cost of service principle," as soon as population has grown and demand has risen sufficiently to lift it out of that stage.[1]   The period proper to the " value of service principle " would seem, in respect of most ordinary lines, to be a comparatively brief one.[2]

[1] Mr. Bickerdike (*Economic Journal*, March 1911, p. 148) and Mr. Clark (*Bulletin of American Economic Association*, September 1911, p. 479) argue, in effect, that the transition from the one system to the other should occur, not when rising demand lifts the railway in question out of the stage just described, but when, if ever, it rises so high as to impinge on that point of the supply curve, at which a negative slope passes into a positive one.   There is not, in my opinion, any adequate ground for this view.

[2] It is possible to maintain, on lines similar to the above, that, after a railway has been built, and has reached the stage of profitable working on the cost of service principle, another stage will presently arrive, at which a return to the value of service principle would enable a second track to be laid down with advantage to the community, though, under a rate system based on the cost of service principle, such an extension would not as yet be profitable to the company.

NOTE TO CHAPTER XIII

THE ZONE SYSTEM

The zone system of rates fixes certain lengths of railway line, to any point in which the rate from any outside point is the same. For postal purposes, the whole of the British Empire is a single zone, and, in forms of transport, where the differences in cost of carriage are small compared with costs of handling, considerations of simplicity and convenience may well make such a system desirable on the whole, despite incidental disadvantages. The system, however, implies differentiation in favour of firms situated far from their markets, as against firms situated nearer to them. In effect, it confers upon them a kind of bounty at the expense of their rivals. Now, it was shown in Chapter VIII. that differentiation in favour of one source of supply as against another source may, in certain circumstances, and if introduced in a certain manner, prove socially advantageous. The sort of differentiation that results from the zone system is, however, random differentiation, not specially designed to favour a carefully chosen list of selected firms. It is, thus, on the average, like differentiation in favour of one set against another set of *similar* firms. This sort of differentiation can easily be shown to imply the production (including transport) of some part of the commodity concerned at greater real cost than is necessary ; for, the marginal real costs of producing in the distant source and bringing to the market must necessarily be greater than the marginal real costs of producing in the nearer source and bringing to the market.[1] It is possible to maintain that the direct loss resulting from this circumstance may be balanced by the effect of the zone system in scattering the producing firms belonging to an industry, and so making combination and the resulting anti-social monopolistic action more

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This argument presents a theoretically valid case for the erection of a system of discriminated rates, *to be applied to traffic carried on the new track only* ; and a modification of it presents a similar case for the erection of such a system, to be applied exclusively to traffic carried in any *additional* train or truck which, apart from discrimination, it is just not worth while to run. In practice, however, it is impossible to apply the value of service principle in this limited way. If it is introduced in respect of the traffic proper to the second track or the extra truck, it must, in real life, be introduced in respect of all the traffic carried on the line. The argument set out above does not present a theoretically valid case for this.

[1] Cf. *Quarterly Journal of Economics*, February 1911, pp. 292-3, 297-8, and 300 ; also *Departmental Committee on Railway Rates*, p. 10.

difficult.[1]   This argument, however, does not appear to have great force.   It is not, in itself, desirable to check the formation of large productive units, since such units introduce economies.   As will be argued presently, it would seem a better policy to attack the evil consequences of monopolistic action, which combination threatens, directly, rather than indirectly by attempts to prevent unification.[2]

[1] Cf. *Quarterly Journal of Economics*, May 1911, pp. 493-5.
[2] Cf. *post*, Chap. XVI. § 3.

CHAPTER XIV

§ 1. THE results of the preceding chapters make it plain that, in many industries, neither simple competition nor monopolistic competition, nor simple monopoly, nor discriminating monopoly will lead to equality of marginal net products in different fields, and, hence, to the maximisation of the national dividend. It will have been noticed, however, that the systems so far investigated have all been systems, under which goods are produced by one set of people, and sold to another set. The failures of adjustment, to which they lead, have, therefore, all been dependent on this fact. Hence, the question naturally arises; could not these failures be eliminated by the device of voluntary groups of purchasers undertaking for themselves the production of the goods they need ?

§ 2. Now, the essence of a Purchasers' Association, whether it is formed of the consumers of finished goods or of producers who will utilise their purchases in further production, is that its policy is directed to maximise aggregate purchaser's surplus *minus* aggregate costs. It *must*, therefore, produce just that quantity of output which equates demand price and marginal supply price, and so, apart from cases in which others besides the purchasers of any commodity are affected by its production, it must make the marginal net product of investment in our industry equal to the marginal net product of resources in general. Consequently, other things being equal, it must eliminate, in great measure, the disharmonies belonging alike to monopoly and to simple competition. This preliminary abstract statement does not, however, solve our problem. It

is not sufficient to know that, *if other things are equal*, Purchasers' Associations will advantage the national dividend. Before we can infer anything from this about the effect of these Associations in actual life, we need to inquire how they stand, as compared with ordinary commercial businesses, in respect of crude economic efficiency; for, it is clear that any advantages, which a Purchasers' Association may possess in respect of price policy, are liable to be outweighed, if it is inefficient on the productive side.

§ 3. As a prelude to the undertaking of this task, it is desirable to guard against certain confusions. First and most obviously, we need to rule out all appeals to the superior efficiency, in certain fields, of Purchasers' Associations, as compared with the members of these Associations operating as isolated individuals. It is easy to point to services, which many persons need in small individual lots, but which can be produced much more economically in large lots. An obvious example is the service of marketing agricultural products of variable quality, produced in small quantities by small farmers. For, economical selling requires careful grading of qualities and a fairly continuous supply of each grade; and small farmers, who attempt individually to market their butter or their eggs, are not operating on a large enough scale to meet these requirements satisfactorily. The fact, however, that, for this kind of reason, the manufacture of butter, the curing of bacon and the marketing of eggs " afford a splendid opening for the application of co-operative principles," is irrelevant to the present issue, since these things also afford a splendid opening for the application of commercial principles.[1] It is true that a Purchasers' Association can work in this field much more cheaply than a single small farmer; but, exactly the same thing is true of an ordinary commercial firm, undertaking to sell the service of marketing to these farmers. Secondly, we need to refrain from stressing unduly the history of English Co-operative Stores. The reason is that, when the device of Purchasers' Associations was introduced into the field of retail trading, the

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[1] In like manner, the charge that the development of Purchasers' Associations on the part of groups of persons other than ultimate consumers may make possible monopolistic action against these consumers is irrelevant; for, so also may the development of commercial firms.

rival method was not fairly represented.   Partly in conse-
quence of the imperfect character of the competition between
different shops, a kind of tradition of incompetence had grown
up.   Even from their own point of view, "retailers as a body
kept far more shops than was necessary, spent far too much
trouble and money in attracting a few customers, and then in
taking care that those few customers paid them in the long
run—the very long run—for those goods which they had
bought on credit, or, in other words, had borrowed ; and for
all this they had to charge. . . . Retail trade was the one
accessible business in which there were great economies to be
effected."[1]   This fact, that the trade of retailing was in an
abnormal condition, is brought out by Professor Pareto's
observation, that retail shops were easily ousted by the com-
petition, not only of *sociétés co-opératives*, but also of *les grands
magasins*.[2]   A comparison between retail trading, as it stood
when our consumers' stores came into being, and these stores is
not a fair test of the relative merits of the industrial forms
they represent.   It is like a comparison between a maimed
member of one race and a healthy member of another.   No
great weight, therefore, can reasonably be attached to historical
examples, and we are driven forward to an analytical study.

§ 4.   In attempting, from this point of view, to estimate the
economic efficiency of Purchasers' Associations, we may begin
by noting two respects in which they enjoy, or may enjoy,
important advantages.   In the first place, when any field of
industry is given over to monopolistic competition, ordinary
commercial businesses are bound to engage in much wasteful
expenditure on advertising, in the manner described in Chapter
VII. § 11.   This expenditure enters into and augments the
cost of production of these businesses.   For Purchasers'
Associations, however, whose customers are already assured to
them by the very fact that they *are* Purchasers' Associations,
this expenditure is wholly unnecessary.   By so much, there-
fore, their efficiency is, *ceteris paribus*, greater than that
of their rivals.   In the second place, when any field of
industry involves an element of bilateral monopoly, ordinary

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[1] Marshall, *Inaugural Address to the Co-operative Congress*, 1889, p. 8.
[2] Cf. *Cours d'économie politique*, p. 274.

commercial businesses, and their customers respectively, are driven to expend energy, if not money, after the manner described in Chapter VII. § 13-14, in attempts to get the better of one another. When a Purchasers' Association exists, this class of expenditure is likely to be reduced. The gain is clear in respect of the provision of two sorts of service, insurance and the retailing of loans. The insurance contract is conditional on the happening of some event to the buyer; the loan contract is conditional on the buyer's promise to repay. In the one case, the buyer may gain at the seller's expense by simulating, or even by voluntarily bringing about, the event provided against ; in the other case, he may gain by deliberately breaking, or by so acting as to render himself unable to perform, his promise. Now, it is, of course, true that individual buyers are able to gain by this class of conduct, not only when the relation of identity between buyers and sellers collectively does not exist, but also when it does exist. The point, however, is this. Under the Joint Stock form of industrial organisation the fraudulent or quasi-fraudulent conduct of one buyer is indifferent to the other buyers, and can, therefore, only be guarded against by an elaborate and continuous system of inspection. Under the Purchasers' Association form, however, the other buyers are directly injured by such conduct and are, therefore, interested to prevent it. If, then, the Purchasers' Association consists of neighbours, all will incidentally, and in the course of the ordinary conduct of life, constitute themselves voluntary and unpaid inspectors of each. In this way small local Purchasers' Associations for the supply of insurance or the retailing of loans are, in effect, free from a substantial part, not merely of the nominal, but also of the real costs, that Joint Stock Companies, attempting to furnish these services, would be compelled to bear. In so far as people are less willing—apart altogether from the prospect of success—to try to defraud a Mutual Association than a commercial company, the gain under this head is increased.

§ 5. Proceeding to more general considerations, we observe that a Purchasers' Association is, in structure, a form of Joint Stock Company. Like any other Joint Stock Company, it is owned by shareholders, and is controlled by a manager, under

the supervision of a committee elected from among the share-holders. The alternatives to it are the private business and the ordinary commercial company. In attempting to compare its economic efficiency with theirs, we naturally look, in the first instance, to the organisation of the management. Under this head, it must be observed, first, that the Purchasers' Association and the commercial company alike are inferior to the private business, just in so far as Boards of officials lack the opportunities for quick action and the stimulus of personal possession belonging to the private business. The Purchasers' Association, however, is likely, in some degree, to make up for this deficiency through the ardour instilled into the manager and the committee by the fact that they are engaged in a service suited to evoke public spirit. The form of Purchasers' Association may, in fact, utilise the altruistic motives, alongside of the egoistic, as a spur to industrial efficiency. Against this consideration, however, there has to be set a second. In so far as Purchasers' Associations consist of poor persons, they tend to grudge large salaries to managers, and so are apt to secure worse men than commercial companies. Furthermore, their committee-men are drawn from a more limited area, and are apt to possess less business experience than the directors of commercial companies. These conflict-ing influences will, of course, have different weights in different circumstances.

§ 6. The considerations we have advanced so far have not, on the whole, been unfavourable to the claims of Purchasers' Associations to be regarded as productively efficient organ-isations, and it might seem, therefore, that the field over which they can be advantageously employed is a large one. There remains, however, another important group of considerations. Under given conditions, at any time, there will always be some size of business unit in any industry which is more economical to work, or, in other words, more efficient than any other size. What this size is will, of course, vary with circumstances, but, in all circumstances, there will be some most economical size. Now, in our discussion up to this point, it has been tacitly assumed that the most economical size can be attained equally easily by a Purchasers' Association

and by a commercial firm.   If this were, in fact, the case, no reference to the matter would be relevant.   In reality, however, while the commercial firm is free to evolve, without obstruction, a business unit whose size shall be determined by considerations of efficiency alone, Purchasers' Associations are often not thus free.   In so far as their powers in this direction are limited, they are rendered relatively inefficient, not directly by their structure, but indirectly through their limitation in respect of size.   I proceed to examine this point in detail.

§ 7. In the second section of the present Chapter the essential nature of a Purchasers' Association was defined in reference to the policy pursued by it :—its manager aims at maximising, not profit alone, but profit *plus* purchasers' surplus.   Now, for a man to be willing to take shares, or to assume liability, in an association framed on this basis, it is necessary, apart from philanthropic action, that he shall expect to make purchases bearing as large a proportion to his holding of shares or assumption of liability as the purchases of the other members bear to their holding or liability.[1]   The reason is that, in a Purchasers' Association, as I have defined it, the risks are assumed by the members in proportion to their holding or liability, but the reward of risk, in the event of success, is handed to them in proportion to their purchases.   This means that no one has much inducement to assume a large share of the risks, unless he intends also to be responsible for a large share of the purchases.   It follows that the size of the business unit, which a Purchasers' Association can evolve, depends upon the extent to which the proportions between share-holding power and purchasing power are similar among different potential members.   If similarity in this respect extends over a wide range of people, it will probably be easy for a Purchasers' Association to attain to whatever size of business unit may prove to be economically most efficient.   But, if similarity only extends over a narrow range, the attainment of this result may be impossible, and it may, therefore, be impracticable to form any Purchasers' Association, which shall not, on account of its small size, be hopelessly inefficient.

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[1] In some societies there are no " shares," the capital being borrowed from a bank on the security of the unlimited liability of the members.

§ 8. Roughly speaking, we may regard capacity to hold shares or to assume liability in a Purchasers' Association as proportionate to income.   Consequently, in order that the Purchasers' Association form of industry may escape inefficiency through inadequate size, it is necessary that the commodity dealt in be of such a sort that a large quantity of it is purchased by people, whose purchases are more or less proportionate to their income.   The field over which this condition is satisfied requires, therefore, to be marked out.   It would seem to contain two principal divisions.   First, the required condition is satisfied in respect of commodities and services, which play an important and constant part in some further productive industry ; for, the quantity of commodities or services of this sort, which individual producers require, is roughly proportionate to the size of their respective businesses, and this, in turn, is roughly proportionate to their incomes.   This statement applies to the services provided by the so-called supply associations often formed by farmers—associations, that is to say, which supply to their members the service of marketing from manufacturing firms such things as manure, seeds, and agricultural machinery.   It applies also to the services provided by agricultural selling societies—such services, for instance, as the sorting, grading, selling and packing of eggs or of butter. It applies, finally, to the services performed by the Co-operative Creameries, which play so important a part in Denmark and in Ireland—the services in this case consisting in a manufacturing as well as a marketing operation. Secondly, the required condition is satisfied in respect of certain commodities and services used, not in further production, but in consumption.   It is not, indeed, to be expected that *any* commodity or service will be consumed, by persons whose incomes are widely different, in proportion to their income, because, for all individual commodities and services, a satiety point is apt to be reached fairly soon.   But, if there exists a large group of persons of similar income, it is to be expected that, among them, certain commodities and services will be consumed in similar quantities.   For this reason, there is scope for Purchasers' Associations, of a size adequate for full economic efficiency, in the provision of the services of

retailing, wholesaling, and sometimes even of manufacturing, general staple household goods (including houses themselves) to large agglomerations of working people with fixed homes.

§ 9. There remains, however, a very wide area of industry over which the required conditions are not fulfilled. Commodities or services, the demand for which is liable to vary with variations of fashion or for other causes, are not likely to be purchased by different people to an extent proportionate to their respective incomes. This is probably the reason why Co-operative Stores " have seemed to shun capital and seafaring towns." The migratory character of the population makes it quite likely that an individual's demand for the service of retailing goods in such a town will suddenly cease, and so destroys the simple relation that might otherwise subsist between purchases and income. Furthermore, even when there is no special liability to variations in individual demand, there are still many commodities, the purchases of which are only remotely connected with the incomes of the purchasers. Such are commodities whose demand depends on individual tastes and, indeed, one might almost say, all "consumable" commodities except obvious "necessaries." In regard to these it will, in general, prove difficult to construct a Purchasers' Association large enough to attain the economies of production proper to the most efficient size of business unit. In these circumstances, unless it so happens that the direct economies of the Association form are very large, the efficiency of the Purchasers' Association is likely to be low relatively to that of the commercial firm. It is not, therefore, specially likely to be introduced, and, if introduced, it will not prove a specially satisfactory engine of social improvement.

§ 10. There remains one more point. Even when the conditions are such that a Purchasers' Association would probably be at least as efficient as a commercial business, it does not follow that an Association will come into being. Very poor people may lack the initiative and understanding, very rich people, not caring for small economies, may lack the will to form one. Consequently, though the Purchasers' Association, as a means of overcoming the evils of ordinary

competition and ordinary monopolistic industry, has, un-
doubtedly, an important part to play, the field open to it is
strictly limited in extent, and the study of further remedies
is, therefore, still required.[1]

[1] For a full discussion of the various forms of co-operative activity, *vide*
Fay, *Co-operation at Home and Abroad.*

CHAPTER XV

§ 1. OVER the large field of industry, where voluntary Purchasers' Associations are not an adequate means of overcoming those failures in industrial adjustments, which emerge in connection with the more ordinary business forms, the question arises whether the magnitude of the national dividend might not be increased by some kind of governmental intervention. The problem of the present and following chapters is to find an answer to this question.

§ 2. For some persons the obvious approach towards this problem is blocked by the supposition that there are certain industries, those, namely, that make use of the right of eminent domain, such as railway service (national and street), gas-lighting, electric supply, water supply and so forth, with which governmental authority has a title to interfere, such as it does not possess in connection with other industries. This supposition is erroneous. It is true that the exercise of eminent domain practically implies monopoly, for the reason that neither State nor municipal authorities are at all likely to allow double parallel interference with streets and highways. This circumstance, however, only puts these public utility services into the general class of monopolistic services: it does not render them different, in any essential respect, from services that have come into that class—like the oil, or steel industries in America—in quite other ways. Thus, eminent domain is in no way a condition precedent, either to governmental management, or to governmental control through a licence. Public slaughter-houses, licensed premises

for the sale of intoxicants and the system of licensed cabs in London are practical illustrations of this fact. The broad question of policy is different, according as we are concerned with monopolistic or with non-monopolistic industries; it is different again, within monopolistic industries, according as discriminating prices are, or are not, practicable; but, it is the same, *ceteris paribus*, whether the industry concerned does or does not require to exercise the right of eminent domain. In short: "the public authority has the power to regulate the profits made in any industry, as well as the power to prescribe the price at which any service shall be rendered, or any commodity shall be sold. Whether, in any particular instance, public necessity and convenience require the exercise of that power, is a question of fact, dependent upon the circumstances of the case. To assert, without inquiry into the circumstances of each individual case, but simply as a matter of general principle, that profits should be limited and charges should be regulated in those industries, which must obtain a franchise to use the streets, is to advocate unequal taxation and class legislation." [1] Again, as Dr. Cannan writes: "The reason for any particular service being rendered by the municipality surely is that it can be best rendered by the municipality, not that it is of general utility. The question of its being or not being of general utility arises only when we have to consider whether it shall be a municipal enterprise (whose services are sold), or part of the ordinary work of the municipality paid for by general rates." [2] We may, therefore, proceed to the discussion of our problem, as stated in the first section, without reference to this imaginary distinction.

§ 3. It is clear that there has already emerged a *prima facie* case for governmental intervention in regard to many industries, particularly when they are of a monopolistic character. The case, however, cannot become more than a *prima facie* one, until we have considered the qualifications, which governmental agencies may be expected to possess for intervening advantageously in this class of matter. It is not sufficient to contrast the imperfect adjustments of unfettered private enter-

H. Meyer, *Public Ownership and the Telephones*, p. 176.
[2] *Economic Journal*, 1899, p. 8.

prise with the best adjustment that economists in their studies can imagine.   For, we cannot expect that any State authority will attain, or will even whole-heartedly seek, that ideal.   Such authorities are liable alike to ignorance, to sectional pressure and to personal corruption by private interest.   A loud-voiced part of their constituents, if organised for votes, may easily outweigh the whole.   This objection to public intervention in industry holds good, both as regards intervention through control of private companies, and as regards intervention through direct public operation.   On the one side, companies, particularly when there is continuing regulation, may employ corruption, not only in the getting of the franchise, but also in the execution of it.   " Regulation does not end with the formulation and adoption of a satisfactory contract, itself a considerable task. . . . As with a constitution, a statute, or a charter, so with a franchise.   It has been proved that such an agreement is not self-enforcing, but must be fought for, through a term of years, as vigorously as at the time of formulation and adoption.   A hostile, lax, or ignorant city council, or even a state legislature, may vary the terms of the agreement in such a manner as totally to destroy or seriously to impair its value." [1]   For this the companies maintain a *continuing lobby*.   " It is from them that the politicians get their campaign funds." [2]   This evil has a cumulative effect, for it checks the entry of upright men into government, and so makes the corrupting influence more free.   On the other side, when municipalities themselves work enterprises, the possibilities of corruption are changed only in form.   " The new undertakings proposed by the municipalisers would lead to dealings to the extent of many million dollars with trades-men, builders, architects, etc., to the increase, by hundreds, of important offices, and to the employment of tens of thousands of additional public servants.   Party leaders would have their proportion of increased patronage.   Every public official is a potential opportunity for some form of self-interest arrayed against the common interest." [3]

[1] *Municipal and Private Operation of Public Utilities* (Report to the National Civic Federation, U.S.A.), vol. i. p. 39.

[2] Beamish, *Municipal Monopolies*, p. 174.

[3] *Municipal and Private Operation of Public Utilities*, vol. i. p. 429.

§ 4. The force of this argument for non-interference by public authorities is, clearly, not the same at all times and places, for any given kind of public authority will vary, alike in efficiency and in sense of public duty, with the general tone of the time. Thus, during the past century in England, there has been "a vast increase in the probity, the strength, the unselfishness, and the resources of government. . . . And the people are now able to rule their rulers, and to check class abuse of power and privilege, in a way which was impossible before the days of general education and a general surplus of energy over that required for earning a living."[1] This important fact implies that there is now a greater likelihood of interference, in any given case by any given governmental authority, proving beneficial than there was in former times. Nor is this all. Besides improvement in the working of existing forms of public authority, we have also to reckon with the invention of improved forms. This point may be put thus. The principal disadvantages of municipal and national representative assemblies, as organs for the control or the operation of business, are four in number. First, these bodies are primarily chosen for purposes quite other than that of intervention in industry. Consequently, there is little reason to expect in their members any special competence for such a task. Secondly, the fluctuating make-up of a town council is a serious handicap. Sir W. Preece wrote: "I have the experience of electric lighting in my mind. Large municipalities overcome the difficulty by forming small and strong committees and selecting the same chairman, and thus maintain a kind of continuity of policy. Small corporations start with very large committees; they are constantly changing, and the result is that you find, sometimes inability to agree upon the system to be used, sometimes inability to agree upon the means to be employed to conduct the service; and it is incessant trouble and squabble."[2] Thirdly, the areas, to which public authorities are severally allocated, are determined by non-commercial considerations, and, consequently, are often likely to prove unsuitable for

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[1] Marshall, "Economic Chivalry," *Economic Journal*, pp. 18-19.
[2] H. Meyer, *Municipal Ownership in Great Britain*, p. 258.

any form of intervention with the working of an industry. It is well known, for example, that attempts on the part of municipalities, in some cases to regulate, and in others to operate, the service of street-traction and the supply of electrical power have suffered greatly from the fact that these services, since the development of modern inventions, can be organised most economically on a scale much in excess of the requirements of any one municipality.[1] Finally, as indicated above, regular governmental agencies, in so far as they are elective bodies, are obviously liable to injurious forms of electoral pressure. These four disadvantages are all serious. All of them, however, can be, in great measure, obviated by the recently developed invention of " Commissioners," that is to say, bodies of men appointed by governmental authorities for the express purpose of industrial operation or control. These men can be specially chosen for their fitness for that task, their appointment can be for long periods, the area allotted to them can be suitably adjusted, and their terms of appointment can be such as to free them, in the main, from electoral pressure. It may be added that the system of commissioners also, in great part, removes a further important objection to intervention in industry on the part of municipal councils. This objection, as stated by Major Darwin, is that such intervention " lessens the time which these bodies can devote to their primary and essential duties, and, by increasing the unwillingness of busy men to devote their time to public affairs, it lowers the average administrative capacity of the Local Authorities."[2] When industries are operated or controlled by special public commissioners, this objection is obviously inapplicable. The broad result is that modern developments in the structure and methods of governmental agencies have fitted these agencies for beneficial intervention with industries, under conditions which would not have justified such intervention in earlier times.

[1] Cf. *post*, Chap. XVII. § 6.
[2] Darwin, *Municipal Trade*, p. 102.

CHAPTER XVI

PUBLIC CONTROL OF MONOPOLY

§ 1. In the course of Chapters VII. and VIII. reference was frequently made to devices, by which the State could interfere, where self-interest, acting through simple competition, failed to make the national dividend as large as it might be made. Apart from governmental operation of the industries concerned, and apart also from penal legislation in extreme cases, these devices were fiscal in character and consisted in the concession of bounties, or the imposition of taxes. Where self-interest works, not through simple competition, but through monopoly, fiscal intervention evidently ceases to be effective. In the present chapter, therefore, I propose to consider what methods are available in these circumstances. For simplicity of exposition, I shall proceed as though simple competition might still be believed, as it was believed by the classical economists, to make the dividend a maximum. The State, then, contemplating a monopoly, may be supposed to contrast the dividend under it with the dividend under simple competition. Its problem will be, not to make things perfect, but to make them as good as they would be, if monopolistic power were not at work.

§ 2. We may begin by noticing a novel form of indirect control, recently advocated by a Royal Commission. The proposal is that the State should encourage the formation, over against a monopolistic seller, of a combination of buyers possessing also monopolistic powers. It is hoped that the combination of buyers may be able to neutralise attempts on

the part of the seller to charge monopoly prices. This plan was advocated by the majority of the Royal Commission on Shipping Rings, as a partial remedy for the evils that have arisen in connection with the Conference system. Analytically, the plan is a weak one, because what the creation of the second monopolist does is, not to bring prices to what we may call the natural or competitive point, but to render them indeterminate over a considerable range, within which that point lies. No doubt, the position of the purchasers is made better than it would be if combination among them were absent, and there is reason to hope that prices and output will approach more nearly to what is socially desirable than they would do under those conditions; but, the chance that the bargain between the two combinations will lie in the near neighbourhood of that proper to simple competition does not seem to be very large. This difficulty would exist, even though the monopoly created to stand against the sellers were a monopoly of ultimate consumers. In practice, however, ultimate consumers are scarcely ever in a position to combine in this way. The only persons who can so combine are middlemen between the ultimate consumers and the monopolistic seller, and these middlemen, since they can shift charges forward on to their principals, are much less concerned than the consumers themselves to battle strongly against the monopolistic seller. This would seem to be a serious flaw in the commissioners' policy.[1]

§ 3. We may now turn to more orthodox views. Probably the most popular of the indirect ways, by which governments attempt to regulate private industry in fields where monopolistic exactions are threatened, is that of " maintaining actual competition " through refusals to allow rival concerns to combine. This policy has been pursued extensively in the United States. Attempts at combination, alike among railways and among industrialists, have been repeatedly attacked, both by the enactment of special laws and by proceedings in the courts. Striking decisions on the subject have been promulgated, such as that which dissolved the Northern

[1] Cf. *Minority Report*, p. 97. Such associations already exist in the South African and Australian trades (*Report*, p. 86).

Securities Holding Company and that which compelled the Tobacco Trust to redivide into its constituent parts. This policy is, however, subject to three very serious objections.

First, it is a policy practically impossible to enforce in an effective manner. The legislature and the courts may succeed in getting rid of certain forms of combination, but the result will merely be the adoption of other forms. The declaration of the Supreme Court of the United States, that the granting of a power of attorney to common trustees by a number of companies was *ultra vires*, led, in some cases, to the purchase of a majority of stock in each of the companies by the said trustees, and, in other cases, to the substitution of a holding company for a Trust. The more recent attacks on holding companies can easily be met by dissolution into separate companies, each subject to the same controlling interest. The Austrian law against Kartels likely to injure the revenue abolished Kartels possessed of a central office; but only with the result of substituting informal understandings. The recent British Committee on Railway Agreements and Amalgamations sums up the situation thus: " While Parliament may enact that this must be done and that must be prohibited, past experience shows that our Parliament appears to be powerless to prevent two parties, either by agreement or without formal agreement, from abstaining from a course of action, namely active competition, that neither party desires to take. Parliament can, of course, refuse to sanction Bills authorising the amalgamation or working union of two or more railway companies, and may provide that certain classes of agreement shall be invalid or even illegal. But it cannot prevent railway companies [and, of course, the same thing is true of industrial companies] coming to understandings with each other to adopt a common course of action, or to cease from active competition." [1] It seems, in fact, to be fairly clear that laws aimed directly at " maintaining competition " are practically certain to fail of their purpose.

There is a second serious objection to this policy. The root idea lying behind it is that competition implies a

[1] *Departmental Committee on Railway Agreement and Amalgamation*, p. 18.

condition of things, in which the marginal net product of
investment in the businesses affected is about equal to the
marginal net product elsewhere.   But, passing by the qualifi-
cations to this view set out in Chapter VIII., we have to note
that the competition, from which the above good result may
be expected, is " simple competition," whereas the competition,
to which laws against combination lead, will almost certainly
be monopolistic competition, namely competition among a *few*
competitors.   When we have to do with railway combinations,
this result is certain, and, in the case of industrial combina-
tions, it is exceedingly probable.   It has been shown, however, in
Chapter X., that monopolistic competition does not tend to
bring about an output of such magnitude that the marginal net
product of investment in the industry affected is equal to that
prevailing elsewhere.   On the contrary, the output is in-
determinate.   When the competitors hope to destroy or to
absorb one another, we may get "cut-throat competition,"
under which production is carried so far as to involve absolute
loss ; and the chance of this is made greater by the desire of
one giant business to win even a barren victory over another.
In short, even if the conditions were such that laws for " main-
taining competition " could really prevent combination, they
would still be unable to secure the establishment of competi-
tion, in that sense in which alone competition can be expected
to evolve the level of prices and rates, which is socially most
advantageous.

Even now, however, the case against the policy we are
considering is not exhausted.   There remains a third objection.
Combination is not the parent of monopoly only, but also, in
many cases, of incidental benefits.   In this connection we may
note, in passing, that a large combination has more inducement
than a small single seller to adopt a policy of developing
demand among potential customers, since it may reckon on
receiving a larger proportion of the gain resulting from any
investments it may make with this object.   The main in-
cidental benefits, however, to which attention should be
directed, are economies of production.   No doubt, some of
those forms of Kartel agreement, under which a proportion
of the market is guaranteed to the several members, since

they tend to conserve weak firms, whom competition would
" naturally " destroy, not only fail to yield economies, but
actually yield diseconomies.[1] When, however, any measure
of common management is introduced by combination, the
case is often otherwise, and savings of the kind referred to
in Chapter IX. are obtained in greater or less degree.
Among other things, weak or badly situated plants are apt to
be shut down much more quickly than they would be under
competition ;[2] while, among those that remain, the purposive
force of " comparative cost accounting "[3] is apt to stimulate the
energy of managers more strongly than the blind force of market
rivalry could ever do.[4] We must, indeed, be on our guard
against exaggerating the importance of these economies. For,
if by combination we mean existing combinations, it is neces-
sary to recollect that, since the magnitude of the unit of control is
determined by monopolistic considerations as well as by con-
siderations of structural and other economies, this unit is often
larger than the unit of maximum efficiency. And, if we mean
only such combinations as it would be profitable to form *de novo*
when monopoly was wholly excluded, though, in this case,
the unit of maximum *immediate* efficiency would be evolved,
yet even that unit is probably too large when ultimate indirect
effects, as well as immediate effects, are taken into account.
The reason is, that large combinations tend indirectly, by lessen-
ing the opportunities for training in the entrepreneur function,
to prevent the level of business ability from rising as high

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[1] Cf. Walker, *Combinations in German Coal Industry*, p. 322.   Mr. Walker
points out, however, that this tendency, at all events in the Ruhr Kartel, is
smaller than appears at first sight, since the large mines, by sinking more
shafts and by buying up small mines, can increase their " participation."
(*Ibid.* p. 94.)

[2] Cf. Liefmann's statement: "Verschiedene grosse Unternehmungen erwarben
nämlich diese kleinen Zechen nur um ihrer Beteiligungsziffer im Syndikat
willen, legten sie aber dann still und förderten deren Absatzquote auf ihren
eigenen Schächten billiger. War dies auch natürlich für die betroffenen Arbeiter
und Gemeinden sehr nachteilig, so ist doch zu berücksichtigen, dass diese
kleinen Zechen bei freier Konkurrenz längst zugrunde gegangen wären. Hoch-
stens kann man sagen, dass dann die Still-legung und die Entlassung der
Arbeiter sich weniger plötzlich vollzogen hätte und länger voraussehbar gewesen
wäre."—*Kartelle und Trusts*, pp. 61-62.

[3] An elaborate account of this system is given by Jenks in the *U.S.A.
Bulletin of Labour*, 1900, p. 675.

[4] Cf. Macgregor, *Industrial Combination*, p. 34.

as it might otherwise do. " The development of a high order of undertaking genius in the few seems to depend upon a wide range of undertaking experience in the many." The opportunities for this experience are largest when there exist, as it were, closely grouped rungs of an industrial ladder, up which it is possible for capable men to make progress. This condition is fulfilled in an industrial system comprising businesses varying in size from the very small to the very large. If the whole of industry were organised in the form of large Trusts, there would be no ladder connecting the hand-worker and the brain-worker. The manual labourer would not have opportunity for that practice of mental labour, which may readily fall to his lot when numerous small businesses are ready to hand. Hence, opportunities for the cultivation of his powers are absent. He is a watcher only, not a doer. Jevons, however, has well taught that it is doing, and not watching, that trains. " A few specimens probed thoroughly," he writes, " teach more than thousands glanced at through a glass case. The whole British Museum accordingly will not teach a youth as much as he will learn by collecting a few fossils or a few minerals, *in situ* if possible, and taking them home to examine and read and think about." [1] The point was put even more forcibly by Dr. Marshall in his address to the Co-operative Society in 1885 : " It is a better training in seamanship to sail a fishing-boat than to watch a three-masted ship, the tops of whose masts alone appear above the horizon." [2] In his address to the Royal Economic Society in 1908 Dr. Marshall once more called attention to this matter, illustrating his thesis of the educative possibilities of small businesses from the present organisation of the milk trade. As he well points out, so far as the working of industries by the State—and the same thing, of course, applies to the working of them by large commercial combinations—does away with this sort of educative ladder, the mere proof that it is *immediately* more economical than private management would not suffice to show that it is more economical on the whole.[3] These

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[1] *Methods of Social Reform*, p. 61. [2] *Loc. cit.* p. 17.

[3] We may notice that when, as in such a country as India, the narrowness of the markets and other causes prevent the development of any large-scale

qualifications are of great importance.   They tell strongly against the claim made by Professor Clark, when he writes: " A nearly ideal condition would be that in which, in any great department of industry, there should be a great corporation, working without friction and with enormous economy, and *compelled to give to the public the full benefit of that economy.*" [1] Nevertheless, there can be little doubt that, *in some circumstances*, combination does involve, even from a long-period point of view, considerable net economies.   These economies *may* be so great that the favourable effect produced by them on the dividend exceeds the unfavourable effect due to the exercise of monopolistic power.   Thus, under increasing and diminishing returns alike, combination would, on the whole, increase output and lower prices, provided that the economies were so large that, had they been introduced without monopolisation, they would have raised output to about double its former amount.[2]   Economies so large as this are, no doubt, improbable, and I do not, therefore, seriously claim that the abolition of combination in any field of industry would often make the dividend actually smaller than it is at present.   I do claim, however, that such abolition would often be more injurious than the retention of combination *plus* the abolition of monopolistic action.

§ 4. It has now been shown that governmental attempts to regulate monopoly charges in the public interest, by maintaining actual competition among sellers who tend normally to unite, are subject to grave objection.   Governmental attempts to maintain *potential* competition next call for consideration. The obvious line, which such attempts must follow, is that of penalising the use of " clubbing " devices, whose repute might otherwise suffice to extrude potential competitors from the field.   Among these devices the two principal are cut-throat competition, as described in Chapter X., and various forms

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industries, the top end of the industrial ladder is cut off, and there is difficulty, analogous to the difficulty discussed in the text, about the provision of an adequate training-ground for the higher forms of business ability.   (Cf. Morison, *The Industrial Organization of an Indian Province*, p. 186.)

[1] *The Control of Trusts*, p. 29.

[2] This proposition is exactly true on the hypothesis that the curves of demand and supply are straight lines.

of boycott, namely, the exercise of pressure, upon third parties not to purchase services from, or sell services to, a rival seller on terms as favourable as they would have offered to him if left to themselves.

§ 5. It is obvious that the weapon of cut-throat competition, or, as it is sometimes called, " destructive dumping," when practised by a business already large enough to monopolise any field of industry, must prove overwhelmingly powerful against newcomers. The monopolist necessarily possesses immense resources, and these can be poured out, in almost unlimited quantities, for the destruction of a new, and presumably much less wealthy, intruder. The case is especially clear when a monopolist, dealing in many markets in many lines of goods, has to do with a competitor dealing only in a few; for, in this case, the competitor can be destroyed by a cut that affects only a small part of the monopolist's business. An example of this kind of cut in an extreme form is afforded by the statement of certain opponents of the Standard Oil Trust, " that persons are engaged to follow the waggons of competitors to learn who their customers are, and that then they make lower offers to those customers ; and it is still further asserted that at times the employés in the offices of rivals are bribed to disclose their business to the Standard Oil Company." [1]   It is needless to emphasise the immense power of a weapon of this kind. " After two or three attempts to compete with Jay Gould's telegraph line from New York to Philadelphia had been frustrated by a lowering of rates to a merely nominal price, the notoriety of this terrible weapon sufficed to check further attempts at competition." [2]

§ 6. The weapon of boycott has a narrower range than that of cut-throat competition. It is worked through a refusal to deal, except on specially onerous terms, with any one who also deals elsewhere. When the worsened terms attached by a dominating seller to dealings with himself are more injurious to the client than the loss of that client's other dealings, the monopolist can force the client to boycott his rivals. In order that this condition of things may arise, it is obvious that the

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[1] *U.S.A. Industrial Commission*, I. 1. p. 20.
[2] Hobson, *Evolution of Modern Capitalism*, p. 219.

goods or services in question must be rendered, by nature or by art, non-transferable;[1] for, it is impossible to hurt a customer by refusing to sell to him, if he is able to purchase through a middleman the goods which are refused to him by the monopolist. Hence, when nature does not cause non-transferability, the exercise of the device we are reviewing requires the existence of stringent conditions concerning re-sales in the contracts between the monopolist and any intermediary agents, if such there are, who may intervene between him and the ultimate consumers. Non-transferability, however, is not sufficient by itself. It is necessary, further, that the rival producer's possible supply *to one recalcitrant consumer* at current prices shall be very small. But, in the ordinary course, though any one seller's output is likely to be small relatively to the total consumption of the market, it is likely to be many times as large as that of any representative single consumer. When this is the case, recalcitrant consumers could successfully counter a refusal to sell on the part of the monopolist by purchasing all that they want from outside competitors and leaving to non-recalcitrants the whole output of the monopolist. This consideration is not, however, entirely fatal to the weapon of boycott, because, in many instances, though by no means in all,[2] producers deal with their customers indirectly through wholesalers, or further manufacturers or transporters, who purchase individually a considerable mass of products. When intermediaries of this kind are present, effective boycott becomes practicable in several important cases.

One such case occurs when the commodities or services supplied by the monopolist consist, not in a single kind of good, but in several goods, and when, among these several goods, there is one, for which the demand is very urgent, and in respect of which the monopolist has, through patents or otherwise, exclusive control. A good example is furnished by the boot and shoe trade, in which certain firms control important patents. The patented machines are not sold, but are let out on lease, under "conditions which debar manu-

[1] Cf. my paper, "Monopoly and Consumers' Surplus," *Economic Journal*, September 1904, p. 392.

[2] Thus, Jenks (*U.S.A. Bulletin of Labour*, 1900, p. 679) states that "about half the combinations reporting sell direct to consumers."

facturers from employing these machines save and except in conjunction with other machines supplied by the same controlling owners . . . , one of the conditions being that the latest machines must not be used for goods which have, in any other process of manufacturing, been touched by machines supplied by other makers."[1]   This kind of case is also illustrated by the " factors' agreement," which makers of popular proprietary goods sometimes secure from retailers.

A second case occurs, where it is important for purchasers —here as before, the purchases are, in general, manufacturers— to be able to get the service that they need immediately the need arises, and where an ordinary supplier, though producing much more service in the aggregate than any single purchaser wants, may not be producing more than such a purchaser wants at some definite single moment.   This case practically arises, and arises only, in respect of the service of transport for goods which are so perishable, or for which the demand is so instant, that transport, to be of use, must be available at the moment when it is asked for.   It is in respect of transport by sea of goods of this kind that the method of boycott has been most fully elaborated.   The transport of goods, which are in fairly steady demand and which have no need of speedy delivery, can be arranged for by purchasers, if they wish, wholly through tramp steamers ; but, transport of the other kind cannot be so arranged for, because tramps and small lines cannot guarantee regular sailings.[2]   Hence, it comes to be practicable for shipping rings to force a boycott against independent lines.   The method of doing this usually assumes the form of " deferred rebates."[3]   Of this method there are two degrees.   In the West

[1] *Times*, 8th February 1903.

[2] Cf. *Royal Commission on Shipping Rings*, Report, p. 13.   The commissioners suggest that it is for this reason that the deferred rebate system is not applied to our outward trade in coal or to the greater part of our inward trade, which consists of rough goods, but only to those cargoes for which a regular service of high-class steamers is essential.   (Cf. *ibid.* p. 77.)

[3] This method has been described by the Royal Commissioners on Shipping Rings thus : " The Companies issue a notice or circular to shippers informing them that, if at the end of a certain period (usually four or six months) they have not shipped goods by any vessels other than those despatched by members of the Conference, they will be credited with a sum equivalent to a certain part (usually 10 per cent) of the aggregate freights paid on their shipments during that period, and that this sum will be paid over to them, if at the end of a

African Shipping Conference and in all the Conferences engaged in the trade with India and the Far East, the rebates are paid to exporting merchants only, on condition that these merchants have not been interested in any shipment by rival carriers, but there is no requirement that the forwarding agent, through whom the merchant may have acted, shall have dealt exclusively with the Conference in respect of the goods of his other clients.[1] In the South American Conferences, however, " the form of claim for rebates has, in the case of goods shipped through a forwarding agent, to be signed by such agent as well as by the principal, and if the forwarding agent has not conformed to the conditions of the rebate circular in all his shipments for all his clients, claims to rebates are invalidated. "[2]

A third case, at least as important as either of the preceding, arises when the intermediary, whom a monopolist wishes to make boycott a rival, is, not a manufacturer or a wholesaler purchasing that rival's goods, but a railway company conveying them. When an alternative route for his own goods is available, the monopolist, by threatening the railway with the withdrawal of his custom, is sometimes in a position to force it to charge differential rates against his rival; and, in one case,—that of the Oil Trust,—it is even asserted that the railways were compelled to hand over a part of the extra charges levied on their rivals to the executive of the Trust.[3]

§ 7. Attempts to prevent the use of cut-throat com-

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further period (usually four or six months) they have continued to confine their shipments to vessels belonging to members of the Conference. The sum so paid is known as a deferred rebate. Thus in the South African trade at the present day the amount of the rebate payable is 5 per cent of the freight paid by the shipper. The rebates are calculated in respect of two six-monthly periods ending with the 30th June and 31st December respectively, but their payment to the shipper is not due until a further period of six months has elapsed, that is to say that, as to shipments made between the 1st January and the following 30th June, the rebates are payable on the 1st January following, and, as to shipments made between the 1st July and the 31st December, the rebates are payable on the following 1st July. It follows that in this instance the payment of the rebate on any particular item of cargo is withheld by the shipowners for at least six months, and that, in the case of cargo shipped on the 1st January or 1st July, it is withheld for a period of twelve months. If during any period a shipper sends any quantity of goods, however small, by a vessel other than those despatched by the Conference Lines, he becomes disentitled to rebates on any of his shipments by Conference vessels during that period and the preceding one."—Report, pp. 9-10.

[1] *Ibid.* pp. 29-30.　　　　　　　　　　　　　　[2] *Ibid.* p. 30.
[3] Cf. *The Great Oil Octopus,* p. 40.

petition or destructive dumping, by legal enactment are confronted with the difficulty of evasion. The American Industrial Commission recommended that "cutting prices in any locality below those which prevail generally, for the purpose of destroying local competition," should be made an offence. Any person damaged was to have the right to sue for penalties, and officers were required to prosecute offenders.[1] Professor J. B. Clark writes to a like effect. It is plain, however, that, even when it is possible, as in the case of public service corporations, to insist that tariff rates shall be regularly published, evasion may be practised by unpublished discounts and rebates to particular customers; nor, since discovery is unlikely, will the enactment of heavy penalties against breaches of the law necessarily secure obedience thereto.[2] Where destructive dumping is threatened, not by public service corporations, but by industrialists engaged in the manufacture of many commodities at different places, the enforcement of regular published rates is impracticable. Hence, the problem confronting the legislator demands the unravelling of still more tangled knots. Where the form of destructive dumping which is employed is that of price-cutting, limited to the local market of a particular competitor or group of competitors, the offence is at least definite, however difficult to detect. Where, however, we have to do with cuts made in respect of all sales of a particular line of goods, the offence is not definite; for, clearly, not all cuts are destructive dumping, and it is difficult to distinguish among them the innocent from the guilty. Professor Clark proposes as a test that, "if the price of the particular grade of goods were first put down and then put up again, and if rivals were crushed in the interval, this would be evidence that the purpose of the cut was illegitimate."[3]

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[1] *United States Industrial Commission*, vol. xviii. p. 154.

[2] It is instructive to read in M. Colson's great work (*Cours d'économie politique*, vol. vi. p. 398) that abusive discriminations "semblent être devenus bien plus rares en Angleterre qu'en Amérique, bien que l'Administration y ait des pouvoirs beaucoup moins étendus et que les pénalités y soient moins sévères, parce que l'entent entre Compagnies y est admise par la loi; au contraire, en Amérique, les pouvoirs publics s'efforcent d'empêcher les accords qui mettraient fin à la concurrence, cause essentielle des inégalités de traitement, et par suite ne sont pas arrivés, jusqu'ici, à déraciner celles-ci."

[3] *The Control of Trusts*, p. 69.

Such a test has been attempted in the American railway law of 1910, which provides that, "when a railway reduces rates between competitive points, it shall not be permitted to increase the rates on the cessation of the competition, unless it can satisfy the Commission that the conditions are changed otherwise than by the mere elimination of water competition."[1] This test cannot, however, be pushed very vigorously ; for, if it were, any firm, which lowered prices in a time of depression or for purposes of experiment, might find itself precluded from afterwards raising them again if, meanwhile, any other firm in the same line had failed.

Difficulties of like character stand in the way of effective legislation against boycotts. Thus, the Anti-Trust Amendment Act of the Australian Commonwealth, 1909, "provides that no person, under a penalty of £500, shall make any condition in dealing with another, that the latter shall deal only with the former, or shall not deal with any third person." It is obvious, however, that, when the condition in question is made between a manufacturer and a retail dealer, both of whom profit by it, the difficulty of preventing evasion must be very great. When the boycott is worked, not through a wholesaler, but through a railway company, the case is still clearer. American law has long endeavoured to prevent railway discriminations favourable to the large Trusts. But: "A partisan of the Trust said to me : ' The Pennsylvania Railroad could not refuse the cars of a competitor of the Standard Oil Company, but nothing could hinder it from side-tracking them.' "[2]   " A consignment note acknowledges the receipt of 70 barrels of flour ; 65 only are shipped, and the railway company pays damages for the loss of the five non-existent barrels." Except when long notice of alterations is required by law, rates may be changed suddenly, secret notice being given to the favoured shipper and no information to others ; and so forth. It is true that the Attorney-General of the United States has declared: " The giving and taking of railroad rebates is now prohibited by a law capable of effective enforcement against corporations as well as against indi-

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[1] *Economist*, 25th Jan. 1910, p. 1412.
[2] Quoted by Ely, *Monopolies and Trust*, p. 97.

viduals. " [1]   Many authorities, however, still seem to hold
that this form of boycott is not yet entirely dead, and is,
indeed, likely to survive so long as competition is retained in
the railway world.

These considerations make it clear that a policy of legal
prohibition against the exercise of clubbing methods cannot
easily be rendered proof against evasion.   It should not be
forgotten, however, that laws, which *could* be evaded if people
took sufficient pains, as a matter of fact, are often not evaded.
For, the mere passage of a law reacts on public opinion, and
throws on the side of the practice upheld by law the strong
forces of " respectability " and inertia.   Hence, we may reason-
ably expect that laws of this character, if carefully prepared,
would, at all events, partially succeed in their immediate
purpose.

§ 8. This much, then, being granted, we turn to the
further question, how far the prevention of clubbing methods
would avail to maintain potential competition.   Professor Clark
appears to hold that it would avail completely for this pur-
pose.   " In so far," he writes, " as legitimate rivalry in produc-
tion is concerned, it is safe enough to build a new mill."   In
reality, however, even when clubbing methods are excluded,
other obstacles to the full maintenance of competition are
still present.   First, when the unit firm, normal to any
industry, is very large, the heavy capital expenditure required
to start a new firm will check the ardour of aspirants.
Furthermore, it should be noticed, in this connection, that, in
many industries, the size of the normal unit firm has recently
been increasing.   For example, the output of the English
paper industry between 1841 and 1903 rose from 43,000
to 773,000 tons, but the number of firms fell from 500 to
282 ; [2] and a like development has taken place in the raw
iron industry.   Secondly, the ease with which new com-
petitors can spring up is smaller, the greater is the extent
to which concentration on the part of the monopolistic seller
has involved productive economies.   For, if great economy
has been brought about by concentration, a potential com-

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[1] *Economist*, 28th Feb. 1903.
[2] Levy, *Monopole, Kartelle und Trusts*, p. 197.

petitor will know that the monopolistic seller, by simply
abandoning some of his monopoly revenue, can, without
suffering any positive loss, easily undersell him.   Thirdly,
the obstacles in the way of new competition are apt to be
further enlarged, when a policy of secrecy as to costs and
profits makes it difficult for outsiders to guess at what
rate the monopolistic seller *could* sell, if he were to content
himself with the normal gains of competitive industry.   Thus,
attempts to maintain potential competition by preventing the
employment of clubbing devices can at best be only partially
successful.

§ 9. The inadequacy of indirect methods of control by
public authorities leads forward naturally to the suggestion of
direct methods.   The position, which is relevant to industrial,
no less than to railway, monopolies, is well put by our recent
Departmental Committee on Railway Agreements and Amal-
gamations, with special reference to the latter class.   They
write : " To sum up, we are strongly of opinion that, in so
far as protection is required from any of the consequences
which may be associated with railway co-operation, such pro-
tection should, in the main, be afforded by general legislation
dealing with the consequences as such, independently of whether
they occur as the result of agreement or not.   Such a method
would afford a much more extensive protection than the regula-
tion of agreements.   It would protect the public in the case of
understandings as well as agreements. . . . It would not tend
to introduce a confusing distinction between what a com-
pany might reasonably do under an agreement and what it
might reasonably do if no agreement existed."[1]   If this
method could be employed with perfect accuracy, there would,
of course, be no need for *any* accompanying indirect methods
of the kind we have so far been discussing.   In practice, in
so far as the direct method works imperfectly, it may not be
undesirable, at the same time, to secure that potential com-
petition shall be kept open as a kind of second line of defence ;
but the direct method should still hold the place of honour.

§ 10. In pure analysis, what is required from this method

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[1] *Report of the Departmental Committee on Railway Agreements and Amalga-
mation,* p. 21.

is easily explained. Assuming that the output proper to simple competition is also the output most advantageous to the dividend, we need so to regulate things that that output will be forthcoming. There are three items involved, price, quantity and quality. It will not suffice to fix any one of these alone, for, if this is done, the others can be varied for compensation. It is, indeed, sometimes thought that, if, quality being given, price is fixed at the level proper to simple competition, quantity must automatically fix itself at the level proper to that condition. A glance at a diagram will show, however, that this opinion is only valid, provided that the supply of the commodity in question obeys the law of increasing or of constant returns ; if it obeys the law of diminishing returns, the seller is tempted to reduce his output below the amount proper to simple competition, in the hope of securing, by this action, an element of monopoly revenue. In general, then, price, quantity and quality must all be controlled. The control can be sanctioned in a variety of ways. Sometimes, the penalty for breach is a direct money fine. Sometimes, in the case of protected countries, it consists in the withdrawal of duties on competing foreign goods. A Canadian Act against Trusts provides for both sorts of penalty. If a statutory Commission " find that there is a Combine, the Government may either lower or repeal the duties, and, in addition, impose a fine of 1000 dollars a day on those who continue in their evil courses after the judgment of the Board has been officially published." [1] Sometimes, again, the sanction consists in the threat of governmental competition. Thus, in connection with the 1892 agreement, by which the Post-Office took over the National Telephone Company's trunk lines, Mr. Goschen hinted that the State, while securing its right to compete, would not be likely to exercise that right, if the Company acted reasonably.[2] Sometimes, finally, the sanction may consist in the threat of State purchase, on terms, either fixed beforehand, or to be decided by arbitration, of the whole of the plant of the regulated business.

§ 11. We pass, then, from the sanctions available for

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[1] *Economist*, March 26, 1910, p. 665.
[2] H. Meyer, *Public Ownership and the Telephones*, pp. 56, 199.

control to the ways in which it can be exercised. Broadly speaking, these are two in number, a negative way and a positive way. The negative way consists in the enactment of general provisions against "unreasonable" conduct, leaving the definition of what is, in fact, unreasonable to the decision of the Courts. This way is, in substance, followed, as regards proposed *changes* of rates, in the work of the English and American commissioners regulating railways. The commissioners have to decide whether any proposed increase of rates is reasonable, and to permit or forbid it accordingly. The negative way is also followed in certain franchises, which permit municipalities to take over the business of a licensed corporation at a proper price—an ambiguous phrase—should they fail to "operate and develop it in compliance with reasonable public requirements."[1] The positive way consists in the legislative determination of definite maximum rates of charge or minimum provision of service, and is illustrated by the terms of the charters usually accorded to companies operating public utility services under leave from city governments.

§ 12. In whatever way the policy of direct control is attempted, it is plain that anything in the nature of exact imitation of simple competition is almost impossible to attain. The most obvious reason for this is the extreme practical difficulty of *enforcing* the observance of whatever conditions the public authority may elect to impose. Even rules as to the simple attributes of quantity and price can, in many cases, be nullified by manipulation of subsidiary matters. Thus, our railway companies have, in effect, raised their rates, without applying for the sanction of the railway Commissioners. Charges for rent of sidings and so forth have been created; the number of articles, which the companies refuse to carry at owner's risk, unless packed to their satisfaction, has been increased; rebates have been withdrawn; and other such devices have been employed.[2] In respect of quality, enforcement is still more difficult. In some cases, as, for example, in the matter of the comfort and punctuality of a tramway service, or of the sanitary condition of slaughter-houses

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[1] H. Meyer, *Municipal and Private Operation of Public Utilities*, vol. i. p. 41.
[2] Cf. *Railway Conference Report*, p. 57.

and sewers, it is difficult to *define* a minimum of quality. In other cases, as, for instance, in the matter of water supply, gas supply, milk supply, and house accommodation, where tests of quality are available to give a basis for definition, it may, nevertheless, be difficult to *detect* departures from the stipulated minimum. Something can, no doubt, be done by an elaborate system of inspection, such as that developed in connection with the Adulteration of Food and Drugs Act, but the openings for evasion of conditions concerning quality are, in any event, likely to be considerable.

§ 13. Even, however, if the conditions decided upon by a public authority could always be enforced with ease, the attainment of conditions imitative of simple competition would still be rendered impracticable by the inability of such authorities to decide what these conditions in any particular case are. We cannot simply say that competitive prices are those that would yield the " ordinary " rate of interest on the capital invested in an enterprise ; for, the establishment of different enterprises involves different degrees of risk, and appropriate compensation under this head must be made to those investors —the only ones with whom the State can deal—whose enterprises turn out successfully.[1] This consideration need not, indeed, involve large practical difficulties in industries in which production has attained more or less of a routine character, but, in all industries in an experimental stage it is of dominant importance. Furthermore, even if there were no risks, we could not rightly prescribe prices that would yield the ordinary rate of interest in all circumstances, but only prices which would yield that rate, if the management were conducted with " ordinary " ability ; and this is a vague and difficult conception. In view of these complications and of the necessary limitations of its knowledge, a public authority is almost certain, either to exact too easy terms from regulated companies, and so to leave them with the power of simple monopoly, or to exact too hard terms, and so to prevent the development of the regulated industry to the point proper to simple competition. Many examples of over-lax regulation are to be found in the franchises granted by American cities. A corre-

[1] Cf. Greene, *Corporation Finance*, p. 134.

sponding example of over-severe regulation is afforded by the British Tramways Act of 1870.   This Act, framed at a time when horse traction prevailed, provided for franchises to tramway companies terminable at the end of twenty-one years, after which time the plant might be taken over by municipalities at the "cost of reproduction."   These terms, as it turned out, did not allow tramway companies to obtain a normal rate of returns on the waiting and uncertainty-bearing invested in the new device of electric traction.   The result was that the development of electric traction in this country was very greatly delayed;— so much so that in 1889 it became necessary to extend the maximum concession period from twenty-one to forty-two years.

§ 14.   To limit the range of these two opposite sorts of error, undue laxity and undue harshness, the device has been evolved, in regard to certain public utility services, of putting up the license to conduct these operations to a kind of auction. This plan allows the persons most interested themselves to present estimates of terms which they would reckon profitable. Its nature is described by Mr. Baker thus: "According to the best plan now in vogue, the City sells the franchise for constructing the works to the company, which bids to furnish water at the lowest rates under definitely specified conditions, the franchise being sometimes perpetual, but often granting to the City at some future date an option for the purchase of the works."   Since, however, in many cases, the companies capable of making tenders will be very few in number, and since, furthermore, their own estimates must be largely tentative, the adoption of this device will still leave a large probability of error.   The error is likely to be especially great in view of the fact that the circumstances of most industries are continually changing, in such wise that the scheme of price-regulation, which is proper at one time, necessarily becomes improper at another.

§ 15.   A further effort at limiting the range of error can be made through arrangements, under which the regulations imposed are submitted to periodical revision.   Franchises "cannot be fixed, or justly fixed, for all time, owing to rapidly changing conditions."[1]   "The public should retain in all cases an

[1] Beamish, *Municipal Monopolies*, p. 32.

interest in the growth and profits of the future."[1] A provision for periodic revision in a franchise may, however, by creating uncertainty, restrict investment in the industry concerned to an extent that is socially injurious. One way of meeting this danger is to hedge round the revising body with conditions designed to defend the company's interest. For example, the Railway Act of 1844 provided that, if dividends exceeded 10 per cent on the paid-up capital after twenty-one years from the sanctioning of the lines, the Lords of the Treasury might revise tolls, fares, etc., on the condition that they guaranteed a 10 per cent dividend for the next twenty-one years. Another way is to make the revision period so far distant from the date at which an undertaking is initiated, that the effect upon investment due to the anticipation of it will be very small. It is obvious, however, that, just in so far as either of these lines of defence is adopted, the effectiveness of revision, as a means of lessening the gap between actual regulation and ideal regulation, is diminished. Revision cannot be made a really satisfactory means to this end, because, if it were so made, the fear of it would impose a serious check upon production.

§ 16. Yet another device designed to limit the range of error remains. In all ordinary industries many variations of demand occur *within* the successive revision periods. If the guidance of " simple competition " is to be followed, such variations should be accompanied by variations in the price charged. Furthermore, it is easily shown that these corresponding variations in price should be especially great, in respect of given variations of demand, in industries where the part played by supplementary costs is large relatively to the part played by prime costs.[2] It follows that any system of control, which endeavours to fix prices at a constant level, independent of short period oscillations of demand, is liable to miss somewhat widely the mark of simple competition. To minimise this failure, franchises sometimes lay down, not a fixed system of rates, but some form of self-adjusting scale. Such a scale might conceivably be based on the prices of some com-

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[1] *Municipal and Private Operation of Public Utilities*, vol. i. p. 24.
[2] Let DD' and SS' be the long period demand and supply curves respectively,

modity, which the regulated industry buys, or in connection with which it renders its services. A scale on these lines appears in " the arrangement adopted on at least one railway, according to which the rates charged for the conveyance of iron-making materials rise and fall according to the price of pig-iron."[1] More frequently, however, scales based, not on any kind of price, but on the rate of dividend paid to shareholders, are utilised. Such scales permit an increase in the rate of dividend during any licence period, only on condition of an accompanying defined reduction of prices. Illustrations of them are furnished in English Acts of Parliament dealing with gas companies. One Act, for example, fixes a standard price of 3s. 9d. per thousand cubic feet, and provides that, for every penny put on or off that price, the company may, in the case of reductions, and must, in the case of increases, move the dividend up or down a quarter per cent. Another illustration is furnished by the Lancashire Power Company Act, in respect of the provision of electricity in bulk. This Act " provides for a dividend of 8 per cent and an additional 1·25 per cent reduction in price for every 0·25 per cent increase of dividend above 8 per cent, in respect

and let S_1S_1' be the short period supply curve, drawn on the assumption that the fixed plant of our industry has been adapted to a normal output OM. This latter curve will be practically equivalent to a short period curve of marginal supply prices. It is evident that DD' and SS' and S_1S_1' intersect at one point P. Through P draw PM and PR parallel to the axes of Y and X respectively. Then PRS_1 represents normal returns to supplementary costs, and is equal to the average of the producers' surpluses (from a short period point of view) that result from various positions of demand. Let D_1D_1' represent the short period demand curve at any one moment, and let it cut S_1S_1' in Q. Through Q draw QM' parallel to PM. Then QM' represents the price proper to simple competition corresponding to this short period demand. For a given variation of D_1D_1' from DD', the variation of QM' from QM is greater, the steeper is S_1S_1'. But, PRS_1 represents normal returns to supplementary costs, and $PMOS_1'$ normal returns to prime costs. Therefore S_1S_1' is steeper the more important is the relative part played by supplementary costs. This proves the proposition stated in the text.
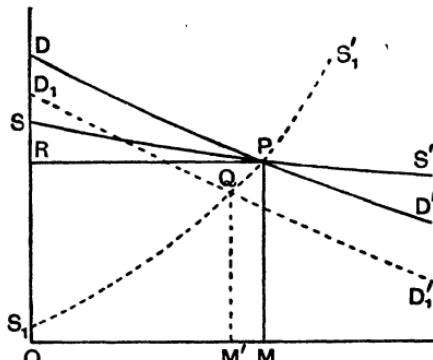
[1] *Departmental Committee on Railway Agreements*, p. 23.

of every 5 per cent charged below the maximum price allowed by the Act."[1]   Sliding scales of this kind, like sliding scales of wages, are, of course, provided, not as a substitute for, but as a complement to, a system of periodic revision of the licence terms.   When carefully constructed, they may be expected to make possible a nearer approach to the system of prices proper to simple competition than would be possible without them. It is evident, however, that under any form of State control over private monopoly, a considerable gap between the ideal and the actual is likely to remain.

[1] H. Meyer, *Municipal Ownership in Great Britain*, p. 281.

CHAPTER XVII

§ 1. The preceding chapter has shown plainly that attempts at public control over monopolistic industries, whether direct or indirect, are likely to be very imperfectly successful. It is easily seen that many of the difficulties there described stand also in the way of the successful public control over those non-monopolistic industries, in respect of which self-interest left to itself works in an unsatisfactory manner. The question, therefore, arises, whether, since to regulate oneself is obviously easier than to regulate somebody else, the national dividend would not be advantaged, if the public authorities themselves operated these industries, instead of struggling to control their operation by others. If nothing else were involved beside the comparative precision with which output could be adjusted under the two plans, in such wise as to make demand price and marginal supply price coincide, there could, of course, be no doubt that this question should be answered in the affirmative. In actual practice, however, other things besides this are involved, just as other things were involved in our comparison between voluntary Purchasers' Associations and ordinary commercial businesses. We are not entitled to assume without argument that the economies of supply—in technical terms, the position of the supply curve—will be the same under public operation and private operation. It may be that public operation is less economical than private operation, even when private firms are subject to public control. If this is the case, the disadvantages of public operation in regard to the economies of supply have to be balanced against its advantages in regard

to the adjustment of supply to demand.   Hence, before any
real answer to our question can be attempted, it is necessary
to undertake some comparison of public with private operation,
from the standpoint of productive efficiency.

§ 2. At the outset, it must be made clear that attempts
to conduct such a comparison by reference to statistics are
foredoomed to failure.   No doubt, if it could be shown that,
other conditions being the same, a given output was, in
general, obtained at greater, or at less, real cost under public
than under private management, genuine evidence concerning
the relative efficiency of the two forms of organisation could
be obtained.   In real life, however, this is impracticable.
In the first place, the quality of services, that are called
by the same name, varies enormously in different places, and
it is almost impossible properly to allow for these varia-
tions.   " Our street cars," say the Reporters of the American
Civic Federation, " run faster, carry more strap passengers, and
kill and injure more people than the street cars, public or
private, of any other country.   Our people seem to like this,
but the English would not." [1]   How can differences of this
sort possibly be taken into account ?   Again, the conditions
of production in different places are utterly different.   " In
Syracuse (U.S.A.) the water flows to the city by gravity ; in
Indianapolis it must be pumped." [2]   " To compare a private
corporation within the limits of a great city, where an immense
supply is furnished, and where special conditions of non-
interference with adjoining property rights are to be met, with
some municipal plant in a suburban town, upon a basis of the
relative amount of supplies and labour required per unit of
electrical energy, would obviously be unfair to both contestants.
Nor is it possible to compare in this manner two lighting-
stations having approximately the same yearly output, and
which are similarly located with reference to adjoining
interests, but are situated, the one in the North and the other
in the South, for the reason that the daily period of service
will vary in these two localities, on account of variation in the
hours of darkness.   For the same reason we cannot compare

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[1] *Municipal and Private Operation of Public Utilities*, vol. i. p. 287.
[2] *Ibid.* p. 21.

the summer service of one station with the winter service of another, even though we should attempt to reduce them both to a common basis by obtaining the amount of human effort employed per unit of electrical energy."[1] It is, in short, quite obvious that arguments from statistics are, in this field, almost entirely valueless.

§ 3. Statistical evidence being thus inadequate, it is necessary to proceed—again as in our study of voluntary Purchasers' Associations—by way of general considerations. The discussion along these lines may well be started with an observation of the Committee of the American Civic Federation : "There are no particular reasons why the financial results from private or public operation should be different if the conditions are the same."[2] The reason for this remark, of course, is that, whether a service is provided by a private company or by a public governmental authority, the actual running of the business must be similar. An expert staff must be appointed, controlled in a general way, in the one case by a committee of directors chosen by the shareholders, in the other case by a committee appointed—perhaps by direct, perhaps by indirect, election—to represent the public. Managing power, as a whole, may be conceived as distributed among electors, directors—or committee—and staff; and Major Darwin has undertaken an elaborate inquiry into the probable comparative efficiency of these three bodies under private enterprise and that particular form of public enterprise known as municipal trading. It is obvious that the result of such an inquiry must be indefinite, and I do not propose to repeat it here. It is enough to say that a public undertaking is substantially equivalent to a voluntary Purchasers' Association, save only that its directors are elected for their political, rather than for their commercial, qualifications, and are, therefore, likely to prove, other things being equal, somewhat less well fitted for commercial leadership. One point, however, demands attention. So far as the electors of the committee, under the system of public management, are, at the same time, employés in the business affected, public operation is analogous to " produc-

[1] Beamish, *Municipal Monopolies*, pp. 289-290.
[2] *Municipal and Private Operation of Public Utilities*, vol. i. p. 23.

tive co-operation," and is liable to experience, in respect of dis-
cipline and the adequate remuneration of the higher officials,
the difficulties which these bodies, in a much greater degree
than Consumers' Associations, have always encountered.   It has
even been suggested that, in some cases, city engineers have
been hindered by the Council from introducing labour-saving
devices, by which the employment of some of the Councillor's
electors would be threatened.[1]   Against this disadvantage,
however, must be set a corresponding advantage also found in
connection with productive co-operation, the advantage, namely,
that, for a given sum of money, a more efficient engineer or
manager can be obtained than will be forthcoming under
private management, for the reason that the position of a
public servant is at once attractive in itself, and also makes
appeal to altruistic motives.   This advantage, it must be
clearly understood, is a real advantage, and not a kind of
bounty obtained at the expense of the engineer or manager;
for, there is created a new value in the extra satisfaction,
which the said engineer or manager derives from the fact of
serving the public.   This advantage can reasonably be set
against the preceding disadvantage.   The general result is
that the efficiency of management in public and in joint-stock
enterprise—apart, of course, from special cases of incompetent
officialdom in certain small towns—is likely to be pretty much
the same.

§ 4. This broad statement does not, however, exhaust
the discussion.   There remain three important groups of
considerations, which tend, in general, to suggest that public
operation is, on the whole, inferior to public control.   The
first of these has to do with the fact that, not only different
producers within the same industry, but also different pro-
ducers in apparently disconnected industries, are often, in
reality, rivals.   No doubt, an industry can be imagined, which
is monopolistic in the widest possible sense, in such wise that,
not only are there no competing firms within it, but also
that there are no competing industries outside it.   There is
some reason to believe that the service of supplying a modern
city with water is, in general, monopolistic in this sense.   It

[1] *Municipal and Private Operation of Public Utilities,* vol. i. pp. 342-3.

would be possible, by combining together a number of industries that are now separate, to create other monopolies of the same sort. For example, the various means of communication, such as omnibuses, tram-lines, motor cars and carriages, might all conceivably be brought together under one hand. The same thing might conceivably be done with all the means of providing artificial light or all the means of providing power. Such arrangements, however, are quite out of relation to actual facts. As things are at present, I should doubt if any industry, except that of water supply, can properly be regarded as monopolistic in the wide sense here taken. Now, social interest requires that, where a number of establishments, whether in the same industry or in different industries, are competing for the supply of some public need, that one which can supply it most efficiently shall oust the others.[1] But, when any enterprise is operated by a public authority, it is likely to be maintained by artificial support, even though it is less efficient than its rivals. The reason is that persons in control of any governmental enterprise, being naturally anxious to make that enterprise a success, tend to identify the good of the whole with the good of their own department. Hence, a governmental authority embarked on business is almost certain, if it prove commercially weak, to employ unfair weapons from its non-commercial armoury, the use of which will maintain it more or less permanently in the industry, despite the fact that its productive methods are more costly than those of its rivals. These unfair methods are of two sorts, according as they are directed primarily to defend the governmental enterprise or to obstruct its competitors.

Defensive non-commercial methods consist in the main of the conscious or unconscious practice of devices for securing a differential bounty from the general public. The most obvious instance of this occurs when a governmental authority, which is engaged, partly in business, and partly in rendering general unremunerated services, charges expenses, that really belong to the business, against the other part of its work. A very glaring instance of this is seen in the practice of the London County Council in writing down the value of land purchased for work-

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[1] Cf. *ante*, Ch. VII. § 11.

men's dwellings to the value which it has, not in the general market, but as ear-marked for this particular purpose. Again, municipal tramway accounts may be given a false appearance of prosperity by the charging of expenditure upon roads, which is properly attributable to them, to the general road account.[1] A like device is adopted in a milder form, when a municipality fails to set aside a special fund to balance the advantage it possesses over private enterprise, in the lower rate at which it can borrow money. "A municipality can float bonds at a lower rate of interest than a private company, since the whole assessable property of the town is generally liable for the payment of interest and principal, while the company can give security only on the works."[2]   This ability on the part of a municipality is, thus, due, in the main, simply to the fact that it is able to force upon the ratepayers a risk, which a company has to persuade private persons to assume by the offer of payment.   Except in so far as this risk is due to public ignorance of facts and qualities in connection with companies, which are more readily ascertainable in connection with municipalities[3] —in that case municipal operation effects a small real saving—the social cost of the municipality's cheap loan is the same as that of the company's relatively dear loan.   If the two enterprises are to compete fairly, the municipality ought to transfer to the rates the bulk of its gain from better credit, before balancing the accounts of its business.   If it does not do this, it is, in effect, assisting that business by a contribution from the general public.   In so far as the lower terms, on which it can engage managers and engineers, is due to the fact that the shouldering of risks by the rate-payers excludes the possibility of bankruptcy, it is doing the same thing a second time, unless it transfers the gain made under this head also to the rates.

[1] *Municipal and Private Operation of Public Utilities*, vol. i. p. 469.

[2] Beamish, *Municipal Monopolies*, p. 45.

[3] The advantage available for municipal enterprise, thus hinted at, turns upon the fact that, when people invest in any undertaking through an intermediary, they necessarily assume the risk that this intermediary may prove to be unwilling or unable to fulfil his obligations. The uncertainty-bearing undertaken in this way is a real element in the cost of production. When the State is the intermediary, its honesty and financial strength are, in general, so well known that this element is practically eliminated.

Aggressive non-commercial methods are made possible by the fact that public authorities, besides operating their own enterprises, are often also endowed with powers of control over other enterprises. When this is the case, there is a grave danger that the public authorities may be tempted to use their powers of control in such a way as to obstruct and injure rivals. It is obvious that an Education Authority, which both runs schools of its own and makes regulations for the running of rival schools, is under strong temptation. So is an authority, which at once builds houses and frames building bye-laws ; and so also are municipalities operating gas-lighting or tramways and controlling electric-lighting or motor-omnibuses. Among the methods of aggression open to them perhaps the simplest is that of rendering the conditions as to sinking fund, under which their own establishments work, more favourable than the conditions of purchase at the end of their lease, which are imposed upon private companies. A public authority, which provides a sinking fund to extinguish the capital debt of its enterprise, as well as a fund to cover depreciation and obsolescence, is, in effect, taxing its present citizens for the benefit of posterity.[1] In like manner, a public authority, which confers a franchise on a private company upon condition that the company's plant shall pass to itself at the end of the lease, either free of charge or at " cost of replacement," is imposing a similar tax. It is obvious that the terms of sinking funds and franchises respectively can be so arranged that the tax under the sinking fund is the smaller, and, therefore, that private operation suffers, as against the rival system, a differential injury.

There are, however, grosser forms of aggression than the above. It is notorious that those municipalities, which operated their own gas-plant, vigorously obstructed, by the exercise of their veto and in other ways, the development of electric lighting companies. Again : " Since 1898 the desire to protect the local municipal electric light plants has been permitted to impede the spread of the so-called electricity-in-

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[1] The Board of Agriculture has made a new departure in not requiring the County Councils to charge small holders, who hire land from them, rents high enough to provide this kind of sinking fund.—[Cd. 4245], p. 12.

bulk generating and distributing companies."[1]   In like manner, the central government, in order to protect its telegraph monopoly, has placed administrative obstacles in the way of other means of electrical communication.   In 1884 the Postmaster-General declined to allow the National Telephone Company to receive or deliver a written message at any of its offices, and, in defending this course, said, "It would make, I am afraid, a serious hole in the telegraph revenue, if written messages were allowed to be sent."[2]   Finally, in the charter granted to the Marconi Wireless Company in 1906, permitting the transmission of wireless messages between the United Kingdom and North America, it is specially provided that, except in the case of Italy, such permission will not be granted in respect of messages to or from the continent of Europe, the purpose being to safeguard the interests of the cables owned by the British and Continental governments.[3]

The use of defensive and aggressive weapons of an "unfair" uncommercial character by public authorities operating industries brings it about, as already explained, that an industry run by them is often maintained in existence, despite the fact that the end served by it would be served more cheaply by a rival industry.   It is necessary to note, in conclusion, that the use of these methods tends to extrude economically superior rivals, even more effectively than it appears to do at first sight.   For, it acts not only directly, but also, in many cases, indirectly through anticipation.   It not only drives out of the market existing competitors, but checks the entry of new ones.   When a man contemplating a philanthropic enterprise is given to understand that, should his experiment succeed, a governmental authority will enter the field he has proved fruitful, he does—or should—rejoice.   But, when a man engaged in a business enterprise is given to understand this, the end he is pursuing is not, as in the philanthropist's case, furthered.   It is, on the contrary, thwarted, and his energies are, therefore, diverted from the undertaking.   An effect of this kind is claimed to have resulted from municipal experi-

[1] H. Meyer, *Public Ownership and the Telephones*, p. 351.
[2] *Ibid.* p. 18.   [3] *Ibid.* p. 341-2.

ments in house-building.   These considerations, when they
have relevance, evidently strengthen the probability that
governmental operation of industries will be injurious to
productive efficiency.

§ 5. I pass to a second consideration.   This has to do with
the fact that the working of any industrial enterprise involves
the combination together of several factors of production,
among which is included the factor uncertainty-bearing.   There
is some definite proportion between the different factors, the
adoption of which leads to a maximum of economy in produc-
tion, and any departure from which causes a smaller product
to be obtained at any given cost.   The point I have now to
urge is, that a public body engaged in industrial operations
is likely to restrict unduly the supply of uncertainty-bearing.

The defence of this proposition rests on the following reasons.
Public authorities recognise that hostility to government on the
part of the people is an evil, and they also recognise that an
unsuccessful State speculation, " if it involves repudiation or
oppressive taxation for years to come, produces a popular
revulsion and deep-seated distrust of government itself, in all
its branches."   Further, the persons at any time in control of
a public authority, when that authority is dependent on the
party system, cannot but know that " failure would give their
political opponents too good an opportunity to ride into
power." [1]   Finally, these persons are partly able to perceive
that a given quantity of uncertainty-bearing obtained from
people, by coercion, in proportion to the rateable value of their
houses, involves more real sacrifice than the same quantity
obtained, by way of voluntary contribution, in proportion to
the attractive force exercised upon the several contributors by
the prospective profits.   It follows that, in general, while the
hope of gain operates more strongly on the private citizen than
on the public authority, the fear of loss operates more strongly
on the public authority.   This *implies* that a public authority
will be less willing than a private concern to provide the factor
uncertainty-bearing.   A good illustration of this tendency is
afforded by the conduct of the British Government in regard
to the working of the telephone trunk lines, after they had

[1] H. Meyer, *Public Ownership and the Telephones in Great Britain*, p. 349.

been taken over by the Post-Office in 1892. " The Treasury compelled the Post-Office to adopt the policy of refusing to make any extensions of doubtful prospect, unless private persons, or the local authority interested, should guarantee ' a specific revenue per year, fixed with reference to the estimated cost of working and maintaining a given mileage of trunk-line wire.' " [1]   The opinion of Sir George Gibb may be cited in evidence that this case is representative of the general attitude of public authorities.   He writes : " Whatever may be thought as to the respective merits of private and public ownership, it cannot be denied that private enterprise does take more risk than any government is likely to do, except under pressure of military necessities." [2]   Dr. Marshall's opinion is still more emphatic : " It is notorious that, though departments of central and municipal governments employ many thousands of highly-paid servants in engineering and other progressive industries, very few inventions of any importance are made by them ; and nearly all of these few are the work of men like Sir W. H. Preece, who had been thoroughly trained in free enterprise before they entered Government service.   Government creates scarcely anything. . . . A Government could print a good edition of Shakespeare's works, but it could not have got them written. . . . The carcase of municipal electric works belongs to the officials, the genius belongs to free enterprise." [3]   The position is summed up in the Report of the American Civic Federation, where we read : " The Assistant Secretary of the Board of Trade, Mr. Pelham, told the Committee [of the Civic Federation] that they did not encourage the trying of new inventions, or the trying of systems in any way experimental, by municipalities.   They waited for these to be proven out by private companies.   Progress is all with the companies." [4]

Now, it is evident that the effect of a restriction of the provision of uncertainty-bearing upon the economies of production will vary in importance in different industries, according to the extent of the speculative element involved in them.

[1] H. Meyer, *Public Ownership and the Telephones in Great Britain*, p. 65.
[2] *Railway Nationalisation*, p. 9.
[3] *Economic Journal*, 1907, p. 21-22.
[4] *Municipal and Private Operation of Public Utilities*, vol. i. p. 437.

Hence, it follows that the relative inefficiency of public operation, as compared with private operation, is very large in highly speculative undertakings and dwindles to nothing in respect of those where the speculative element is practically non-existent.   This idea is sometimes crystallised in an attempt to group industries into two divisions, the speculative and the non-speculative, after the manner in which trustees distinguish between speculative securities and investment securities.   This grouping, it is sometimes suggested, can be adequately worked out, by setting on the one side new industries in an experimental stage, and, on the other, industries that are already tried and known.   Thus, Sir George Gibb distinguishes, from this point of view, the railway industry at an early, and at a mature, age.   " As regards the age of construction, at all events, England has derived incalculable benefit from the fact that the railway system has been made by private enterprise.   But, the problem of working the railway system after it has been constructed is, I admit, essentially different from the problem of securing its construction." [1]   In like manner, Professor Commons, writing in 1904, while he approved of the establishment of city electric lighting plants at that time, considered that " those cities which entered upon municipal electric lighting eight or ten years ago are open to criticism."   " Private parties," he holds, " should be encouraged to push forward in all the untrod fields." [2]   The distinction thus insisted on has, no doubt, considerable importance.   Two points, however, should be noticed.   First, an industry, which is old-established at one place, may need new construction at another, and the conditions of construction there may be such that a large speculative element remains. For example, though the industry of water supply is an old one, different towns have to be supplied from sources situated so differently and along routes of such varying character, that little guidance can be drawn from the experience of other towns.   Secondly, no industry is likely to be so far established that experimentation — which involves speculation — as to improved methods is undesirable.   In some measure, all indus-

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[1] *Railway Nationalisation*, p. 11.
[2] Beamish, *Municipal Monopolies*, p. 56.

tries, in which possibilities of development remain, demand
the service of uncertainty-bearing, and are, therefore, liable
to be hampered by obstacles to the supply of this factor.   It
would, therefore, be an error to suppose that the relatively
uneconomic character of public operation, due to the circum-
stances discussed in this section, is significant only for new
industries.   It probably has some appreciable significance in
regard to nearly all industries, though, of course, its import-
ance is greatest in regard to those in an experimental stage.

§ 6. I pass to a third consideration.   The relative in-
feriority of public operation, due to the interference which
it causes with the most economical combination of the different
factors of production, is paralleled, in many cases, by a further
inferiority due to interference with the most economical size
of business unit.

In Chapter XIV. it was shown that a voluntary Purchasers'
Association may fail to attain to the most economical size owing
to the difficulty of finding enough people, the proportion
between whose purchases and share-holding power is about
equal.   A public undertaking, being, in effect, a compulsory
Purchasers' Association, is free from this difficulty.   To secure
its establishment, it is not necessary, as is the case with a
voluntary Association, for people to be attracted to hold
shares in it, and, therefore, it is not necessary that the pro-
portion between the purchases and the share-holding of
different members should be similar.   The reason is that
coercion to assume a liability authoritatively decided upon is
substituted for persuasion—coercion sanctioned by the cir-
cumstance that escape can only be made on pain of departure
from the coercing country or town.   Though, however, public
undertakings cannot be made to fail from the most economical
size by the causes that bring about this result in the case
of voluntary Purchasers' Associations, they can be made to
fail in another equally important way.   Practically speaking,
they can only be operated by groups of people united into
some form of political organisation.   It is, however, highly
improbable that the areas of control, most economical for the
working of any industry, will correspond in size to the areas
covered by the public authorities existing in a modern State,

since these are set up with regard to quite other considerations than the efficient running of industries.   Consequently, in general, it must either happen that special public authorities are created for the express purpose of running certain industries, or that the size of the units of control in the industries affected is altered to fit the scope of existing public authorities.   In the case of very large enterprises having a scope midway between that of the central government and that of the relevant local authority, experience shows that special public bodies, adapted to this scope, can be and have been, erected.   We are familiar, for example, with the various harbour trusts and dock trusts, with the London Water Board and the Port of London Authority.   Though, however, in the case of very large businesses, the creation of special public bodies is admittedly a practicable policy, it is, nevertheless, not one that is, in all cases, likely to be adopted.   The danger, that, under public operation, local authorities inadequate in area will become the agents of that operation, is especially great in the case of industries originally adapted to the area covered by these agents, but afterwards fitted by invention for larger areas.   In former times the areas of management most suitable for the industries of water supply, gas lighting and electrical power supply were approximately coincident with the several municipal areas.   Of late years, however, since the advent of certain modern discoveries, the areas, which might be expected to prove economically most efficient, are often much larger than municipal areas.   Thus, " with horse traction the limit of each local authority was, roughly, the limit of commercial working.   With electric traction the parish became a mere item in a comprehensive system, which might extend over a whole county." [1]   Again, with the improvement in methods of distribution for electricity in bulk, the most economical area for the supply of electricity has come to extend over thousands of square miles.   Even in the supply of water, now that the needs of large towns are satisfied by the tapping of distant lakes, there is obvious economy in a joint organisation for supplying a number of towns along the route that the pipes must follow.   Indeed,

[1] Porter, *Dangers of Municipal Ownership*, p. 245.

it would seem that gas lighting is the only one of the public utility industries, for which the most economical area of management at the present time does not exceed the municipal area. These changes in the area proper to management have not, however, been followed by the transference of the public utility industries to new public authorities created *ad hoc*. To oust the municipalities would be a task impeded by an immense amount of friction, and one, therefore, little likely to be successfully undertaken. Hence, in practice, public operation often implies that industries, whose most economical area of management is intermediate between those representative of the central authority and of local authorities respectively, will, as a general rule, be worked by local authorities; and this, of course, implies a reduction of the unit of management below what is economically best.[1] In the case of enterprises, whose most economical area of management is smaller than that covered by the smallest existing public authorities, the creation of new authorities for the special purpose of running them cannot even be said to be practicable. If the industries of building houses, of supplying milk, of managing slaughter-houses, of retailing alcoholic drinks and so forth are to be taken over by any public authority, this authority can hardly be other than one of the authorities that would exist in any case for other purposes. Consequently, in these industries public operation, not merely in general, but practically always, implies the introduction of a scale of management larger than is economically most efficient.

§ 7. Now, if it were the fact that under private enterprise all industries would always evolve the most economical unit of management, it would follow that municipal operation could

[1] It may be objected that the alternative to municipal operation is, in many cases, municipal control, and that this control, when the area of the municipality is too small, may render private undertakings as inefficient as municipal undertakings would be. It is, however, easier to transfer control than it is to transfer operation to an authority of wider scope than the municipalities. The British Light Railways Act of 1906 establishes such a wider authority in the shape of the Light Railway Commissioners. (Cf. H. Meyer, *Municipal Ownership in Great Britain*, p. 69.) Again: "When, as in Massachussetts, it is not uncommon for a street railway company to operate franchises from ten, and, in one case, from nineteen different towns, independent municipal control is out of the question. The State railroad commission is the recognition in law of this condition of fact."—Rowe, *Annals of the American Academy*, 1900, p. 19.

not, in this respect, be superior, and would, in general, be greatly inferior, to private operation. In industries normally conducted under conditions of simple competition, such as the industries of baking, milk-supply, house-building or farming, we may fairly presume that private enterprise will, for the most part, evolve the most efficient size of unit. Where, however, any element of monopoly is present, we may by no means presume this. The most economical unit may be prevented from realising itself through friction, or through the hindrance imposed by popular dislike of large amalgamations, or in other ways. The probability that it will be so prevented is especially great, when the normal condition of the industry in question is, not that of simple monopoly, but that of monopolistic competition. In this case, there are, as was pointed out in Chapter VII., large wastes due to competitive advertisement and so forth, which centralisation under a single management might remove. With regard to railways, for example, Sir George Gibb writes : " Each railway company works for its own route. The result is that unnecessary mileage is run, and train loads are lessened. . . . If those responsible for the handling and carriage of railway traffic could work with a single eye to economical results, and in all cases forward traffic by the routes which yielded the best working results, great economies could undoubtedly be effected." [1] Like economies are sometimes obtainable from the combination, not of different firms engaged in the same occupation, but of different occupations. There is probably an economy in the co-ordination under one hand of the various industries that utilise the public streets. " Water mains may be laid before streets are paved, thus saving the damage and expense of tearing up good pavement to lay water pipes." [2] In cases of this sort—when the normal state of things is monopolistic competition—it is not improbable that public operation, so far from hindering, may actually foster the growth of the most economical unit of management. These cases, however, would seem to be exceptions to the general rule.

§ 8. The broad result of the foregoing analysis is to show

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[1] *Railway Nationalisation*, p. 21.
[2] Beamish, *Municipal Monopolies*, p. 46.

that public operation will, in general, prove inferior to private operation in respect of productive efficiency. This inferiority has to be balanced against the fact, emphasised in the preceding chapter, that, in the matter of adjustment of supply and demand, governmental regulation of private enterprise labours under great difficulties and is likely to be less successful than governmental regulation of enterprises operated by the governmental authority itself. The net effect on the dividend of these conflicting influences will be different in different circumstances. The injury to productive efficiency under public operation is specially great, when the publicly operated enterprise is a part of some industry, or is a whole industry, which is, in an important measure, rival to other privately operated industries. It is also specially great, when the enterprise is one, whose normal unit of management is widely different from the area of existing public authorities. On the other side, regulation of private enterprises by public authorities is likely to be specially unsuccessful, when these industries produce commodities whose quality cannot easily be tested. The need for the use of a large amount of the factor uncertainty-bearing in any industry tells against the success both of public operation and of public control, and, therefore, cannot be appealed to in a comparison between the rival methods. Applying these results to practice, we deduce two fairly clear general presumptions. The first is that, in respect of industries, where the quality of the output is of supreme importance and would, in private hands, be in danger of neglect, public operation is desirable. Thus, the Reporters of the American Civic Federation write : " We are of opinion that a public utility, which concerns the health of the citizens, should not be left to individuals, where the temptation of profit might produce disastrous results, and therefore, it is our judgment that undertakings, in which the sanitary motive largely enters, should be operated by the public." [1]   The second presumption is that, in industries other than those just described, when the producing unit is normally small and simple competition would normally prevail, public operation should not be attempted. The general run of monopolistic industries is intermediate between these two

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[1] *Municipal and Private Operation of Public Utilities*, vol. i. p. 23.

groups.   Whether they should be publicly operated or publicly controlled cannot be determined in a general way.   The case for control is strongest when the monopolistic industry is, in great measure, rival to some other industry; the case for operation is strongest when such operation would make practicable an advantageous enlargement of the unit of management.   In all practical cases, before a decision between these alternative methods is arrived at, it is necessary to take account of the general character of the particular public authority whose action is involved, as well as of the probable effect of new tasks upon its efficiency for the purpose of its primary non-industrial duties.

PART III

THE DISTRIBUTION OF THE NATIONAL DIVIDEND

CHAPTER I

§ 1. In the second chapter of the preceding Part it was argued that the general run of causes affecting the magnitude of the national dividend, either favourably or unfavourably, should be presumed, unless special reason were shown to the contrary, to affect the aggregate real earnings of the poor in the same sense. In that discussion, however, I deliberately put on one side an important group of economic phenomena, namely, attempts to improve the distribution of the dividend by the deliberate transference of resources from relatively rich to relatively poor persons. Such attempts may manifest themselves, either in some form of interference with the natural course of wages, as paid for the work of certain poor persons, or in the levy of resources by taxation, or otherwise, from the more fortunate members of the community for the benefit of certain poor persons. *Prima facie*, it would seem that attempts of both the above kinds may act inharmoniously, in the sense that they may at the same time expand the real income of the poor and contract the national dividend as a whole. If this *prima facie* view were valid, the discussion, which has to be carried through in the present Part, would be exceedingly complicated. In fact, however, the same class of reasoning, which proved the generality of economic causes acting on the national dividend to be " harmonious," can be used to prove a like proposition concerning the special causes here under review.

§ 2. It is, of course, true that the introduction of any arrangement which effects a transference of resources from the

relatively rich to the relatively poor, whether it is accompanied by a diminution or by an increase in the magnitude of the national dividend as a whole, must lead to an increase in the real income enjoyed by the relatively poor in the year in which it is introduced. This obvious fact, however, does not imply that the arrangement will lead to an increase in the real income enjoyed by the relatively poor, when account is taken of all the years affected by it. The reason is that the national dividend coming into being in any year, *plus* the accumulated stores held over from previous years, constitutes the sole source from which savings can be made. Other things being equal, therefore, any diminution in the amount of the dividend in one year lessens the supply of capital, with which labour can co-operate in the following year. In that year, therefore, both the national dividend and the real earnings of labour are reduced below what they would otherwise have been. In the next year they are reduced still further below that level, and so on. It is easy to see that the process of reduction initiated in this way is continuous and cumulative. Hence, the advantage to the real income of the poor, which an act of transference brings about immediately, can only prove an advantage on the whole, if the act does not involve an injury to the magnitude of the national dividend. It is obvious that the result thus established in regard to a single isolated act of transference holds good equally of a continuous series of such acts. No doubt, if the amount of resources transferred in the course of a year is augmented as the years proceed, its rate of growth may exceed the rate of decline in the earnings won by the poor from industry; and, in this way, the real income of the poor may be maintained for an indefinite period above its natural level by a process which is, nevertheless, rapidly reducing the national dividend. Apart, however, from this special case, to which reference will be made in the concluding chapter of the present Part, the question, whether transferences from the rich to the poor are of ultimate benefit to the poor, is equivalent to the question whether they are of ultimate benefit to the national dividend.

§ 3. The equivalence thus established does much to simplify

our argument.   Nevertheless, seeds of complexity remain, in
the fact that attempts to transfer resources to the poor and
actual transferences to the poor are not the same thing.   In
the following chapters I propose to discuss, first, attempts to
transfer resources by interference with the natural course of
wages.   I shall begin by investigating the conditions, under
which these attempts may be expected to succeed in their
immediate object and actually to affect transferences.   This
discussion will occupy Chapters II. to VI.   I shall then
inquire—in Chapter VII.—under what conditions successful
attempts at transference of the above kind will advantage the
national dividend, and, therefore, ultimately the fortunes of
the poor.   Next, I shall turn to attempts at transference
engineered through taxation and so forth, and shall inquire,
in Chapter VIII., into the conditions under which *these*
attempts will actually bring about transferences.   Chapters
IX., X., and XI. will then be devoted to the question, under
what conditions successful attempts at transference of this
class will advantage the national dividend, and, therewith, the
fortunes of the poor.   In regard to both sorts of attempt, I
shall ignore the academically interesting, but practically unim-
portant, possibility that an attempt at transference, which does
not succeed in effecting any transference, may, nevertheless,
conceivably increase both the dividend and the real earnings
of the poor.   Finally, in Chapter XII., on " The National
Minimum," I shall revert to the special case of a series of
transferences of such a sort that they *may* operate inharmoni-
ously upon the real income of the poor and the magnitude of
the national dividend.   Throughout this discussion no refer-
ence will be made to reactions that may be produced in the
numbers of the population ; for, this matter has already been
considered in the second chapter of Part I.[1]

[1] Cf. *ante*, pp. 28-32.

CHAPTER II

§ 1. ATTEMPTS to transfer resources from relatively rich to relatively poor persons by way of interference with the natural course of wages manifest themselves in attempts to establish artificial wage-rates at some point or other in the industrial field. Analytically, two principal forms of such wage-rates may be distinguished. On the one hand, the wage payable for a particular kind of work per efficiency unit may be artificially varied; on the other hand, the wage payable for a particular kind of work performed by some men may be raised differentially above the wage payable for the same work performed by other men. An illustration of the former arrangement would be afforded by a perfectly adjusted piece-wage raised artificially above the normal level; an illustration of the latter by a time-wage of so much per hour for the work of competent and incompetent men alike. In practice, when interference takes place at all, the element of artificiality and the element of differentiation are, in general, in some measure blended. An actual artificial piece-wage is apt to contain a larger element of differentiation than the ideal piece-wage of which I spoke just now, and an actual artificial time-wage is apt to contain a smaller element of differentiation than might be expected at first sight. The degree of differentiation present in different cases is roughly exhibited in the following paragraphs.

§ 2. Generally speaking, a wage of so much per piece differentiates slightly in favour of inferior workers as against better workers, or, in other words, involves payment to the inferior workers of an efficiency-wage slightly higher than that

paid to the others.   The reason for this is, first, that in a factory —though not, of course, among home-workers—the worker, who is inferior because he is slow, "occupies" the employer's machine or workspace for a longer period than a faster worker, in producing the same quantity of commodity ; secondly, that the worker, who is inferior because he is careless, is more likely to have an accident, and so to mulct the employer under the Workmen's Compensation Act, than the careful worker. Of course, it might be possible to devise a piece-wage scale, that should take account of these considerations, and should really yield equal efficiency wages for work performed by all grades of workpeople engaged on similar jobs.   The actual existing arrangements are, however, generally rough, and involve some differentiation in favour of inferior men along the lines which I have just indicated.

§ 3. The time-wage regulations that are enforced by trade unions and arbitration courts often aim, more or less consciously, at the establishment of an artificial piece-wage, the machinery of time-wage regulation being employed as a means of overcoming the practical difficulties that, in some circumstances, impede the direct establishment of that kind of wage.   In regard to goods, whose patterns or fabrics are frequently changing, the construction of a piece-work scale— even apart from the problem of making fair adjustment between workers engaged on machines of different efficiency, and in situations where varying facilities are afforded—has been found to present great difficulties.[1]   In New Zealand these have proved so serious, that, "in a number of trades, the weekly, daily, or hourly wage has, of late years, taken the place of the log."   In cases of this kind the time-wage is

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[1] Variations in these facilities may be important. Miss Black writes : "The methods and distribution of work vary surprisingly in different places, and the real wage received is greatly affected by the degree of organising and administrative ability that may happen to be possessed by the person in command.   It is a common thing for groups of workers employed in different rooms of the same factory, doing precisely the same work under identical outward conditions, and at the same piece-work rates, to show weekly general averages, one of which will be always steadily larger than the other."—*Makers of our Clothes*, p. 145. In like manner, one of the principal arguments advanced in favour of a minimum day-wage for miners in the recent dispute was that, in view of the different positions in the mine, and the different facilities for work, obtained by different men, piece-wages did not really imply uniform efficiency-wages.

simply used as an indirect means of doing what it is found impracticable to do by means of a piece-wage. The point is well illustrated by the practice of the Wages Boards for special trades in Victoria, and of the Arbitration Court of New Zealand. The determinations and awards adjudged by these bodies refer to the wage of *ordinary* workmen assumed to perform a given task. There is no rule to prevent better men from earning more than the minimum, and, indeed, the Inspector of Factories in Victoria in 1902 stated that, in the clothing trade, while the minima for men and women workers respectively were 45s. and 20s., the average wages were 53s. 6d. and 22s. 3d.[1] Furthermore, in the Report of the Bureau of Labour for 1909, it is stated that " out of 2451 employees in factories in Auckland City, excluding underrate workers and young persons, 949 received the minimum rate, and 1504, or 61 per cent of the whole, received more than the minimum. In Wellington the per cent receiving more than the minimum was 57, in Christchurch 47, and in Dunedin 46." [2] The same point is illustrated in a rough way by the policy of certain American unions, which enter into agreements with employers concerning both a standard and a minimum wage. In the Norfolk and Western Railway shops in Roanoke the minimum wage was 20 cents, while the standard wage was that received by the largest number of men in the shop, namely, 24 cents per hour. Again, in an agreement made in 1903 between the " Soo " Railway and the International Association of Machinists, " it is stipulated that in the machine shops of the railway company the minimum rate shall be 30 cents per hour, and the standard rate $34\frac{1}{2}$ cents per hour." [3] If the object sought by arrangements of

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[1] Cf. Webb, *Socialism and the National Minimum*, p. 73.

[2] *Quarterly Journal of Economics*, 1910, p. 678. The tendency of the minimum to become the maximum is, of course, stronger in some circumstances than in others. Thus, Mr. Broadhead writes of New Zealand : " In those trades, in which there is no competition with the outside world, many of the workers, according to their degree of skill, are paid more than the minimum wage fixed by the court, but, in others, in which there is competition with the imported article, the practice of making the minimum the maximum wage is, I believe, pretty general. In the latter case the employers contend that they cannot afford to pay to any worker any more than is fixed by law."—*State Regulation of Labour in New Zealand*, p. 72.

[3] Holland and Barnett, *Studies in American Trade Unionism*, p. 118.

this kind were completely attained, differentiation would be expelled from an ideal time-wage system, just as it would be expelled from an ideal piece-wage system.

§ 4. In practice, however, the difficulty of adjusting time-wages accurately to the capacities of different men is frequently so great that, even where serious efforts are made to secure adjustment, a large element of differentiation favourable to inferior workmen [1]—a much larger element than is present in piece-work schemes—remains. In respect, indeed, of workmen, whose relative inferiority arises out of some definite visible cause, such as old age, adjustment appears to be reasonably practicable. Trade unions, in which operatives are paid by time, often have special arrangements permitting men over sixty to accept less than the standard rate. Such arrangements, Mr. Beveridge states, " occur, for instance, in the rules of several furnishing trade unions, and of others in the printing, leather, and building trades. In one union, indeed, members over fifty-six years of age may not only be allowed, but be compelled, by their branches to accept less than the standard rate (so as to clear the unemployed fund)." [2] " It is," he adds, " of course, possible that, in some of these cases, the formal rule of exception is seldom put in force, or that the branch refuses its consent to a lower rate. On the other hand, it is quite certain that many unions in fact make exceptions for their aged members without possessing any formal rules on the subject. This is the case with the Amalgamated Society of Carpenters and Joiners, and, to a less extent, with the Amalgamated Society of Engineers. The question is, indeed, very largely one of the strength and feeling of the particular branch concerned. If the standard rate is firmly established, it may appear safe to make exceptions for the older men." [3] There

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[1] In the text I have tacitly ignored a few special cases, in which differentiation is in favour of superior workmen. The most important instance of this arises, when " boys " are paid at an abnormally low rate, simply because they are " boys." In such cases, provided that the " boys " really do the same work as the men, and do not merely act as assistants to the men, differentiation is present in favour of the men, and, in times of depression, the men will be dismissed and the boys retained.

[2] *Unemployment*, p. 124, footnote.

[3] *Ibid.* p. 124. The peculiarity and uncertainty of these arrangements is brought out in Mr. Barnes' evidence to the Poor Law Commissioners : " In the Amalgamated Society of Engineers we do not require a man to shift

are, however, many relatively inefficient men in industry, whose inefficiency is not associated with a definite objective thing, such as old age or infirmity. With regard to such men adjustment is far more difficult to bring about. The nature of the difficulties involved may be illustrated from the much discussed case of the "slow workers" under the New Zealand Arbitration Law. In connection with its award of "minimum" wages, it is usual for the Arbitration Court to provide for a tribunal to fix an "under-rate" for slow workers.[1] In the earlier years of the Act, permits to claim the under-rate used to be obtainable from the president or secretary of the trade union concerned. It was found, however, that, especially in the case of slow workers, as distinct from those who are more obviously afflicted by age, accident or infirmity, these officials hesitated to issue permits. The new arrangement is that the power of issue is entrusted to the chairmen of local Conciliation Boards, after hearing the representatives of the unions. In Victoria the issue is in the hands of the Chief Inspector of Factories, subject to the condition that the persons working with licences in any factory must not exceed one-fifth of the adult workers who are employed there at the full minimum rate.[2] The unwillingness of the unions to sanction permits is, of course, due to the fear that, through them, the standard required of the ordinary efficient workman entitled to a full wage may be raised, and the minimum thus insidiously lowered. This unwillingness tends, of course, to be checked, when the unions are under obligation to pay large out-of-work benefit to unemployed members. In all circumstances, however, it is

from one town to another after he is fifty years of age, and, putting it generally, we do not require him to get the standard rate of wages—according to the discretion of the committees who may deal with the matter—after about fifty-five years of age." But, the percentage of men who take advantage of this is very small. "In fact, although we allow men to work under the rate at fifty-five years of age, it is rather the case that the men at fifty-five, or even sixty, do not avail themselves of the opportunity. So strong is the sense of discipline in the trade unions, and their sense of loyalty to their fellows, that in most cases a man would rather give up work altogether than accept work at the lower rate. So that, instead of trade unions standing in the way of the men accepting lower rates, the opposite is the fact, and the trade unions rather encourage it." (Evidence of Mr. G. N. Barnes, M.P.; quoted in the Report of the Commission, p. 313, footnote.)

[1] Cf. Broadhead, *State Regulation of Labour in New Zealand*, p. 66.
[2] Cf. Aves, *Report on Wages Boards*, p. 61.

likely to retain some force, and it is, furthermore, backed by the reluctance of border-line workpeople to ask for permits, and of employers to obtain a reputation for employing under-rate workers.[1] Hence, under time-wages, even when no excessive rigidity is maintained, but a serious effort after adjustment of wage to efficiency is made, it seems probable that a true adjustment will be much less nearly attained than under piece-wages.

§ 5. Where work is done on time-wages, and the standard is deliberately made rigid, it is plain that the discrepancy between the efficiency-wages of different workers will be more serious still. An absolutely rigid time-wage is often contemplated, and sometimes actually instituted, with regard to the poorest class of workpeople. It is *not*, we may note in passing, contemplated in the Report of the British Committee on Home Work. The proposal of that body, subsequently incorporated in the Trades Boards Act, was, in effect, to establish a minimum piece-wage, calculated to yield a " living wage " of so much to an average worker, and therefore, of course, yielding a lower wage to inferior workers.[2] Absolute rigidity is, however, contemplated in some part of the legislation of Victoria and South Australia. The Parliaments of these Colonies " have decided that no person whatsoever can be employed there in a registered factory without receiving some minimum remuneration—in the case of Victoria 2s. 6d. a week, and in that of South Australia 4s." [3] In like manner, the New South Wales Minimum Wage Act of 1908 provides that no workman or

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[1] The danger of allowing under-rating to become a means of evasion of awards is clearly seen by those in charge of the Acts. '' In granting permits, the Chief Inspector is guided by claims based on personal disability of some kind, and not by the exigencies either of an industry or of a particular business. If conditions have changed, making the applications for permits more urgent on that account, the view is held, very consistently, that the occasion would then have arisen for the reconsideration of its determination by the Board concerned. While the determinations are in force, wages conditions, it is held, should conform to them, and in their power to arrest or postpone a fall some consider that they will in the future prove their greatest value. Such is the hope, but to that form of testing they have not yet been subjected. The point, which it is necessary to emphasise here, is that at such a period the permit is not regarded as the appropriate instrument upon which to fall back."—Aves, *Report on Wages Boards*, p. 63.

[2] *Report of the Select Committee on Home Work*, pp. xiv-xv.

[3] Aves, *Report on Wages Boards*, p. 88.

shop assistant shall be employed, unless in receipt of a weekly wage of at least 4s., irrespective of any amount earned as overtime.[1]   Again, in the Factory Act of New Zealand, it is provided that "every person, who is employed in any capacity in a factory, shall be entitled to receive from the occupier payment for the work at such rate as is agreed on, in no case less than 5s. per week for boys and girls under sixteen years of age, and, thereafter, an annual increase of not less than 3s. weekly till twenty years of age." [2]   This clause was passed in order to prevent persons being employed in factories without "reasonable remuneration in money." Payment is to be made in every case irrespective of overtime, and premiums are forbidden.[3]   The same idea is embodied in the suggestion, sometimes made in Victoria, that " a national minimum for adults of working age, say, between twenty-three and fifty-five —one for men and one for women "—would be preferable to the present system, which practically consists in fixing a "standard wage" in the different trades.[4]   It is obvious that, under arrangements of this kind, a very large element of differentiation is possible.

[1] *Labour Gazette*, March 1909, p. 103.

[2] Aves, *Report on Wages Board*, p. 88.

[3] *Ibid*. p. 88.   [4] Cf. *ibid*. p. 48.

§ 1. ATTEMPTS to raise the rate of wages paid to groups
of workpeople above the natural level are made, in practice,
sometimes by one, sometimes by another, of three separate
agencies. These agencies are, respectively, the collective
diplomacy of trade unions, the pressure of public opinion
and the coercive action of government. Action by trade
unions is too common to need illustration. Its sanction is,
of course, that of a strike. Action by governmental authority
is also, in view of Australasian experience, tolerably familiar.
Its sanction is the imposition of a penalty upon violators of
the law. This penalty may assume the peculiar form, pro-
posed under the Australian Excise Tariff Act of 1906 and
afterwards ruled unconstitutional by the Supreme Court,[1] of
differential excise duties upon native manufacturers who pay
less than " fair and reasonable rates "; or, it may be simple
and direct. Action by public opinion is chiefly relevant to
the case of specially poor workpeople, whose wages are so low
that humanitarian sentiment is touched. Sometimes it
appears in an unorganised form. Thus, Mr. Jones, in his
Report to the Royal Commissioners on the Poor Laws,
affirms, of our low-grade workers, that their " rates of pay
would be lower than they actually are but for the effective
force of conventional or customary standards." [2] It is prob-

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[1] Mr. St. Leger, in his book on *Australian Socialism*, pp. 304 *et seq.*,
prints the judgment of the Supreme Court.
[2] *Report of the Royal Commission on the Poor Laws*, Appendix, vol. xvii. p. 377.

able that the frequency with which the wage of women
workers approximates to 10s. a week is, in some measure,
due to the working of a cause of this kind. A more
important form of intervention by public opinion occurs,
however, when that opinion is organised. Voluntary associa-
tions of customers try to put pressure on employers, by under-
taking to confine their custom to those among them, whose
treatment of their workpeople comes up to a standard that is
considered fair. The scope of this method varies greatly in
different industries. It operates, for example, more easily in
respect of the hours of labour of assistants in retail shops,
whom the customers actually see, than it does in respect of
those imposed on factory or domestic workers, whom they do
not see.[1] In all cases it is much restricted by the imperfec-
tions of customers' knowledge, and by the fact that many
articles pass through a number of stages of manufacture,
before they reach the man who ultimately sells them to
the consumer. Associations of private persons have, never-
theless, sought to employ this method through the devices of
the White List and the Trade Union Label.[2] It has been
employed with greater effect by public bodies, which have
extensive contracts to offer. The Fair Wages Resolution
of the British House of Commons in 1893 endeavoured to
secure that Government departments should exert themselves
in this respect, by demanding that, on Government contracts,
not less than " the rate of wages current (in the district)
should be paid to employés." The London County Council
furnish a schedule of wages, which all firms tendering on their
contracts must agree to pay in respect of the work in question.
In some towns it is insisted, further, that no contract shall
be given to a firm that fails to pay " fair " rates, not merely
on the town's contract, but regularly on all its work. Thus,
" Belfast and Manchester have standing orders, under which

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[1] Cf. Mény, *Le Travail à domicile*, p. 173.

[2] The Australian Trade Marks Act of 1905, which directed that all goods sold
should be marked with a label, showing whether or not their makers employed
Union labour exclusively, was ruled by the High Court to be unconstitutional, on
the ground that the Federal title to legislate about trade marks did not permit
legislation in respect of marks not designed for the benefit of the manufacturer
using them (*Economist*, Sept. 19, 1908, p. 532).

contractors tendering for, or executing, work must be paying all their workpeople the rates of wages, and observing the hours of labour, agreed upon by the organisations of employers and workpeople, and must not prohibit their workpeople from joining trade unions; while at Bradford the contractor gives an assurance that, for three months immediately preceding his tender, he has paid all his workmen the rate agreed upon between the employers' association and the trade union." [1] These three instruments, trade union diplomacy, legislative action and pressure on the part of consumers, constitute the principal means, by which attempts are made to raise the rate of wages enjoyed by any group of workpeople above their natural level.

§ 2. Before the general effects of attempts of this kind are discussed, it is desirable to investigate the conditions, under which such attempts are likely to succeed in their immediate object of making the real wage-rate enjoyed by a limited group of persons higher than it would naturally have been. Let us suppose that an attempt is made to force up the wage-rate at a particular point in the industrial field, and let us examine the difficulties with which such an attempt is likely to be confronted. The first and most obvious of these is, of course, direct evasion. Such evasion is facilitated by the fact that the reward, which an employer pays to his workpeople for their services, is complex, including, besides the money-wage, the promise that he makes of comfort, sanitary arrangements and safety appliances during the hours of work, and also, in many cases, certain payments in kind. By operating on one or other of these items it may be possible for an employer, if he wishes to do so, to neutralise apparent additions to the money-wage. It is not, however, only in this way that evasion can come about. Since a poor man will often prefer to accept a low wage rather than lose his job, collusion may take place between employer and employed,

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[1] *Report of the Fair Wages Committee*, p. 50. Unless the requisition that contractors shall pay standard wages is made to apply to all their work, and not merely to their work on particular contracts, unscrupulous contractors can evade it by employing the same men for part of their time on contract work at full wages, and for another part of their time on other work at exceptionally low wages.

and, as is well known to happen in the Chinese factories of
Victoria, a lower wage may be paid actually than is paid
nominally.   When workpeople are unorganised—and they are
specially likely to be unorganised if they are very poor or
if they work apart from one another in their own homes [1]
—it would seem that even a strong government, not to
speak of a Consumers' Association, must have immense diffi-
culty in enforcing its will.   This fact may be illustrated from
the experience of our own legislation concerning sanitation,
safety and hours of labour for women and children.   Great
difficulty has always been found in bringing the smaller and less
obvious units of the trade under effective control—a difficulty
that is especially great in respect of length of hours, since in
" domestic workshops," and among solitary workers, household
and workshop labour can so easily be intermingled.[2]   In
England at present any place, where employers, working in
their own houses, employ persons from outside, is a " work-
shop," and is subject to the ordinary provisions of the factory
law.   Any place where employers, working in their own
houses, employ only members of their own family, is a
" domestic workshop," and is regulated as regards sanitation,
and also, though in a less degree than ordinary workshops,
as regards the hours of work of young persons and children.
A place where a home-worker works alone in her house for an
outside firm is not, however, subject to this class of regulation.
Even in respect of workshops and domestic workshops, it is
doubtful whether, with the existing staff of inspectors, the
enforcement of the rules is satisfactory.[3]   Throughout, the task
of inspection is exceedingly heavy—so much so that, in England,

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[1] Mr. Lloyd writes : " The chief reason why the grinders both in Sheffield
and Solingen have been better organised than the cutlers is that they are more
congregated at their work."—*Economic Journal*, 1908, p. 379.

[2] It is sometimes suggested that enforcement would be easier if the giver-out-
of-work, or even the landlord, as well as the employer, in a domestic workshop,
were made legally responsible for breaches of the law.   (Cf. Webb, Evidence
before the Royal Commission on Labour [C. 7063-1], Q. 3740.)   In Massa-
chusetts responsibility is sometimes thrown on the giver-out-of-work.

[3] Cf. the difficulties experienced in New Zealand and Victoria in enforcing
the law limiting the hours of shop assistants.   In New South Wales these diffi-
culties are partly avoided by means of a general law regulating the hours for
all shops, whether employing assistants or not.   (Cf. Aves, *Report on Hours of
Employment in Shops*, p. 12.)

the demand for a larger staff is continually being made. If, however, things are thus difficult in respect of the kind of regulation we have just been discussing, in wage-regulation they are more difficult still. As the late Mrs. Macdonald well observed, wage-rates are not, like sanitary arrangements, hours and so forth, things easily detected by the watch or nose of an inspector.[1] Hence, the violation of rules concerning them can scarcely be discovered except through overt action by the workers; and, in the absence of organisation, individual workers will often fail to take such action. Where, however, an effective workers' association exists, this difficulty can be overcome. For, the workers, having unemployed benefit to fall back upon, will not be terrorised into accepting less than the union rate by fear of losing their job, but will complain to the union officials ; and, even when individual workmen do not do this, their officials will play the part of a body of lynx-eyed unpaid inspectors.

§ 3. So far we have discussed direct evasion. It remains to consider what I may call indirect evasion. Such evasion occurs, when the establishment of an artificially high wage-rate in any part of the industrial field, instead of bringing about the payment of that rate to the workpeople previously assembled there, brings about, rather, a redistribution of workpeople, in such wise that new men are brought into the region in question, who, on account of superior efficiency, are normally worth the higher wage. For example, the variations in the real wage represented by Trade Union rates in different towns is met, in the main, by the gravitation of the abler workpeople to the towns with higher real wages, just as the establishment of the " dockers' tanner " in 1889 was met by the substitution, in part, of strong immigrants from the country for the weaker men among the old dockers. This kind of indirect evasion is, however, obviously not practicable, when the artificial wage-rate, whose introduction is attempted, is not a time-rate but a piece-rate. Nor is it practicable, even under a system of time-wages, when the district, to which the artificial rate is made applicable, is so large that there are not enough superior workpeople

[1] *Economic Journal*, 1908, p. 142.

of the grade affected in existence in other districts to admit
of the shuffling process just described.

§ 4. The general result of the preceding discussion has
made it plain that, though attempts to transfer resources
from relatively rich persons to relatively poor persons by
raising the real wage-rate of particular workers above their
natural level are liable to be impeded, in greater or less degree,
by evasion, yet they may frequently attain at least a partial
success in their *immediate* object.   It is, therefore, a false
objection to such attempts to declare that they cannot, in
fact, raise the real wage-rate of anybody.   There is no doubt at
all but that they *can* do this.   The really significant question
is whether, and, if so, under what conditions, they are able, by
raising the real wage-rate of certain persons, to attain their
ulterior object of transferring resources from relatively rich
to relatively poor persons.   That question still remains to be
discussed.   I shall examine it, first, on the assumption that
such artificial wage-rate as may be introduced is wholly
non-differential in character, after the manner of an ideal
piece-wage.   The effect of the presence of an element of
differentiation will be discussed in Chapter VI.

CHAPTER IV

§ 1. IN attacking the problem just formulated, we are confronted, at an early stage, with the fact that the effect of the establishment at any point of an artificial non-differential wage-rate partly depends upon the methods, in accordance with which workpeople are engaged in industries where the artificial rate is established. It, therefore, becomes important to make some study of the various methods of engagement that are in vogue. The present chapter is devoted to that task.

§ 2. Sir H. Llewellyn Smith, in an important passage, draws the following distinction between two principal ways in which a slackening of demand is met in different industries. "Looking at the question broadly, we may distinguish two main methods. The first general method is by short time, or short work, for all or the majority of those employed. A good example of that is mining, in which, for the most part, the contractions do not result so much in throwing out a certain number of colliers altogether, but in the colliery working a smaller number of days per week. Another example would be the boot and shoe trade (I mean apart, for the moment, from the great factories where machinery is used, but where it is carried on on the ordinary piece-work system), in which in slack times there are not many people entirely unemployed, but a very large number of people will have a short amount of work. The second method, which applies in other industries, is not by working short time, but by throwing out of work a certain proportion of the workers, who form a fluctuating margin of unemployed. Examples of such

trades are the building, engineering and shipbuilding trades. I do not mean to say there is not short time known in any of those trades, or that overtime is not worked in times of inflation; but, the main method by which they adjust themselves to a change in demand is by throwing out workers or taking on more workers."[1]   This distinction is worked out directly with reference to industrial fluctuations, but, obviously, it applies equally well to stationary conditions.   The analysis, however, requires, for my present purpose, some slight modification.   The fundamental distinction is, not between arrangements, under which, in any particular week, the work available is, respectively, spread among all those attached to the industry and concentrated upon certain persons among them.   It is, rather, between arrangements, under which spreading does, or does not, exist on the whole; and spreading may exist on the whole, even though no spreading exists in any particular week.   Thus, on the one side, we have the concentration method, which is simple and definite; on the other side, spreading methods in general.   The essence of the concentration method is that the work available shall be concentrated entirely upon certain men, the others getting none at all.   It can be applied absolutely in fields where demand is stationary, and even, by resort to the method of overtime, where demand is subject to moderate fluctuations.   When the fluctuations are too large to be met in this way, the method can be applied in considerable measure by the provision, alongside the list of permanent men, of a list of inferior preference men, who, since they are inferior, continue in the industry, despite the fact that their aggregate earnings are lower than those enjoyed by the permanent men.   The essence of spreading methods is that the work available is scattered over more workpeople than would be required to perform it, if all were fully and

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[1] *Third Report of the Committee on Distress from Want of Employment*, Evidence, Q. 4540, p. 48.   It may be observed that, even in industries where the dismissal method is adopted for contractions of work from below the normal, the short-time method is adopted for contractions from above the normal.   (Cf. *Twenty-Ninth Quarterly Report of the General Federation of Trade Unions*, quoted in Messrs. Pringle and Jackson's *Report to the Poor Law Commission*, Appendix, vol. xix., p. 82.)   Thus, in the engineering trade, whereas the average amount of short time is very small, overtime adds, on the average, $3\frac{3}{4}$ per cent to the normal man's working-time (Cd. 2337, p. 100).

continuously employed. Among such methods any number of grades can be distinguished, from the one extreme, at which the spreading is wholly at random, to the other extreme, at which it is absolutely even. Under the ideal form of even spreading, work, not necessarily at a particular moment, but over the whole of a reasonably short period, is deliberately made equal for all the men, even in periods of depression, either by the employment of them all continuously on short time or short work, or by a system of rotating gangs, such as seems to exist among " the riverside corn-porters working regularly at the Surrey docks."[1]

§ 3. We have now to study the influences, which, on the assumption that no element of differentiation is present in the wage-rate, govern the choice between the concentration method and spreading methods, or, rather, the choice as to how far the inevitable compromise between them shall lean to the one side or to the other. Among these influences it is convenient to distinguish three principal groups: (1) those connected with the nature of the work performed in the occupation under review; (2) those connected with the character, in respect of fluctuations, of the demand for labour in that occupation; and (3) those connected with the range covered in it by the typical individual centre of engagement.

§ 4. As regards the first of these three groups of influences,

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[1] *Report of the Royal Commission on the Poor Laws*, p. 1156, footnote. The fact that the *even spreading* method is, thus, practicable otherwise than by means of "short time" is especially important, for the reason that the use of "short time" is often impeded by technical considerations. That method is, indeed, readily applicable, when the conditions are such that appreciable advantage can be gained in slack times by cutting off the most expensive *hours* of work, those, for example, that involve extra charges for lighting and heating. (Cf. Beveridge, *Unemployment*, p. 222.) But, the method of dismissal, in that it involves "reduction of the working-time of each workman, the working-time of the business remaining as before," is favoured, whenever appreciable advantage can be gained by keeping machinery going, provided that it is possible to effect this by spreading labour more sparsely over any given amount of machinery. Professor Chapman gives some interesting figures illustrating the varying degrees, in which different textile industries, all employing the same (namely, the piece-wage) method of wage-payment, have adopted the two methods of short time and dismissal of hands respectively to meet depressions. Between November 1907 and November 1908, it appears that, in the cotton industry, among the firms investigated, a 13·3 contraction of output was met, to the extent of 5 per cent by dismissal of hands, and to the extent of 8·3 per cent by short time; whereas, in the silk industry, an 8·1 per cent contraction of output led to a 6·2 per cent dismissal of hands and 2·1 per cent short time. (*Unemployment in Lancashire*, p. 51.) It would seem that the causes of these differences are, in the main, technical.

we may conclude broadly that occupations, in which any considerable degree of skill is required, tend, to a greater extent than the relatively unskilled occupations, to favour the concentration method of engagement.   One cause of this is that skilled workpeople often acquire a kind of quasi-rent value to the particular firms, which have employed them for any length of time.   This is partly due to the fact that the detailed methods of different factories are different, and that, therefore, workmen, who have become accustomed to any given factory, particularly if the work they have to do in it is of an all-round kind, are more useful there than other similar workmen would be.   It is partly due also to the fact that skilled workmen often handle expensive materials or delicate machinery, and that employers naturally prefer to entrust these things to men, of whose qualities they have had continuing experience.   These influences are, in general, absent in the case of unskilled men.   A second cause is that skilled men, being members of trade unions, which themselves act, in a measure, as courts of discipline, do not need that stringency of personal control in their behaviour, that is sometimes necessary with unskilled men.   This consideration is an important one, representing a real force adverse to the concentration method in some unskilled industries.   A foreman or manager's disciplinary power, " unless he is a man of great tact, depends on the number of men at the gate ready to take the place of any man he turns off.   By careful distribution of irregular work, the margin necessary for the purpose can be kept up.   The master porter, foreman, or other, who has to get work done, is much helped, if he is always conferring a favour upon the man he employs, and a very marked favour upon those whom he employs frequently or constantly.   This we believe to be the real objection to the schemes for diminishing the irregularity of employment in the docks and warehouses of Liverpool by an association among the employers of this kind of labour, so ably and powerfully urged by the leading men of that city for many years." [1]   A third cause tending to foster the concentration method of engagement in

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[1] Messrs. Pringle and Jackson's *Report to the Poor Law Commission*, Appendix, vol. xix., p. 15.

skilled, to a greater extent than in unskilled, occupations is also connected with the fact that skilled men are generally much better organised than unskilled men. As a consequence of this circumstance, the chance of strike by them is a much more serious danger to employers, and is, therefore, much more likely to drive them to search for methods of obviating strikes. Among such methods is the device of engaging workmen individually on long-term contracts. An example is afforded by the agreement of the South Metropolitan Gas Company with its " co-partners." " The agreement is a definite engagement on our part to give a man work for a period varying from three months to twelve months, and the great bulk of our men work under such agreements. The origin of it was, as perhaps you may have heard, in order to prevent a large number of men giving notice to us at the same time. At the time of our strike in 1889 all the stokers gave notice at one time. In order to obviate that, we instituted a series of agreements, to fall in so many every week. It is not compulsory. The men can sign them or not as they please, but those who do sign partake in the prosperity of the Company. At present, the men who have signed are getting 10 per cent on their wages as a result of being under agreement, so you may realise that there is no difficulty in getting the bulk to sign."[1] It is obvious that a system of individual long-term contracts implies the concentration method. Since, therefore, there is less inducement to employ the long-term contract in the case of unskilled men, there is, *pro tanto*, less inducement to employ the concentration method. It should be noted, however, that the difference in this respect between the circumstances of unskilled and skilled occupations, brought about by the three causes which I have enumerated, is capable of being eliminated by " artificial " intervention. It has been urged, for instance, that trade unions might, with advantage, turn their attention to demanding minimum periods of engagement as well as minimum rates of wage.[2] Mr. Beveridge, again, refers by implication to the possible influence of public

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[1] *Report of the Charity Organisation Society's Committee on Unskilled Labour*, 1908, p. 170.

[2] *Report of the Royal Commission on the Poor Laws*, p. 632.

opinion: "Public opinion and custom," he writes, "often maintain the nominal rate of wages even in the face of unlimited competition for employment; the conception of a certain rate per hour of work done readily becomes part of the instinctive standard of life. There is not the same check upon the cutting down of real earnings by irregularity of employment."[1] Again, an ingenious method has been suggested by the Poor Law Commissioners. They write: "One method of discouraging casual labour would be the imposition of what we might call an 'employment termination due.' That is to say that, to the termination of an engagement, either by the master or by the man, should be attached a small payment, both by the master and the man, in the nature of a fine or stamp duty to the State. The tax, or 'employment termination due,' could be very easily levied by means of stamps placed upon a 'termination of employment' form, which it might be made incumbent upon every workman to produce to the labour exchange upon registration. It is urged that the advantages of this system, if it could be adopted, would be threefold. In the first place, it would discourage the, so to speak, wanton termination of employment either by the employer or the employee. In the second place, it would discourage also the employment of casual labour, inasmuch as, the more casual the labour employed in a concern, the greater would be the amount of 'employment termination due,' which would have to be paid. And, thirdly, to the extent to which it did not deter either of these practices, it would afford a source of revenue, which might be devoted to defraying the cost of one or other of the proposals which we shall make."[2] Devices of this sort, if introduced, would undoubtedly strengthen the desire of employers to keep posts occupied as far as possible by the same men, and so would enhance the stimulus, which this desire affords, towards the adoption of the concentration method of engagement. The provision of the National Insurance Act, to the effect that, "when an employer has employed a man continuously throughout a period of twelve months, he may recover one-third of the contributions paid for that

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[1] *Unemployment*, p. 107.
[2] *Report of the Royal Commission on the Poor Laws*, pp. 410-11.

man " [1] is a device of the kind contemplated. It is evident that such devices tend, *pro tanto*, to favour the concentration method of engagement in unskilled industries. Up to the present, however, they have not been developed in practice to any important extent.

§ 5. As regards the second of the three groups of influences distinguished in the third section, those, namely, connected with the character, in respect of fluctuations, of the demand for labour in different occupations, we may conclude that, in the case of skilled and unskilled workpeople alike, fluctuating character tends, on the whole, to favour spreading methods — more especially, the even spreading method—of engagement. No doubt, special circumstances sometimes exist, in which this tendency is overborne. For example, a business, which manufactures for itself part of some material employed in its processes, naturally concentrates the constant portion of its demand upon its own workmen, and throws the fluctuating portion on the general market; and consumers' associations, in their dealings with productive co-operative establishments, act in a similar manner. Still, in general, the *even spreading* method has the advantage. First, employers, knowing, or hoping, that times will improve again, like to keep in touch with more workmen than they actually need at the moment, in order to be assured of their services when demand once more expands. The most effective way of doing this is to retain a number of them in partial employment. The employers' interest in acting in this way is especially great in industries, whose fluctuations are known to be seasonal in character; for, in these industries, there is practical certainty that a full staff will be needed again shortly. It has been suggested that seasonality of this kind is responsible for the use of "short-time"—the most obvious form of spreading method—among coal-miners and in agriculture. In like manner, it may be observed that, in the London building trade—a time-wage industry and obviously seasonal—the working week in summer is 50 hours and, in winter, 44 hours.[2] Secondly, trade unions have an interest in

securing the adoption of spreading methods, because, under the rival method, more men are liable to become wholly unemployed, and more out-of-work benefit has to be provided. To obviate this, the unions often endeavour, either indirectly through provisions concerning overtime, or directly by overt rules, to secure a certain amount of work-sharing in bad times. Thus, in several Welsh towns, the agreements between the Engineers and Shipbuilders' Association and the Boilermakers' Union provide for a restriction of overtime, so long as "competent men are idle in port."[1] Again, negotiations between the Tailors' Trade Union and the Master Tailors' Association have resulted in the latter declaring: "We fully recognise that the work ought to be fairly shared during the slack seasons [subject to certain explanations], and we urge upon our members throughout the country to carry these principles into effect."[2]

§ 6. The considerations advanced in the preceding section lead directly to the third group of influences distinguished above—those, namely, that relate to the range covered in different occupations by the typical individual centre of engagement. It is obvious from the preceding section that fluctuating character in an occupation as a whole only favours spreading methods of engagement, because, other things being equal, it implies fluctuating character in the demand for labour in the various centres of engagement contained in the occupation. The direct cause at work is fluctuating character in these centres. The extent, however, to which fluctuating character prevails in the typical centre of engagement in any industry, depends, not only on the measure in which it prevails in the industry as a whole, but also on the range which the typical centre covers. The reason for this, of course, is that, since the fortunes of different centres of engagement vary in part in response to independent causes, the percentage fluctuations in the aggregated demand of several establishments are likely to be smaller than the corresponding fluctuations in the demand of a representative single establishment. This implies that, when the demand for labour on the part of several

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[1] *Report on Collective Agreements*, 1910, p. xxiv.
[2] *Ibid.* p. xxviii.

establishments is unified, in such wise that a joint repre-
sentative of all engages the hands required from time to time
by each, fluctuating character is less marked than it would be,
if the establishments remained, in this respect, separate.
Furthermore, the greater the number of establishments brought
into union, the greater is the resultant diminution in fluctuating
character.   Hence, unification of demand facilitates a more
extended adoption of the concentration method of engagement.
It is, therefore, important to distinguish the circumstances,
upon which the probability that unification will actually come
about in different industries, depends.   It is easily seen that
the obstacles in the way of it are least, when the separate
establishments belong to the same company, when they are
fixed in position, and when they are physically close together.
Thus, in the case of the London and India Docks, unification
came about many years ago.[1]   The obstacles are somewhat
more serious, when the different establishments, though still
belonging to the same company or person, are scattered and
moving, as in the London building trade.   No doubt, even
here unification is sometimes introduced.   Before the Com-
mittee on Distress from Want of Employment, Mr. Aves,
referring to the building trade, observed : " In the case of one
employer, he said he did not hand over, as was the common
practice, the responsibility of taking on men to his foremen,
but did it himself, with this special object of having men
permanently, and being able, as the foreman is not able to do,
to move them on from job to job, the foreman being unable to
pass them on to another job of which another foreman would
be in charge.   Although one understands why the other
practice is adopted, it seems a very desirable thing that the
practice of this individual employer should be more widely

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[1] For an account of the introduction of the new policy at the Docks after
the strike of 1889, cf. *Report of the Royal Commission on the Poor Laws*, p. 356.
Mr. Beveridge summarises the changes introduced as follows : " Formerly each
of the forty-seven departments of the Company's work was a separate unit for the
engagement of men ; each department had its insignificant nucleus of regular
hands, and its attendant crowd of more or less loosely attached casuals ; 80 per
cent of the work was done by irregular labour.   Now the whole Dock system
is, so far as the Company's work goes, the unit for the engagement of men ;
80 per cent of the work is done by a unified staff of weekly servants directed
from one spot to another by a central office."—Beveridge, *Economic Journal*,
1907, p. 73.

followed." [1]   In general, however, builders' workmen in London are engaged independently by the different foremen of the firm employing them.   The obstacles to unification are still more serious, when the separate establishments belong, not to one company or person, but to several; for, in this case, in order that unification may come about, a definite organisation, in the nature of a Labour Registry or Labour Bureau, has to be set up, either by the companies themselves or by some outside body.   This evidently involves the overcoming of considerable friction.

§ 7. In conclusion, it is necessary to enter a caution.   I have argued that the unification under a single hand of the demand for labour entertained by a number of establishments *favours* the concentration method of engagement, as against spreading methods.   It must not be inferred that such unification actually brings about an increased use of this method in all cases where it is introduced.   It makes possible such increased use, but does not necessarily make it actual. Thus, in many Labour Bureaus organised by trade unions in France, the officials " allot situations to their members strictly in order of *priority of application*." [2]   " The Antwerp Bureau adopts the rule of sending workmen to situations in the order in which they apply at the office—a method which has been the subject of much criticism." [3]   In the Labour Bureau of the Berlin brewers, " a workman must wait his turn before he is placed, *i.e.* on registration he gets a number and must then wait till all the numbers on the list prior to his own have been satisfied." [4]   In these cases, unification does not make actual any increased use of the concentration method of engagement.   In order that it may do this, resort must be had to some form of preference list.   From the present point of view, it does not matter in the least upon what basis this list is drawn up.   One made by placing the names of applicants in alphabetical order would answer the purpose.   In practice, how-

[1] *Report of the Committee on Distress from Want of Employment*, Evidence, Q. 10,917.

[2] *U.S.A. Bulletin of Labour*, No. 72, p. 761.

[3] *Ibid.* p. 766.

[4] Schloss, *Report on Agencies and Methods for dealing with the Unemployed*, p. 84.

ever, if there is a preference list at all, it is practically certain to be based in some way upon capacity. Thus, the Central (Unemployed) Body for London suggests, among its model rules, that " the superintendent will recommend applicants for employment according to suitability, but employers may select from the registered applicants any one whom they consider suitable." [1] Broadly speaking, this policy is pursued by the Berlin Central Labour Registry.[2] Wherever the officers of the Bureau maintain a preference list, whether, on the above, or on any other, plan, the use of the concentration method of engagement is greatly encouraged. In general, however, those in control of Labour Bureaus do not, as yet, fully realise this important truth.

[1] *U.S.A. Bulletin of Labour*, No. 72, p. 803.
[2] Cf. Schloss, *Report on Agencies and Methods for dealing with the Unemployed*, p. 87.

CHAPTER V

§ 1. THE question we have now to discuss is as follows. Granted that the establishment of a non-differential artificial wage-rate at some point in the industrial field can succeed in its *immediate* object of raising the wage paid for the work of some men, under what conditions, if at all, can it succeed in its *ulterior* object of transferring resources from relatively rich to relatively poor persons. For the present, it will be remembered, we are not concerned with remote reactions through the supply of capital, brought about indirectly by immediate reactions on the magnitude of the national dividend. Our problem is, not to determine how the real income of the relatively poor will, in the last resort, be affected by a transference to them of resources from the relatively rich, but rather—a logically prior matter—to determine whether such a transference of resources can be brought about at all by the instrumentality of an artificial wage-rate. This problem, though *relatively* simple, is, none the less, one that can be attacked most conveniently, not *in globo*, but by degrees. Provisionally, therefore, I shall make the simplifying assumption that the commodity produced by the group of workpeople, whose wage-rate is artificially raised, is exclusively consumed by persons other than workpeople.

§ 2. We may conveniently begin by investigating the effects of the establishment of an artificially enhanced wage-rate upon the aggregate earnings of the group of workpeople, in respect of whom it is established. The formal solution of this problem

is perfectly simple. The establishment of such a wage-rate means a decrease in the earnings of these workpeople, if the demand for their labour has an elasticity greater than unity: and it means an increase in their earnings if the demand has an elasticity less than unity. This result—on the assumption, of course, that the workpeople concerned are not themselves purchasers to any appreciable extent of the commodity they produce—is an obvious arithmetical truism, following at once from the definition of elasticity. To fill it out in the concrete, to investigate, that is to say, the conditions, that determine whether the demand for the services of any assigned group of workpeople is likely to have a high elasticity or a low one, is the task we have now to essay.

§ 3. This task is not entirely easy. For, we are not interested in merely momentary effects, and the elasticity relevant to our discussion is, therefore, that proper to a period of moderate length. The various determinants of short-period elasticity, which are of dominant importance when we are considering the proper structure, say, of a sliding scale,[1] are, thus, beside the mark. The analysis of the determinants of elasticity given in the ninth chapter of Part II. with reference to different classes of commodities has, however, an important application to different classes of labour also.[2] This application may be set out as follows.

First, we have the general fact that the demand for anything is likely to be more elastic, the more readily substitutes for that thing can be obtained. This fact has a bearing on the relation to one another of different grades of workers. For, "full" workers and other workers are, in a measure, substitutes. For example, in Australia, where an artificial minimum wage is laid down for adult "full" workers, it sometimes pays employers to supplant such workers by women or boys. Thus, after an award in the Order Clothing Trade, the employers in New South Wales told Mr. Aves: "Had the trade still retained the same number of males, it would have increased cost of production 15 or 20 per cent on labour; but, by the introduction of

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[1] For a discussion of these determinants, cf. my *Principles and Methods of Industrial Peace*, Part ii. ch. iii.   [2] Cf. *ante*, pp. 186-9.

females it was minimised."[1]   This form of substitution is, however, clearly excluded when, as is tending more and more to be the case, all forms of competing labour co-operate in wage-bargaining.   Hence, a much more important application of our general fact has to do with the relations between labour and machinery; for, in some cases, a very small addition to the cost of working a process by hand would induce employers to adopt mechanical appliances.   Mr. Aves, for example, quotes the statement of an ex-inspectress that, in the Victorian clothing trade, where minimum wage determinations have unintentionally discriminated against home work, employment was transferred to factories using machinery, and "practically all outside work was stopped."[2]   In

[1] *Report on Wages Boards*, p. 185.
[2] *Ibid.* p. 197.   This "determination" fixed both an hour rate and a piece-work rate, compelling the latter to be paid to out-workers.   The intention was that the two should be equivalent, but employers in practice found the hour, or wages, rate much the cheaper.   The ex-inspectress added : "When the wages rate and the piece-work rate were nearly the same, as in the shirt and underclothing trade, the trouble did not occur, and, after ten years' working of the determination, these trades count many outworkers to-day."   The choice between an out- and an in-worker is affected by the fact that, when employing out-workers, the employer escapes charges for working space, light, firing and so forth. "The saving upon factory rent, upkeep and superintendence appear to be larger factors in the cheapness of home work than the lowness of wages" (Black, *Makers of Our Clothes*, p. 44).   On the other hand, of course, economies of superintendence and, sometimes, of power are to be obtained in factory work. The general policy of discriminating against home work in minimum wage arrangements, and so driving out-workers out of existence, is open to strong criticism. Miss Collet writes : "Of course, the home worker cares very much about being able to settle her own times of work and about being able to go out in the afternoons, for instance, and to have visitors, and there are a great many things which are very much better for the married woman at home than the continuous heavy work in the factory" (*Evidence before the Committee on Home Work*, Q. 793).   It has even been suggested that, in some cases, 8s. earned at home is worth as much to the worker as 15s. earned in the factory, because, if she went into the factory, she would have to pay some one to do her work in the home.   Mr. Jones' Report to the Poor Law Commission emphasises the importance of the ties of home in attracting women to non-factory work. Speaking directly of those women workers, who are also paupers, he notes that about 70 per cent of the occupied women paupers are engaged in casual domestic occupations.   "The remainder are to be found chiefly in precarious employments like hawking or small shop-keeping, or in sack-sewing and rag-sorting, in aerated water and jam factories, and in laundries.   Such industries permit of irregular attendance, and, therefore, relieved widows, with children, are attracted to them" (*Royal Commission on the Poor Laws*, Appendix, vol. xvii. p. 340).   Mr. Jones is emphatic in the view that there is little direct causal connection between out-relief and home work : "It is poverty that drives a certain number of them to the Poor Law, it is poverty also that drives them into home work" (*ibid.* p. 343).

like manner, the tanners of Victoria, commenting on the effects of the Wages Board in their industry, state : " Labour-saving machinery is forced into use, so much so that the tanning trade has been practically revolutionised since the Wages Board system was applied to the trade." [1]   The same point, from a different side, is made by Mr. Hunter in the following passage : " Through cheap labour, manufacturers are often able to retain and perpetuate methods of manufacture which are unnecessary and antiquated.   The so-called belated industries, like the sweating system, are made possible only through the cheapness of child and woman labour.   Greed for profits alone makes it necessary for children of six years to carry the newly blown glass bottles from hot ovens to a place for cooling.   The same thing can be done by mechanical means. Mechanical ingenuity and inventive skill are enabled to lie dormant, because the labour of women and children is cheap and plentiful."   If the cheap labour were excluded, " a thousand devices latent in inventive brains would quickly make good any momentary loss." [2]

Secondly, we have the general fact that the demand for anything is likely to be more elastic, the more important is the part played by the cost of that thing in the total cost of some other thing, in the production of which it is employed. This general fact enables us to indicate certain instances, in which the demand for a particular class of labour is likely to be especially inelastic.   A case in point is the work done by women in sewing on the covers of racquet and fives balls, which was recently investigated by Mr. Lyttelton. [3]   Another case is given by Sir G. Askwith.   He writes : " The rich man's trousers may be cut by an expensive tailor, the buttons on those trousers may be made by sweated industry.   High payment for those buttons would be but a minute part of the cost of the whole article." [4]   The engineering work done by engineers engaged by building firms, since these persons are employed only incidentally and as a trivial part of the total producing force, is in a similar position.   In like manner, the

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[1] *Report on Wages Boards*, p. 179.   [2] *Poverty*, pp. 244-5.

[3] *Contemporary Review*, February 1909.

[4] *Fortnightly Review*, August 1908, p. 225.

part played by the original labour is small in respect of commodities, in which the addition to wholesale price made by the work of the retailer is large. " For example, when we find that the maker of a lady's costume is paid 10d. or 1s., while the article is sold for 25s. to 30s., it is obvious that the wage paid is so small in relation to the retail price that, even were the wage doubled, it need necessarily affect the price but little, if at all."[1]   This condition, that the part played by labour in a particular act of production shall be small, is probably fulfilled fairly often.   One writer has even suggested " the labour cost of production in most industries is usually not sufficient materially to affect the price of the finished article."   It should be noticed, however, that, in the important work of coal production, hewers' labour constitutes a very large part of the total cost, and the condition stipulated for is, therefore, not fulfilled.

Thirdly, we have the general fact that the demand for anything is likely to be more elastic, the more elastic is the supply of co-operant agents of production.   This fact does not make it necessary in the present instance, as it would do for some purposes, that we should enquire how far it is possible for a particular group of workpeople to squeeze the profits of employers or the wages of other workpeople.   For, in a period of moderate length, the earnings of these persons in a particular industry will adjust themselves to the prevailing level, and this prevailing level is not likely to be seriously affected by anything that happens in one occupation. Our general fact does, however, enable us to conclude that the demand for labour is likely to be specially inelastic in industries, which make use of raw materials of highly inelastic supply.[2]

Fourthly, we have the general fact that the demand for anything is likely to be more elastic, the more elastic is the demand for any further thing, which it contributes to produce. This fact implies that the demand will be specially inelastic in regard to groups of workpeople engaged in the manufacture of commodities of highly inelastic demand.   As observed at the beginning of this section, the circumstances upon which

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[1] Cadbury and Shann, *Sweating*, p. 124.
[2] These industries include agriculture, whose chief raw material is land.

the elasticity of demand for various classes of commodities depends, are discussed in the ninth chapter of Part II. In order, therefore, to complete our estimate of elasticity in any particular case, it would be necessary to combine the results established there with those that have just been obtained. By following out this process in the concrete, we should be enabled to make practical application of the proposition set out above, that the establishment of an artificial wage-rate will increase the aggregate earnings of the workpeople immediately affected, if the elasticity of the demand for their labour is less than unity, and will diminish their earnings if this elasticity is greater than unity.

§ 4. The effect upon the aggregate earnings of the workpeople immediately affected is not, however, the goal of our research. We are concerned, rather, to determine the effect upon the aggregate earnings of workpeople as a whole. To accomplish this object, let us now assume that perfect mobility exists between different parts of the industrial field, and also that the attractiveness to labour of different parts of that field is measured by the average earnings of the workpeople assembled there. On these assumptions, it is necessary that an artificial addition to the wage-rate at any point A shall be followed (apart from the special case of unitary elasticity) by a flow of labour between A and other points. For, equilibrium is only possible when the attractiveness of all the different points in the industrial field, that is to say, in the present instance, the average earnings of the workpeople assembled at all of them, are equal. If, at the other points, as well as at A, an artificial wage-rate prevails, the flow of labour from point to point, thus brought about, need not mean any change in the quantity of labour actually employed at different points; for, at all points the numbers assembled may exceed the numbers employed. If this is the case, the effect on the earnings of labour as a whole, produced by an artificial enhancement of the wage-rate at A, is equivalent to the effect on the earnings of that group among the workpeople which is assembled at A. In general, however, from a long-period point of view, wages over a large part of the industrial field are fairly plastic. We are, therefore, likely to approach more

closely to reality, if we add to our assumption of perfect mobility the further assumption that, at points outside of A, no element of artificiality in the wage-rate prevails. On this assumption, a flow of labour to or from these other points means a flow to or from points, not merely of assemblage, but also of employment. Equilibrium requires, as before, that the average wage at A, or, in other words, the aggregate earnings of those employed at A divided by the number of those assembled there, shall be equal to the average wage of similar workpeople elsewhere. But, the average wage elsewhere means, in this case, the actual wage of every workman (abstraction being made of differences of quality) who is assembled there. In these circumstances, the earnings of all the workpeople collectively are necessarily equal to the number of workpeople multiplied by the wage-rate prevailing outside A. But, an inflow from outside to A, by lessening the supply of labour outside, raises the wage-rate outside, and an outflow to outside from A, by increasing the supply of labour outside, lowers the wage-rate outside. It follows that the total earnings of workpeople collectively are increased by the establishment of an artificial wage-rate at A, when that policy increases aggregate earnings at A itself, and are diminished in the opposite case. In other words, the establishment of an artificial wage-rate at A increases the earnings of workpeople as a whole, when the elasticity of the demand for labour at A is less than unity, and diminishes the earnings of workpeople as a whole when the elasticity of demand is greater than unity. The increases and diminutions are not, however, the same as they would have been apart from the flow of labour. In general, that flow has the effect of restricting their magnitude.

§ 5. It will have been noticed that, throughout the argument of the preceding section, we have maintained the assumption that the attractiveness of different points in the industrial field is measured by the average earnings of workpeople (of given efficiency) assembled there. We have now, still retaining our other assumption of perfect mobility, to inquire how far that assumption is realised in fact. It is at this point that the discussion conducted in the preceding chapter concerning methods of engagement becomes relevant;

for, the relation, which attractiveness bears to average earnings, can be shown to be different, according to the method that is employed. The case is simplest when that variety of the spreading method, which I have called *even spreading*, prevails. In that event, the average earnings of all the men assembled at A are also the average earnings of each man there assembled. The expectation of earnings, therefore, to any one contemplating movement to A, is a *certain* expectation of this amount. If, then, we suppose, as before, that there is a field of labour outside A, not subject to an artificial rate of wages, the attractiveness of work at A to men in that field is exactly measured by the average earnings of the workpeople assembled at A. In short, the assumption that the attractiveness of work at A is measured by the average earnings of the workpeople assembled there is in accordance with facts. The abstract conclusions set out in the preceding section are, therefore, applicable to the conditions of the real world, provided that perfect mobility prevails, accompanied by the *even spreading* method of engagement.

§ 6. It might be thought, at first sight, that the effect of an artificial wage-rate associated with varieties of the spreading method of engagement, in which the spreading is not even, but is more or less random in character, will be the same as in the case just described, for the reason that the expectation of earnings to a man contemplating movement to A will be the same. It must be observed, however, that, though the expectation of earnings will be the same in quantity, it will not be the same in certainty. Instead of the certainty of, say, 25s. a week, if trade remains steady, there is a possibility of a great variety of earnings, whose actuarial value is equal to 25s. a week. This is obviously not the same thing, and it does not necessarily exercise the same attractive force. From a purely abstract point of view, since uncertainty as such is, in general, repellent, we might anticipate that the attractiveness of the expectation of a given rate of earnings, when a method of engagement that involves random spreading prevailed, would be less than it would be, when the even spreading method prevailed.[1] This anticipation, however, needs to be qualified

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[1] Cf. the note on *Uncertainty-bearing* following Chapter II. of Part II.

by two considerations.   First, a random spreading method of
engagement is often associated with a certain element of free-
dom, that is specially seductive to some men.   In general, in
occupations such as dock-labour, where this method predomi-
nates, the arrangements are such that the men can, without
detriment, take days off at their own option—a freedom that
is denied them under other methods.   This consideration is
deemed by the Majority of the Poor Law Commissioners to be
of some importance: "The 'docker's romance,' as it is called, is
that he, alone of all tradesmen, can take days off when he likes,
without suffering for it. . . . At Southampton docks several
cases have come under notice, where permanent hands have
asked to be given casual employment." [1]   Mr. Walsh is of the
same opinion.   According to him, a large percentage of men
have taken to the docks, "because the work there is inter-
mittent and, therefore, more congenial to them than other
occupations, where regularity in attendance is required." [2]
The second qualifying consideration is that, in practice, the
random spreading method means a higher rate of wages,
balanced against a higher rate of unemployment.   But, in
general, the rate of wages is a more important element in the
attractiveness of an industry than the rate of unemployment,
because it is more obvious and ascertainable.   Thus, the Poor
Law Commissioners report: "In Liverpool it is freely said
that the nominally high wages attract men from the country
and from Ireland, under the impression that they can get
regular work at these rates." [3]   Mr. Dearle speaks to like
effect in regard to the London building trades.[4]   And Mr.
Beveridge puts the point strongly thus: "Men can be got to
follow up work, which gives them five shillings a day about
four times in a fortnight, when they would repudiate with
scorn a regular situation at fifteen or eighteen shillings a
week." [5]   In view of these circumstances, we must conclude,
on the whole, that the expectation of a given earnings rate at
any point A is likely to prove more attractive under random

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[1] *Report of the Royal Commission on the Poor Laws*, pp. 335 and 354.
[2] *Report on Dock Labour*, p. 19.
[3] *Report of the Royal Commission on the Poor Laws*, p. 353.
[4] *Unemployment in the London Building Trade*, p. 127.
[5] *Unemployment*, p. 197.

spreading methods of engagement than under the even spreading method. Now, since, in the absence of an artificial wage-rate, everybody assembled at A must, in circumstances of perfect mobility, be always "employed," this excess of attractiveness, due to the presence of the random spreading method of engagement, only comes into being when an artificial element is introduced into the wage-rate. It cannot, therefore, be ignored on the ground that it is there whether or not an artificial wage-rate is introduced. Hence, it makes a real difference to the effects produced by artificiality. When the demand for labour at A has an elasticity greater than unity, it checks the outflow of unemployed labour from A to work elsewhere, and so, granted, as was argued in Chapter II. § 11 of Part II., that the elasticity of the demand for labour in general is greater than unity, causes the aggregate earnings of workpeople as a whole to be reduced more than they would have been had the even spreading method of engagement prevailed at A. When the demand for labour at A has an elasticity less than unity, it strengthens the inflow of labour to A from work elsewhere, and so—again granted that the demand for labour in general is greater than unity—causes the aggregate earnings of workpeople as a whole to be increased less than they would have been had the even spreading method prevailed. It *may* work in this sense to such effect that the aggregate earnings of workpeople as a whole are not increased at all by the change, but are actually reduced.

§ 7. Let us now turn to the effects of the concentration method of engagement. When this method prevails, the attractiveness of that part of the industrial field, in which it prevails, continues to depend on the expectation of earnings there, but this expectation becomes sundered altogether from the average earnings of the workpeople assembled there. Thus, if the concentration method is applied with absolute rigour, each post at A is definitely and permanently allocated to a particular man. However high, therefore, the average earnings at A may be, the expectation of earnings to an outsider contemplating movement to A is zero. The average earnings of those assembled at A measure the expectation of earnings to such an outsider, only when he has approxi-

mately as good a chance as the men already at A of obtaining the jobs which are available. Nobody will come, or, having come, will stay there, unless he is actually employed. In stable industries, men attached to A, but not at work there, will be practically unknown; in fluctuating industries men so attached, but not at work, will be very much fewer than they would have been had any form of spreading method of engagement prevailed. Furthermore, the influence of the concentration method, like that of random spreading methods, only makes itself felt, when an artificial element is introduced into the wage rate. Consequently, it is responsible for a real modification in the effects due to the presence of such an artificial element. This modification is directly opposite in character to that caused by the practice of the random spreading method of engagement. When the demand for labour at A has an elasticity greater than unity, the concentration method strengthens the outflow of unemployed labour at A to work elsewhere, and so—granted, as before, that the elasticity of the demand for labour in general is greater than unity—causes the aggregate earnings of workpeople as a whole to be diminished less than they would have been, had the even spreading method of engagement prevailed. It *may* work in this sense to such effect that the aggregate earnings of workpeople as a whole are not reduced at all by the change, but are actually increased. When the demand for labour at A has an elasticity less than unity, the concentration method, not merely weakens the inflow of labour to A from work elsewhere, but necessitates an outflow of labour from A to work elsewhere. Hence, still granted that the elasticity of the demand for labour elsewhere is greater than unity, it causes the aggregate earnings of workpeople as a whole to be increased much more than they would have been, had the even spreading method of engagement prevailed at A.

§ 8. Up to this point, we have maintained the assumption that mobility is perfect, in such wise that the attractiveness of work at A and at other points in the industrial field respectively are always equal. To complete our analysis, it is necessary to recognise the fact that, in practice, perfect mobility between different parts of the industrial field often

does not exist.   In the absence of perfect mobility, however, it need no longer happen that the establishment of an artificial wage-rate at A sets up a flow of labour between A and other points.   When it fails to do this, the effect on the earnings of workpeople as a whole is obviously equivalent to the effect on the earnings of that group of workpeople which is assembled at A.   A case of imperfect mobility of the kind contemplated occurs, when A represents the field of employment of the lowest grades of casual and unskilled workers.   For, there is ground for believing that the earnings of these workers are normally lower in proportion to efficiency than the earnings of other workers.[1]   The reason is that the supply of casual and unskilled workers is filled out from the failures of higher classes and from the lads who have wasted their youth in uneducative employments.[2]   The number of people in these occupations is not, in fact, regulated by economic considerations in the ordinary way.   Rather, unskilled labour of the lowest class constitutes a kind of reservoir, to which there is an entrance but no exit.   There is, therefore, a permanent over-supply of work of this sort, and a normal earnings level permanently less than comparative efficiency warrants.   Consequently, a considerable rise might take place in the wage of low-grade unskilled occupations in general, without making any men from outside willing to come into them.   The conditions of such occupations might be improved without tempting migration, just as the conditions of labour in a poor country might be improved without making it worth while for men to go there from a rich one.   The same consideration applies, though for somewhat different reasons, to low-paid women's

[1] The term " efficiency " contains ambiguities and difficulties, which it is not possible to investigate fully in the present connection.   It would seem imperative to find for it some measure independent of the value, which a unit of it is capable of producing.   But, it is difficult to see how this can be done, while at the same time the proposition that wages tend to correspond to efficiency is maintained. For, a person with a units of moral force, b of mental, and c of physical force tends to earn more or less than a person with b units of moral force, c of mental, and a of physical force, according to the comparative popular demand for the things, in the production of which these different qualities are respectively most important.

[2] Cf. *Report of the Royal Commission on the Poor Laws*, p. 407.   It is possible that, at the present time, the relative over-supply of unskilled labour is *temporarily* enhanced by the influence of new machinery in diminishing the demand for mere muscular effort.   Cf. *ibid.* pp. 346 and 1146.

industries.   The above cases are " natural " cases of impeded
mobility.   Artificial cases, in which the practical effect is similar,
also sometimes arise.   A strong trade union, whether by enforce-
ment of the " union shop," coupled with regulations as to the
number of apprentices allowed, or in some other less direct
way, may build up a kind of dyke shutting off its occupation
from competition with the rest of the industrial world.   In
this class of case any adjustment, by way of new entrants to
the trade brought into it by the attraction of exceptional
earnings, is practically precluded.   Such cases are, however,
of no large significance in the modern world ; for, with the
decay of the apprenticeship system, the power of trade unions
to maintain exclusive rights for the monopolistic members of
a closed corporation has disappeared over the greater part
of the industrial field.

§ 9. It now only remains to remove one further simplifying
assumption, the assumption, namely, introduced at the close of
§ 1, that the commodity produced by the group of workpeople,
whose wage is artificially raised, is exclusively consumed
by persons other than workpeople.   On the strength of that
assumption we have been able, up to this point, to ignore the
distinction between effects on money earnings and effects
on real earnings.   When the assumption is unwarranted, we
are not justified in doing this.   An increase of money earnings
may be associated with a decrease of real earnings, and may,
therefore, be delusive.   If the commodities produced by the
favoured workers are consumed by nobody except members of
the working classes, it *must* be delusive, for it must, generally
speaking, involve a more than equivalent loss to workpeople
(those inside the privileged industry and those outside it
together) in their capacity as consumers.   If the consumers
consist partly of workpeople and partly of others, it is not
possible to say absolutely whether the workpeople's gain as
producers or loss as consumers will be greater.   All that we
can lay down is that, the more important the part of the
consumption for which non-wage-earners are responsible, the
more likely it is that the establishment of an artificial wage-
rate will succeed in bringing about a real transference of resources
from the richer classes to the poorer classes as a whole.   When,

therefore, the main part of the product of any group of workers is consumed by other workers, though restriction of supply may enhance the aggregate real income of those workers who impose the restriction, it is not probable that it will involve any transference to all workers collectively. This point is of great importance, for the reason that, in real life, it is rich people who make, or otherwise provide, a great part of the luxuries of the rich, while poor wage-earners make things for other wage-earners. Thus, Mrs. Bosanquet writes : " Nothing strikes one more forcibly in studying the position of the lowest-paid workers than that they are almost always engaged in producing goods for the consumption of their own class. . . . Badly paid tailors are making cheap clothing that no rich man would look at ; badly paid servants are rendering services that would not be tolerated by any one of refinement and culture ; while the real requisites of refinement and culture, if by these we mean such things as art, music and literature, are produced by professional people." [1] Of course, Mrs. Bosanquet would not pretend that there are no rich men's luxuries, towards which poor men's labour contributes an important part. It would seem, however, that not much of the labour of poor persons in the United Kingdom is devoted to the supply of luxuries of this sort.[2] This circumstance, while by no means making it impossible that the establishment of an artificially enhanced wage-rate among a particular group of workpeople should involve a real transference of resources from the general mass of the relatively rich to the general mass of the relatively poor, renders this result very much more improbable than it appears to be, when the distinction between money earnings and real earnings is ignored.

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[1] Bosanquet, *The Strength of the People*, p. 71.

[2] For examples of things made by "sweated" workers and consumed by others than wage-earners, cf. Cadbury and Shann, *Sweating*, p. 123.

CHAPTER VI

§ 1. THE general result of the discussion in the preceding
chapter has been to show that, though the establishment of
a non-differential artificial wage-rate over a portion of the
industrial field will often fail to effect a transference of re-
sources from the relatively rich to the relatively poor as a
body, yet, in certain cases, it may succeed in doing this. It
is now necessary to inquire in what way the conclusions we
have reached concerning artificial wage-rates, which do not
contain any differential element, need to be modified in respect
of rates, which do contain such an element. When differentia-
tion is present and is effective, that is to say, is not cancelled by
a redistribution of workpeople of different degrees of efficiency
between high-wage and low-wage districts, its presence can
easily be shown to make the aggregate earnings of the work-
people as a whole smaller than they *could* be made by the
establishment of an artificial wage-rate free from any differ-
ential element. Suppose, for example, that, in any industry,
there is set up an artificial efficiency wage w for labour per-
formed by competent men, and an artificial efficiency wage
$(w + h)$ for labour performed by incompetent men. It is, then,
obvious that, if the demand for labour in that industry has an
elasticity greater than unity, the aggregate earnings of labour
there could be made larger by the substitution for this dual
wage of a universal efficiency wage w; and that, if the demand
for labour has an elasticity less than unity, these aggregate

earnings could be made larger by the substitution of a universal efficiency wage $(w + h)$. Hence, apart from certain special cases, the aggregate real earnings of workpeople as a whole could always be increased by one or other of these changes.   It follows that an artificial wage containing a differential element is less likely to imply a real transference of resources from the relatīvely rich as a body to the relatively poor as a body than one that is free from such an element.   Still, of course, if the elasticity of the demand for labour in the favoured industry is sufficiently small, it is *possible* that an artificial wage even of this imperfect sort may carry that implication.

§ 2. The above statement, however, does not exhaust what it is desirable to say upon this topic.   For, when differentiation exists, in the sense that the same wage-rate per day has to be paid to men of varying degrees of competence, it will not only be the case that the aggregate earnings of workpeople as a whole are smaller than they might have been, had no differentiation been present, but it will also be the case that these aggregate earnings are distributed in such a way that, within the occupations affected, practically all of them go to one set of workpeople, and practically none to another set. That this result must tend to come about is obvious *a priori.* For, when employers have to pay a lower efficiency rate if they engage workmen A, B and C than if they engage workmen X, Y and Z, it is necessarily to their interest to concentrate all the jobs that they can upon A, B and C, and to leave X, Y and Z, as much as possible, unemployed.   No doubt, the tendency of employers to act in this way is mitigated, in so far as they are ignorant of the relative capabilities of different workpeople who demand the same wage.   For example, a standard rate for all men in the building trade will have less effect in London than it would have in a country district, where inferior men rapidly become known to foremen.[1]   Again, it often happens that employers, from motives of kindliness, keep on old hands, who, through age or otherwise, have become relatively incompetent; and it sometimes happens that they take on deliberately, at a charity wage, needy men whom they happen to know.   These things, however,

[1] Cf. Dearle, *Unemployment in the London Building Trade,* pp. 125-6.

are mere mitigations. The broad result of a wage-system, which differentiates in favour of inferior workpeople, must be to concentrate work and wages upon those who are not inferior.

§ 3. The conclusion thus reached by general reasoning may, if that is desired, be tested by reference to statistics. In Chapter II. of the present Part it was shown, first, that, in practically all current wage-arrangements, whether payment is by time or by piece, some element of differentiation is present; secondly, that this element is more marked in rigid time-wage systems than in non-rigid time-wage systems; and, thirdly, that it is more marked in time-wage systems in general than in piece-wage systems. Hence, if the conclusion of the preceding section is correct, we should expect to find (1) that such involuntary idleness as arises in the industrial world is concentrated, in the main, upon a small number of men, (2) that this concentration is stronger in rigid than in non-rigid time-wage industries, and (3) that it is stronger in time-wage industries in general than in piece-wage industries. There is evidence to show that all three parts of this expectation are, in fact, realised.

Detailed figures illustrative of the tendency of involuntary idleness in general to be concentrated upon a small number of men are available in respect of the Amalgamated Society of Engineers, whose work is mainly on time-wages, and in respect of the London Society of Compositors, whose work is mainly on piece-wages. From the " vacant books " of the former Society the Board of Trade, after averaging the results of a number of years, some good and some bad, obtained the following table of days lost through want of work :—

Lost less than 3 days per annum	.	70·4 %	of the Union.	
,, between 3 days and 4 weeks	.	13 %	,,	
,, from 4 to 8 weeks	. .	4·6 %	,,	
,, from 8 to 12 weeks	. .	2·8 %	,,	
,, over 12 weeks .	. .	9 % [1]	,,	

[1] Cf. *British and Foreign Trade and Industry*, Second Series, p. 99. That this distribution is associated with inefficiency is suggested by the annexed table drawn up for the year 1895 (a year of medium employment) :—

With regard to the London Society of Compositors, Mr. Beveridge writes that "2268 men, or 19·8 per cent of the total membership, drew unemployed benefit during 1904. Of these 1671, or 74 per cent, claimed again in the following year, and 1402, or 62 per cent, in the year after. 1261, or 10·8 per cent of the total membership, claimed in each of the three years 1904–6 ; and 1006, or 8·6 per cent, in each of the four years 1904–7. Moreover, the greatest tendency to claim repeatedly was shown by those who drew the largest sums. Of the 876 men drawing less than £3 (4 weeks' unemployed pay) in 1904, 498, or 57 per cent, claimed again in 1905 ; of the 968 who drew £6 (8½ weeks) or more, the proportion claiming again was nearly 88 per cent. The same point is ᴖ pᴜᴊᴖᴜᴄᴇother way by saying that about seven-eighths of the total payments in 1904 (£14,000 out of £16,000) went to men who had to claim again in 1905."[1] Further, for the engineers, "a comparison of 1890 with 1893 ᴊlds the rather striking result that almost as large a proportion ᴄmembers (21·4 per cent) became unemployed during one of ᴛᴜ best years as during the worst (26·4 per cent)."[2] The genᴇᴄᴧ1

			Average Number of Days lost in a Year.
Members between 15–25 years old	.	. . . .	8·8
,,	25–35 ,,	. . . . .	13·1
,,	35–45 ,,	. . . . .	12·3
,,	45–55 ,,	. . . . .	20·1
,,	55–65 ,,	. . . . .	33·1
,,	65 and over (excluding superannuated)		26·9

These tables take no account of time lost through "short time," sickness, unpunctuality, or trade disputes, or of time gained through overtime. It is natural to find that the old suffer most. Mr. Brooks emphasises his conviction on this point by writing : "I have heard a manufacturer of machines say that, among the greatest changes he had known in forty years of business, was the elimination of men who showed the least sign of age" (*The Social Unrest*, p. 202). Some people hold that the Workmen's Compensation Act has strengthened this tendency. The late Mr. Livesey, however, in a letter to the *Times*, dated 16th March 1907, gave the following result of an investigation conducted by the South Metropolitan Gas Company. "Taking five-year periods (of age), that ending at 30 has the highest and that ending at 65 the lowest percentage of accidents. I would much rather entrust an exceptionally dangerous job to a man over 50 than to one of 30 years of age." The percentage of accidents in any group is, of course, taken relatively to the numbers in that group.

[1] *Unemployment*, p. 140. Similar figures have been worked out for the years 1891–4 by Messrs. Jackson and Pringle in their *Report to the Poor Law Commissioners* (Appendix, vol. xix. pp. 77-8).   [2] *Ibid.* p. 72.

implication of these figures is emphasised in the blunt statement of the Transvaal Indigency Commission, thus : " The really efficient man is rarely unemployed except for short periods between jobs, because, being competent, he is the last to be thrown out of employment, and has generally sufficient money to enable him to migrate to some place where his services are wanted."[1] But, indeed, there is little need to labour the point. It is notorious that the main bulk of unemployment, with its accompanying lack of earnings, falls upon relatively inefficient men.

Our second and third inferences from general principles, namely, that concentration of involuntary idleness should be more marked in rigid time-wage systems than in non-rigid time-wage systems, and in time-wage systems in general than in piece-wage systems, are supported by less direct statistical evidence. Where depressions of industry are met by " short time," it is certain that the resulting involuntary idleness is not highly concentrated. Where they are met by " dismissal of hands," it is still possible that there is no high concentration ; for, dismissal of hands does not necessarily mean the dismissal of the same hands at different periods of short work. Still, though the method of dismissal covers *some* cases of low concentration, it also covers *all* cases of high concentration. Hence, we may reasonably suppose that, if a sufficiently wide area is taken, low concentration will, on the whole, be correlated with short time, and high concentration with dismissal of hands. Hence, the statistical confirmation we are seeking is obtained, if there is some measure of correlation between piece-wages and short time, and if, within time-wage industries the same sort of correlation is found between non-rigid time-wage systems and short time. These correlations should not, of course, be close or exact, but we should expect them to appear in some degree. As a matter of fact, there is reasonable ground for holding that they *do* appear. If we wish to contrast broadly industries under an elastic and a rigid time-wage respectively, we cannot do better than compare the case of Germany, where unions are weak, with that of England, where they are strong. If, again, we wish to contrast piece-

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[1] *Report of the Transvaal Indigency Commission*, p. 121.

wage and time-wage industries, we have material ready to hand in our own country.   Both these comparisons work out in the way which we have been led to expect *a priori*.   The former of them has been made in a recent blue-book : " The practice of meeting slack periods by working short time, rather than by a reduction of staff, appears to be very considerably more general in Germany than in the United Kingdom. . . . Some of the German authorities declare that the practice of short time in some industries reduces earnings by as much as one-fourth or one-third in the course of a year. It is certain that, though certain British industries, notably coal-mining and the cotton industry, resort to the system of short time, the extent to which this system operates to lower the figure of unemployed workmen in the United Kingdom is much less than in the German Empire." [1]   The latter comparison has been worked out by Sir H. Llewellyn Smith in his evidence before the *Committee on Distress from Want of Employment*.   An examination of the trades mentioned in the passage quoted from him on page 309 shows that those industries, which he classes among the short-time industries, are just those in which piece-wages predominate, while those, which he classes as dismissal industries, employ time-wages.   It may, indeed, be thought at first glance that the engineering trade belies this rule.   As a fact, however, though this trade contains a good deal of piece-work, it is *mainly* a time-work trade, and so is no exception.[2]   I do not wish to stress these facts unduly.   They appear, however, to afford some slight confirmation *a posteriori* of the results reached by general reasoning.

§ 4. To prove, as I have been endeavouring to do, that the presence of a differential element in an artificial wage-rate tends to make the distribution of earnings between the efficient and the inefficient workpeople in any industry more uneven than it would have been apart from differentiation, may seem, at first sight, irrelevant to the purpose of the present chapter.   And it must, indeed, be admitted that, so

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[1] *Report on the Cost of Living in German Towns* [Cd. 4032], p. 522.
[2] *Third Report of the Committee on Distress from Want of Employment,* Evidence, Q. 4541, *et seq.*

long as we identify workpeople in the mass with the relatively poor in the mass, and go no further, what has been said does not help us to decide whether and how far an artificial wage-rate, containing a differential element, is able to bring about a transference of resources from the relatively rich to the relatively poor. But, a formal classification, useful as it may be within limits, must not be allowed to obscure real issues. What we wish to know ultimately is, not whether a particular sort of wage-manipulation can affect a transference of resources to the poor, but whether it can affect a transference of a kind conducive to economic welfare. Other things being equal, transferences, the content of which is distributed evenly among the relatively poor, are plainly of this kind. Transferences, however, which are brought about by a device, which, while it allows the poor to be benefited, at the same time diminishes the incomes of the very poor, cannot be held necessarily to make for economic welfare. Hence, the fact that the establishment of an artificial wage-rate involving differentiation tends to concentrate involuntary idleness, with its accompanying penury, upon certain poor persons, instead of scattering it among them all, may be taken to mean that, if it brings about a transference of resources from the relatively rich to the relatively poor, that transference will be inferior in quality to transferences brought about by the establishment of an artificial wage-rate not involving differentiation. But, it has already been shown that the inclusion of a differential element reduces the likelihood that the establishment of an artificial wage-rate will bring about any transference to the poor as a body. Hence, we may conclude generally that, as instruments of transference, differential rates are much less likely than non - differential rates to prove successful in achieving their final purpose of increasing economic welfare.

CHAPTER VII

THE ULTIMATE EFFECTS OF TRANSFERENCES BROUGHT ABOUT BY ARTIFICIAL WAGE-RATES

§ 1. THE position we have now reached is that, in certain circumstances, though less frequently than might be supposed at first sight, interference with the natural course of wages can effect a real transference of resources from the relatively rich to the relatively poor. The fact that it is possible, by this means, to effect such a transference does not, however, necessarily imply that it is possible to increase the real income of the relatively poor. On the contrary, as was pointed out in the first chapter of this Part, the relatively poor will not be benefited in the long run, unless the national dividend is not diminished. We have now, therefore, to ask our final question, whether, and under what conditions, a transference of resources from the relatively rich to the relatively poor, brought about by interference with the natural course of wages at any point, will react favourably upon the national dividend.

§ 2. First, the most obvious and, in some ways, the most important case of such beneficial reaction occurs, when the " natural course of wages " in any occupation does not arise directly from free competition among employers and employed in that occupation, but is modified by bargaining, within isolated rings constituted by bilateral monopoly, between individual employers and particular individual workmen. As was explained in the seventh chapter of Part II., the imperfect character of the competition that prevails in practice sometimes makes it worth while for an unscrupulous employer to devote his energies to inducing an ignorant and

unprotected workman to accept a wage lower than the real
worth of his work in the market.[1]   The authoritative estab-
lishment in any occupation of an " artificial " wage-rate, equal
to the rate normally paid by " reputable employers " or in
" reputable industries," would eliminate this anti-social bargain-
ing, and divert the energy of employers to efforts at improving
their productive processes.   This sort of artificial wage-rate,
therefore—if the term artificial can rightly be applied to it—
is likely to increase the national dividend.   Secondly, even when
the natural course of wages is not perverted from the competi-
tive level in the way just described, the introduction of an arti-
ficial element may sometimes increase the dividend.   For, if we
suppose the method of engagement of workpeople in any occu-
pation to be what I have called the " concentration method," so
that no workmen are attracted to the occupation over and above
those actually obtaining employment there, the establishment
of an artificial wage-rate in the occupation is exactly equivalent
to the erection of an obstacle against the investment of re-
sources in it; and it has been shown by the general reasoning
of .Chapters III. to VIII. of Part II. that the magnitude of
the national dividend *may* be increased by the erection of such
an obstacle.   As was also shown, however, in the chapters
cited, the presence of an obstacle, diverting resources from
their natural flow into any occupation, which is introduced
otherwise than with the direct purpose of increasing the
dividend, is very unlikely, in fact, to increase the dividend.
Furthermore, in so far as the method of engagement in the
occupation concerned diverges from the pure concentration
method, a number of workpeople are likely to be retained
as hangers-on of the occupation, without being employed in
it; and the resultant waste of their work makes it still more
improbable that the dividend will be increased.   Thirdly, it is
possible that, apart from these special cases, a transference of
resources brought about by the establishment of an artificial
wage-rate may increase the national dividend by reacting
advantageously upon the industrial efficiency of the workpeople
whose earnings are increased.   It must be remembered, how-
ever, that, though the aggregate earnings of workpeople as a

[1] Cf. Part II. Chapter VII. § 13.

whole are improved, the earnings of *some* workpeople are likely to be reduced to nothing at all, and that the injury to their efficiency may well be as large as the benefit to that of their more fortunate confrères.   Furthermore, as will be argued in Chapter IX., a transference of resources will seldom do much for efficiency, unless it is associated with careful supervision and control, and, in the present instance, these things are wholly lacking.   Finally, even though workpeople's efficiency on the whole is slightly improved, we have to set against this two important facts—first, that the investment of resources is diverted from its natural channels, not in ways deliberately chosen so as to benefit the dividend, but, from that point of view, at random ; and, secondly, that the reward of employing power and of waiting in industries in general being somewhat reduced, these factors of production are likely to be forthcoming in somewhat diminished quantities.   The result is that, though in a few special cases success may be achieved, yet, generally speaking, a transference of resources from the relatively rich to the relatively poor, brought about by interference with the natural course of wages at any point, is unlikely to do otherwise than injure the national dividend, and therewith, in the end, the real income of the relatively poor.[1]

§ 3. In the face of this result, attempts to transfer resources to the relatively poor in the way described stand, as a general rule, condemned as injurious to economic welfare.   As regards the lowest and most inefficient grade of workpeople it is, however, still possible to enter a plea on their behalf from a wider standpoint.   This plea, furthermore, can be advanced, not merely as regards artificial wage-rates which do, but also as regards artificial wage-rates which do not, succeed in transferring resources from the relatively rich to the workpeople as a whole.   The foundation of it is that injurious reactions upon industrial quality are set up, whenever poor persons are brought into contact with State charity.   Hence, other things equal, there

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[1] The conclusion reached in the text cannot, it must be observed, be used as an argument against all governmental regulation of wages in particular industries, but only against such governmental regulation as seeks to raise the wage-rate above the normal level.   Cf. my *Principles and Methods of Industrial Peace*, Part II. Chapter II.

would be a gain to economic welfare, if a minimum wage could be so worked as to cause some people, who would otherwise need to be relieved overtly by the Poor Law, to be relieved, as it were, covertly, through the ordinary operations of industry. To make such an arrangement effective, it would be necessary that the method of engagement in the industries concerned should be of the concentration type, for, otherwise, most of the poor persons attracted to them might, at one time or another, come upon the parish. If the concentration method were adopted, however, a good number of men, who are now partially relieved by the rates, might be entirely relieved by their customers, while the remainder—a much smaller number —would be taken over altogether by the Poor Law. Against this arrangement, the most obvious objection is that the care of relatively incapable citizens is an obligation upon the whole community, and not merely upon those members of it who purchase racquet balls or whatever the article may be. It may be replied, however, that, in so far as relatively incapable citizens are responsible for products of general consumption, or in so far as they do work for municipalities or the State, in connection with commodities or services not designed for sale, this objection loses the greater part of its force. There remains, however, a more serious objection. The method of the minimum day-wage excludes from work at private industry a number of relatively inefficient persons, who might otherwise have been making there some contribution to the national dividend,—a contribution, small, no doubt, but yet considerably larger than any contribution they are at all likely to make under the ægis of a Poor Law authority.[1] This objection has much

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[1] It is sometimes argued that the exclusion from industry of assisted workpeople, though bad for the national dividend, is good for the poor, and, hence, for economic welfare, because it increases the real earnings of independent workpeople. From a long-period point of view, however, the interests of the poor should be identified, not with those of independent workpeople only, but with those of all workpeople ; for, all workpeople are liable to become dependent at some period of their lives. But, from a long-period standpoint, the elasticity of the demand for labour in general is large. If, therefore, the supply of labour is contracted, the aggregate earnings of independent and dependent workpeople together will be diminished. Hence, so far as the present argument goes, it is inadvisable to adopt the policy embodied in certain two pension schemes submitted to the Royal Commission on the Aged Poor, one of which contained, as a condition for the receipt of a pension, "the abstention from all work of

force. For those who regard the " taint of pauperism " as an exceedingly grave evil, it is not, however, necessarily, decisive.

pensioners, male and female," while the other would have awarded pensions to " every one over sixty, and prohibited work beyond that age." These schemes were advocated by Mr. Hardy and Mr. Lansbury respectively (*Report of the Royal Commission on the Aged Poor*, p. 72). It should be noted, however, that the cessation of work by pensioners can be defended from a more special point of view. The qualification for a pension may be declining strength. This cannot be tested directly, but, if abstention from work were made a condition for receiving, say, a 4s. pension, conformity to the condition would ensure that recipients were really incapable of earning much more than 4s. regularly. Hence, such an arrangement, though it would abolish work on the part of many persons below the 4s. line, might, nevertheless, be desirable as a means of preventing many other persons from obtaining the pensions, and, in consequence of obtaining or expecting them, from slackening their industry. The pension policy pursued by certain friendly societies seems to be based on considerations of this order (*Royal Commission on the Aged Poor*, Minutes of Evidence, Q. 10,880).

CHAPTER VIII

DIRECT TRANSFERENCES OF RESOURCES FROM THE RELATIVELY
RICH TO THE RELATIVELY POOR

§ 1. Up to this point, we have been discussing attempts to
transfer resources from relatively rich to relatively poor persons
by way of interference with the natural course of wages. We
have now to undertake a similar discussion with regard to
attempts to bring about such a transference by philanthropic
or State action of a direct kind on behalf of the less fortunate
classes. In this case, the preliminary inquiry as to the condi-
tions, under which attempts at transference will succeed in their
immediate object of effecting a transference, can be disposed of
very shortly. All that is needed is a brief comment upon
two popular arguments, one of which asserts generally that
transference is not possible under any conditions, while the
other questions whether it is possible, unless the poor persons,
to whom resources are made over, are, at the same time, for-
bidden to work for wages.

§ 2. The position taken up in the former of these argu-
ments is that any levy of money from the rich for the benefit
of some poor persons necessarily implies the infliction of a sub-
stantially equivalent burden upon other poor persons, through
the reduction, which the rich are compelled to make in their
purchases of the services rendered by them. The foundation
of this view may be set out as follows. It is obvious that a
great part of the expenditure of the rich involves, directly or
indirectly, the employment of labour; and it is equally obvious
that, if the incomes of the rich are diminished by, say,
£20,000,000 of taxation, their expenditure must be contracted

to a corresponding extent.   Some persons, concentrating atten-
tion upon this fact, immediately conclude that the workpeople,
whose services this expenditure would have called into being,
if the tax had not been there, must suffer a loss of income
approximating to the twenty million pounds levied in taxation.
To argue in this way, however, is to ignore the fact that the
twenty million pounds collected from the rich is transferred to
the poor, and that the expenditure of it by them is likely to
be no less productive of employment than the expenditure of
it by the rich would have been.   No doubt, if we are contem-
plating the immediate effect of the addition of twenty millions
to the taxation of the rich for the benefit of the poor, it is
relevant to observe that the men who lose jobs on the one side
will not be the same persons as those who find them on the
other ; and that, therefore, a certain number of men, who have
been trained to special aptitudes, may find their immaterial
capital of acquired skill rendered permanently worthless.   This
loss, however, is the result, not of taxation, but of *change* in
taxation, and would emerge equally in consequence of a *reduction*
by twenty millions of the imposts levied on the rich for the
benefit of the poor.   Our problem is not concerned with inci-
dents of this character.   The comparison we have to make is
between one permanent system, under which nothing is collected
from the rich and handed over to the poor, and another per-
manent system, under which twenty millions is so collected
and handed over.   To this comparison the incident we have
just been discussing is irrelevant.   Speaking broadly and
apart from special circumstances, we may say that it makes
very little difference to the employment of, and wages paid for,
labour, whether twenty millions is annually transferred or not
transferred from any one class to any other class.   The idea
that reactions in this field will render attempts at transference
of no effect is, therefore, wholly delusive.

§ 3. The latter of the two arguments distinguished above
asserts that, if any group of poor persons are accorded any form
of subsidy, they will, in consequence, be willing to work for
less than the worth of their services to their employer, and so
will, in effect, transfer back the subsidy they have received to
members of the richer classes.   This view rests, partly, upon

a priori reasoning, and, partly, upon what is called experience. It needs, therefore, a two-fold discussion. The *a priori* reasoning starts from the fact that a Poor Law subsidy *enables* a person to accept lower wages than it would be possible for him to accept otherwise without starvation or, at all events, serious discomfort ; and it proceeds to assert that, if a person is *enabled* to work for less, he will be *willing* to work for less. Now, no doubt, in certain special cases, when a workman, in receipt of a subsidy insufficient to enable him to live up to his accustomed standard of life, is confronted by an employer occupying towards him the position of a monopolist, this inference may be valid. In general, however, where competition exists among employers, it is quite invalid. A person who, by saving in the past, has become possessed of a competence, is *enabled* to work for less than one who has not. A millionaire is *enabled* to work for less even than a relieved pauper. So far from this ability making it probable that he will strike a worse bargain in the higgling of the market, it is likely, in general, to have the opposite effect. It is not the case that the wife of a man in good work is likely to accept abnormally low wages. On the contrary, the woman who, for this or any other reason, can afford to " stand out," is, in general, among those who resist such wages most strenuously. Let us turn, then, to the reasoning from what is called experience. This starts from two admitted facts. The first fact is that many old and infirm persons in receipt of a Poor Law subsidy are at present earning from private employers considerably less than the ordinary wage per hour, current for the class of work on which they are engaged. The second fact—given in evidence before the Poor Law Commission of 1832—is that the refusal of guardians to grant relief in aid of wages " soon had the effect of making the farmer pay his labourers fairly." From these facts the inference is drawn that, where a Poor Law subsidy exists, workpeople accept a wage lower than the worth of their work to their employers. This inference, however, is illegitimate. There is an alternative and more probable explanation. In the case of old and infirm persons, may it not be that the low wage per hour is due to the circumstance that the work they can do in an hour is poor in quality or little in

quantity ? In the case of the old Poor Law, may it not be that the system of differential relief, so long as it prevailed, caused people to work slackly and badly, that, when it was abolished, they worked harder, and that this was the cause of the alteration in their wages ? The view that the true analysis of experience is to be found along these lines, and not in the suggestion that relieved persons work for less than they are worth to their employers, is made likely by general considerations. It has been further confirmed by recent investigations, which tend to show that, where two people differ solely in the fact that one does, and the other does not, receive a Poor Law subsidy, their wages are in fact the same. Thus, Mr. Jones and Miss Williams, as a result of their enquiry for the Poor Law Commission into the effects of out-relief on wages, write : " We found no evidence that women wage-earners, to whose families out-relief is given, cut rates. Such wage-earners are invariably found working at the same rates of pay as the much larger number of women not in receipt of relief, who entirely swamp them. . . . We could find no evidence that the daughters of paupers accepted lower rates than others, or earned less than others, because of their indirect relation to pauperism." [1] This argument, therefore, like the other, breaks down, and we are left with the simple result that the transference of resources from the relatively rich to the relatively poor, by way of philanthropic and State action of a direct kind, is obviously possible, and does not postulate the existence of any special conditions.

§ 4. Up to this point our conclusion concerning direct transferences is similar to that reached concerning transferences effected through interference with the natural course of wages. Henceforward, however, the argument becomes different. It was shown that transferences of the latter sort must, except in very special circumstances, diminish the national dividend and, therefore, must make unambiguously against economic welfare. In regard to direct transferences, no general statement of this kind can be made. Such transferences will, in some cases, increase the national dividend, and so promote economic welfare, and, in other cases, diminish the national

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[1] Appendix volume, xxxvi. pp. vi and vii.

dividend, and so obstruct economic welfare. We have, therefore, to investigate the conditions, upon which the occurrence of the one or the other of the above opposing consequences depend. These conditions can be examined most conveniently by means of an analysis, in which the distinction between the effects of the fact, and the effects of the expectation of the fact, of transferences is made fundamental. The chapter that immediately follows will, therefore, be devoted to a study of the fact of transferences, and this will be succeeded by two chapters dealing, on the side of capital and on the side of labour respectively, with the expectation of the fact.

CHAPTER IX

§ 1. FROM the point of view of the present chapter the fact
of a transference of resources from the rich to the poor may be
regarded as equivalent to a redistribution of the dividend, that
comes annually into being, between certain different uses. If
things went on " naturally " and no transference took place, a
part of this dividend would assume the form of goods con-
sumable by the rich, a part that of machines to assist future
production, and a part that of goods consumable by the poor.
When a transference of resources from the rich to the poor
takes place, the third of these three divisions of the dividend
is increased at the expense of the other two. Our problem is
to determine the effect of this alteration in the distribution
among different uses of the dividend of one year upon the
magnitude of the dividend of future years.

§ 2. Let the amount of resources transferred from the rich
to the poor be y pounds. If no transference had occurred,
that portion of these y pounds, which would have assumed
the form of machines, would obviously have contributed
to enlarge the dividend in later years. The part devoted to
the consumption of the rich, in so far as it served to make
them more efficient producing agents, would also have
done this to some extent. In the case of rich persons, how-
ever, it is improbable that any moderate reduction of con-
sumption—the case might, of course, be different if taxes were
imposed so large as to bring down incomes from £5000 to £100
—would diminish efficiency in an appreciable degree. Hence,

we may say, roughly, that that part of the y pounds, which, if
it had not been transferred to the poor, would have been
converted into machines, is the only part that would have
made a substantial contribution to the national dividend of
the future.   Let this part be equal to ky pounds.   Then, if
the normal return from resources invested in machinery is
represented by a rate of interest i, the loss to the dividend
due to the collection of y pounds from the relatively rich is
represented by iky.   Let the return yielded by resources trans-
ferred to the poor, through the addition made to their indus-
trial efficiency, be represented by a rate of interest j.   It follows
that the aggregate effect of the fact of the transference of y
pounds is to increase the national dividend, if ik is less than j,
and to diminish it, if ik is greater than j.   Our problem is
to determine the conditions upon which, for different sorts of
transference, the relative magnitude of these variables depends.

§ 3. Since it is obvious that j is more likely to exceed ik
the smaller is the fraction k, we naturally inquire, first, in
what way the magnitude of the latter fraction is determined.
This inquiry yields the interesting result that k is likely to
have a different magnitude, according as the resources taken
from the rich are absorbed through postponed taxes, such as
death duties, or through non-postponed taxes, such as income
tax.   This proposition can be proved as follows.   It is evident
that k varies directly with the proportion in which the absorbed
resources are paid over from capital and from income.   But,
when a given sum is being collected, this proportion
depends exclusively upon the elasticity of the utility
schedules representing the fruits of resources devoted to
the two uses of consumption and saving; and it is easily
shown that the proportion taken from capital is larger, the
larger is the elasticity of the utility schedule which represents
saving, relatively to that which represents consumption.[1]

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[1] If A be the amount of resources normally saved, B the amount normally
consumed, e_a, e_b the elasticities of the utility curves of the two uses, and R the
resources absorbed by the State, the check to the investment use in any year is
measured, as a first approximation, by

$$\Delta A = R \frac{e_a A}{e_a A + e_b B}.$$

This is obviously larger, the larger is $e_a A$ relatively to $e_b B$.   Cf. the argument of
my *Protective and Preferential Import Duties*, p. 94.

Now, the relative magnitude of these two elasticities is different, according as the levies made are small and frequent or large and occasional. The annual collection of, say, twenty millions from a given group by income tax on unearned incomes involves a comparatively small annual levy on each member of the group; whereas, the annual collection of the same sum by death duties involves a comparatively large occasional levy from the estates of that small proportion of the group who die during the year. The essence of the difference is given, if we suppose the income-tax method to raise an annual twenty millions by collecting £100 every year from each of a group of 200,000 people, and the death-duty method to raise the same sum by collecting £2000 from each of these people once in twenty years. If perfect foresight prevailed, whether it displayed itself in insurance against death or in adjustment of private expenditure, there would be no important difference between the effects of the two methods. Under the death-duty method each person would furnish about £100 annually to insurance companies, to be handed over by them in payment of the death duties falling due during the year, instead of furnishing it, as under the income-tax method, to the Treasury. No essential difference would be made to the conduct of anybody. In actual life, however, foresight is not complete, and it is not likely that a tax falling due from any estate every twentieth year will be fully provided against in the untaxed years that precede or follow. Consequently, it is probable that, under the death-duty method, a good deal more than £100 will have to be furnished towards the tax from the resources accruing in the actual year of the tax, and a good deal less from those accruing in other years. It is fairly clear, however, that, as the amount withdrawn from the resources of any year grows, the elasticity of the utility schedule of the consumption use, relatively to that of the savings use, contracts. If this be so—and the assertion that it is so is, it must be noted, a matter of opinion rather than of strict proof—it follows mathematically that, in general, the death-duty method is likely to trench on capital somewhat more than the income-tax method. The fact that death duties are, in fact, levied on estates, not merely at long intervals, but

at the particular moment when property is changing hands through death, and when, therefore, payment out of capital is often specially easy, constitutes a further influence favouring this result.[1]

§ 4. The above conclusion has to do merely with the relative effects of two ways of raising revenue, and not with the absolute effects of any way. We should, therefore, of course, wish, if practicable, to supplement it by something further. At first sight, it seems that help in this direction might, perhaps, be obtained from statistics. We are tempted to cite Mr. Bowley's estimate, that about one-sixth or one-seventh of the national dividend is converted into capital annually; and to suggest that, therefore, of y pounds transferred from the rich, provided that y is not very large, some such proportion as this would probably come from capital. The inference, however, is invalidated by the fact that the proportion, in which the aggregate dividend is saved, is certainly much smaller than the proportion in which the part of the dividend falling to the rich is saved.[2] Furthermore, it must be observed that, though k varies with the proportion in which the resources absorbed are taken from capital and income respectively, it is not equal to this proportion. Hence, numerical estimates cannot be reached along these lines. We cannot, with the facts at present available, say anything more concerning the *absolute* value of k than that it must, in all circumstances, be somewhat smaller than unity.

§ 5. The fact that k is less than unity implies that ik is less than i, and, therefore, that the national dividend is increased by any given transference of resources to the poor, provided that j is not less than i. Now, since i measures the

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[1] The above result must not, of course, be used as an argument against death duties as an engine of finance, without reference to the effects produced by the *expectation of the fact* of this method of taxation. These, as will be shown in the following chapter, are less injurious than those of the expectation of the fact of other methods. Cf. *post*, Chapter X. § 9.

[2] Mr. Ireson (*The Peoples' Progress*, p. 147) gives an estimate of the proportion of their income saved by persons with different incomes, as follows: persons with over £5000, 42 per cent; with between £5000 and £700, 35 per cent; with between £700 and £160, 8 per cent; with between £160 and £52, $2\frac{1}{2}$ per cent, of their incomes. There are, however, no reliable statistics on which to base such an estimate. (Cf. Mr. Bowley's review of Mr. Ireson's book, *Journal of the Royal Statistical Society*, 1910, pp. 442 *et seq.*)

return on the ordinary forms of investment made by the well-to-do, we may regard it as approximately equivalent to the normal rate of interest. The question, therefore, whether, in regard to any transference of resources, j, the rate of return from investment in the persons of the poor, is greater or less than i, is equivalent to the question whether it is greater or less than the normal rate of interest. To this question it is evident that no general answer can be given. The fruits of resources handed over for consumption by poor persons must vary, both with the conditions by which the transference is accompanied, and with the categories of poor persons to whom it is made. Our problem, therefore, resolves itself into that of determining whether there are any, and, if so, what, types of transference that may be expected to make j relatively large.

§ 6. Now, there is reason to believe generally that the play of normal economic forces tends to leave the marginal net product of resources invested in the persons of the poor and their children higher than the marginal net product of resources invested in machines, in such wise that an extra pound spent in making workmen more efficient would ultimately yield more product than an extra pound spent in making machines more efficient. The ground for this belief is that poor persons are without sufficient funds to be able themselves to invest adequately in their own and their children's capacities, while they are also so situated that other persons, who have sufficient funds, are, in great measure, debarred from doing this. Under a slave economy, or under a social system so organised that those, in whom alien money was invested, could somehow pledge their capacities as security for loans, the case would be different. But, in the actual world, there is no easy way, in which capitalists can ensure that any considerable part of the return on money invested by them in the capacities of the poor will come back in any form to themselves. If they make a loan, they cannot exact security for repayment ; if they invest directly, by providing instruction for their own employés, they have no guarantee that these employés will not shortly quit their service. In view of these considerations, there is strong *prima facie* reason for believing that, if a moderate amount of

resources were transferred from the relatively rich to the relatively poor, the rate of return yielded by them, in extra product due to the increased economic efficiency of the persons benefited, would much exceed the normal rate of interest; or, in other words, that j would be much larger than i.

§ 7. Against this apparently obvious deduction from general principles there is, however, a scarcely less obvious objection. For, the inference drawn in the preceding section tacitly assumes that any resources transferred to the poor will be employed by them in the manner best calculated to promote their own economic efficiency. As a matter of fact, however, the poor, as entrepreneurs of investment in themselves, are extraordinarily incompetent. The entrepreneurs of ordinary business—those of them at least who produce goods, not for their personal consumption, but for the market—are subject, in general, to keen competition among themselves. The result is that the stupid and ignorant tend to be extruded, and those only continue to act as entrepreneurs, who approach fairly closely to the average level of intelligence among their class. In fields of industry, where commodities are produced, not for sale in the market, but for domestic consumption, and where, therefore, the competitive struggle is relaxed, the standard of competence tends, other things being equal, to be lowered. This point is well illustrated by the history of the English textile industries. Wool and linen, at the time of the industrial revolution, were associated with the ordinary routine of peasant life, but the treatment of cotton was not so associated. " Everywhere a professional employment, not a by-product, those who followed it did so for gain." [1] The result was that improvements in cotton manufacture developed and spread much more rapidly than in the other textiles. Now, it is obvious that the field of investment most completely associated with domestic production is that occupied by people in respect of investments in the capacities of themselves and their children. Here the action of natural selection is extremely weak. Women, who cook badly or feed their children on pickles, are not bankrupted out of the profession of motherhood; fathers who invest their sons' activities un-

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[1] Cf. Clapham, *Cambridge Modern History*, vol. x. p. 753.

remuneratively are not expelled from fatherhood. The result is that those who have to make investments in these fields continue to act as entrepreneurs there, despite the fact that they may be exceedingly incapable. Ignorance among them is, by this fact, rendered specially great, and grotesque mistakes are constantly made. Thus, in a recent report of the Board of Education, we read : " A large proportion of the badly nourished children suffer from unsuitable food rather than from lack of food. It is probably no exaggeration to say that the improvement, which could be effected in the physique of elementary school children in the poorer parts of our large towns if their parents could be taught or persuaded to spend the same amount of money as they now spend on their children's food in a more enlightened and suitable manner, is greater than any improvement which could be effected by feeding them intermittently at the cost of the rates." [1]   In like manner, Mrs. Bosanquet notes that some two-ninths, out of Rowntree's three-ninths, of poverty is " secondary " poverty. She writes : " The weight of the problem rests with the ignorance and carelessness of parents, who do not lack the means to do better ; and this view is further enforced by the large amount of evidence that most of the malnutrition is due to misdirected feeding rather than underfeeding." [2]   Nor is it only in the nourishment of children that ignorance is rife. It is at least equally potent to interfere with wise investment in their training. " Many parents let their boys go into offices or as telegraph messengers, because they seem respectable jobs, but they have never considered, and, perhaps, have no means of knowing, whether there are any future prospects. This aspect is dwelt upon in the reports of many of the skilled employment committees. If the father is not himself in a position to get a boy into a good trade, he does not know in many cases how to manage it." [3]   The point is well illustrated by Sir H. Llewellyn Smith's observation that, among the Cradley Heath hard-nail-makers, " although the trade has been decaying for more than

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[1] [Cd. 5131], p. 5.

[2] *Physical Degeneration and the Poverty Line, Contemporary Review,* Jan. 1904, p. 72.

[3] Mr. Jackson's Report on Boy Labour,' *Royal Commission on the Poor Laws,* Appendix vol. xx. pp. 9-10.

half a century, children are still going into, and are further crowding, their parents' trade." Again, "A very large number of parents are ignorant of the relative advantages of different occupations. . . . The boys tend always to follow their older companions into the same factory or yard, or at any rate into the same kind of occupation ; and, where the prevailing trades are of a poor grade . . . the boys will generally follow the line of least resistance . . . without regard to the ability of the individual boy." [1]   Other illustrations, not all of them referring to the particular case of investment in the young, could easily be given.   What has been said, however, should suffice to establish the thesis set out at the beginning of this section, that the poor, as entrepreneurs of investment in themselves and in their children, are abnormally incompetent.

§ 8. From this circumstance it follows that the presumption enunciated in § 6, to the effect that, if a moderate amount of resources were transferred from the relatively rich to the relatively poor, the rate of return in efficiency would exceed the normal rate of interest, cannot be maintained.   On the contrary, it is probable that, unless the transference of resources to the poor were accompanied by special conditions, the fund transferred would be almost entirely misspent.   The greater part of it would yield no product of efficiency whatever, and, therefore, the return on the whole of it together would be at much less than the normal rate.   Examples of this kind of unconditional and ineffective transference are afforded by the practice of "out - relief," as administered in many districts in this country.   Many Boards of Guardians take no measures to ascertain what recipients do with the relief granted to them.[2]   "With significant exceptions, Boards of Guardians give these doles and allowances without requiring in return for them even the most elementary conditions. . . . We have seen homes thus maintained out of the public funds in a state of indescribable filth and neglect, the abodes of habitual intemperance and disorderly living." [3] In view of the mass of ignorance that prevails among the

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[1] Mr. Jackson's Report, p. 161, quoting from the *Enquirers' Club.*
[2] Cf. *Royal Commission on the Poor Laws, Majority Report*, p. 267.
[3] *Ibid., Minority Report*, p. 750.

very poor, it is idle to expect that mere doles will be spent in ways appreciably conducive to efficiency.   It is highly improbable that the return on resources transferred to the poor will approach, in respect of any transference, at all nearly to the return on resources invested in machines, unless a deliberate and careful attempt is made to organise the transference with the express object of improving efficiency.   This means that the transference must be accompanied by some measure of control and direction, through the enforcement of conditions upon assisted persons.   The demand for such conditions is fundamental in the reports both of the Majority and of the Minority of the 1909 Poor Law Commissioners.   It is excellently summarised by the Majority in the following passage. The Poor Law Authority "must extend its policy of making the giving of relief conditional upon the recipient accepting a way of life likely to restore him to independence.   This is no new principle.   It was the leading note of the 1834 administration, and has been so ever since, that one class—the ablebodied—should be relieved only under certain conditions.   It is now necessary to apply the principle to other classes.   It has proved, indeed, impossible to push a curative policy any further in its absence ; sickness cannot be cured, either in institutions or at home, unless the patient will accept conditions ; economic evils cannot be combated, unless those who suffer from them will conform to conditions : moral weakness cannot be strengthened, unless the authorities have power to impose conditions."[1]   Furthermore, practical considerations as to the circumstances in which the imposition of conditions is feasible lead the Commissioners to a general conclusion concerning the respective spheres of indoor and outdoor relief. Thus, the Majority write : "While fully recognising the respectability and merits of many of the recipients (of out-relief), we cannot fail to call attention to the many cases, in which the allowances made by the Guardians are helping to perpetuate social and moral conditions of the worst type."[2]   It would seem, therefore, that out-relief should never be granted, except to persons leading reputable lives in decent houses, and, perhaps, even that certain slum areas should be proscribed

[1] *Loc. cit.*, *Majority Report*, p. 232.   [2] *Ibid.* p. 102.

altogether in respect of out-relief.[1]   Both the Majority and
the Minority Commissioners would take power to compel
persons, who refuse to carry out in their homes the conditions
of sanitation, good habits and so on that are stipulated for,
to enter institutions.[2]   Children, not properly looked after in
the homes of parents in receipt of relief, should be forcibly
" sent to an institution or industrial school." [3]   In respect of
the children of " ins and outs," both Reports agree that " power
should be taken to keep these children in institutions, while
their parents are detained in a detention colony." [4]   In sum,
the acceptance of conditions *must* be insisted on ; when it is
impracticable to enforce them in the homes of assisted persons,
these persons must be brought into institutions.

§ 9. To discuss in detail the *nature* of the conditions,
whether in institutions or outside of them, with which trans-
ferences of resources designed to improve efficiency should be
accompanied in different circumstances, lies outside the scope
of my present argument.   There are, however, three fairly
obvious propositions of a general kind, which it may be con-
venient to set out.

First, the conditions imposed must be, not uniform, but
carefully thought out and adapted to the different needs of the
various classes of persons who, from time to time, require help.
Uniform conditions applied indiscriminately to many different
types of case are almost certain to be useless.   This is the
ground of the strong condemnation, which both the Majority and
the Minority of the Poor Law Commissioners pronounce on the
" general mixed workhouse."   " The difficulty mainly arises out
of the attempt to deal in one institution, under one master, with
people requiring such very different treatment as the infirm
and the able-bodied, the old and the young, the feeble-minded,
epileptic, insane and those of bad character.   The difficulty
can only be met by setting apart special institutions for special
classes, as was intended by the Royal Commission of 1832 :
so that it may be possible to deal humanely with the aged,
without thereby attracting the young ; and so that the able-
bodied loafer may be kept under strict discipline and not

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[1] Cf. *Majority Report*, p. 152.   [2] Cf. *ibid*. p. 282.
[3] *Ibid*. p. 620.   [4] *Ibid*. p. 187.

allowed to lose the power of work." [1]   If this is not done, we
are compelled to have resort to a "mixed official," who cannot
possibly deal as a specialist with all the various grades.   The
case is, of course, most serious in the very large workhouses of
London and other towns, but it has some seriousness everywhere.
It is agreed, therefore, by both the Majority and the Minority of
the Poor Law Commissioners that those poor persons, whom
it is decided not to relieve at home, should be carefully classified
and treated in separate institutions, arranged with a special
regard to the circumstances of each class.   This arrangement
implies a fairly large unit of administration, such as the county
or county borough.

Secondly, the conditions should, if possible, be extended
beyond the period over which relief is actually being accorded.
This point is well brought out by the Majority Commissioners,
in regard to the after care of Poor Law boys.   "It is not,"
they write, "sufficient to send a child of fourteen to a situa-
tion which may prove unsuitable, and leave it there to look
after itself." [2]   The same point is important in regard to persons
discharged from Poor Law Infirmaries.   The Minority Report
declares : "No attempt is made to follow into their homes the
hundreds of phthisical and other patients discharged every
week from the sick wards of the Workhouses and Poor Law
infirmaries, in order to ensure at any rate some sort of
observance of the hygienic precautions, without which they,
or their near neighbours, must soon be again numbered among
the sick." [3]   The importance of extending control in these
and similar cases to the after period is, evidently, very great.

Thirdly, the conditions should be arranged with a view to
the fact that the output of human, unlike that of inanimate,
machines, is a function of moral, as well as of material,
surroundings.   If the arrangements are such that persons
hitherto respectable are compelled, for any considerable time,
to associate with vagabonds and ne'er-do-weels, their industrial
character is endangered.   If, on the other hand, the gift of
material aid is accompanied by the interest, sympathy and
counsel of friends, willingness to work and save may be largely

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[1] *Majority Report*, p. 135.   [2] *Ibid.* p. 188.
[3] *Minority Report*, p. 867.

and permanently encouraged. A system of Poor Law adminis-
tration, in which, as in the Elberfeld and Bergen plans—
copied in essentials by the voluntary Guilds of Help now
growing up in many English towns [1]—the elements of personal
care are largely utilised, is, thus, likely to prove a better
monetary investment than one dependent on mechanical rules.
This consideration suggests the great importance of associating
voluntary effort with the official machinery of Poor Law
administration.

§ 10. The argument of the preceding sections has made it
tolerably clear that resources transferred from the relatively
rich to the relatively poor are not at all likely to yield a rate
of return as large as the normal rate of interest, unless the
transference is associated with the imposition of conditions
framed in the general lines indicated above. Even, however
when conditions are insisted upon, the general principle set
out in § 6 does not warrant the inference that, in all circum-
stances, the transference of a moderate amount of resources
to the poor must yield a rate of return in excess of the normal.
On the contrary, it is necessary to distinguish between two
sorts of transference, in respect of one of which j probably will,
while, in respect of the other, it probably will not, be
greater than i. The distinction turns on the kind of poor
persons to whom transference is made.

On the one side, there stands a very important class of poor
persons, from investment in whom no appreciable return can be
hoped for. This class includes primarily the great mass of
those who are morally, mentally, or physically degenerate.
The history of Labour Colonies both at home and abroad and
the experience of our own special schools for the feeble-minded
make it fairly clear that, for this class of person, real " cure "
is practically impossible. " The officials of the colonies, on
being asked their opinion as to whether it could be said with
truth that any large proportion of the men sent to Merxplas
were rehabilitated, morally or socially, by their stay at Merxplas,
replied that in very few cases is such reclamation effected : " [2]

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[1] Cf. Mr. Snowden's *Report of the Local Government Board on Guilds of Help*
[Cd. 5664].
[2] *Report of the Royal Commission on the Poor Laws*, Appendix vol. xxxii.
p. 17.

and this is the experience of more than one colony elsewhere devoted to the care of the worst class of cases.[1]   We must, in short, recognise the fact that, in the economic as in the physical sphere, society is faced with a certain number of " incurables."   For such persons, when they are found, the utmost that can be done is to seclude them permanently from opportunities of parasitism upon others, of spreading their moral contagion, and of breeding offspring of like character to themselves.   The residue of hopelessly vicious, mentally defective and other unfortunates may, indeed, still be cared for humanely by society, when they come into being.   But, our main effort must be, by education and, still more, by restriction of propagation among the mentally and physically unfit, to cut off at the source this stream of tainted lives.[2]   To " cure " them in any real sense is beyond human power.   The same thing is true of those persons who suffer from no inherent defect and have lived in their day the life of good citizens, but whose powers have been worn out by age or ruined by grave accident.   Here again, from the standpoint of investment, the soil is barren.   The transference of resources to such persons, desirable as it may be for other reasons, cannot be expected to yield any significant return in industrial efficiency.

On the other side, there stand two very important classes of poor persons—adults in the early stages of sickness or unemployment and the young in general.   It is unnecessary to labour the point that temporary sickness, if unattended, may lead to a permanent breakdown of health, and that failure to find work may involve both physical and moral deterioration of a kind greatly detrimental to industrial efficiency.   If help is delayed—as, under the deterrent system of Medical Relief that prevailed in England before the passage of the Insurance Act, help against sickness often was delayed—it is likely, when it finally arrives, to effect but little.   On the other hand, however, help in the early stages—to the sick man before chronic disease, to the unemployed man before the habit of idleness, is contracted—may prevent immense loss of efficiency, and

[1] Cf. *Report of the Royal Commission on the Poor Laws*, Appendix vol. xxxii. p. 80, and for a contrary instance, p. 81.   Much information concerning penal and free labour colonies is given in Appendix vols. ix. and xxxii.

[2] Cf. Part I. Chapter IV. § 2.

so yield a very large return.   The same thing is true, in an even higher degree, of resources invested in the nurture and education of the normal children of the poor.   Proper provision for such children can greatly affect capacity, by building up, in the most plastic period of life, strong bodies and minds trained in general intelligence and, perhaps, also in some special form of technical skill.   There can be little doubt but that resources transferred from the relatively rich, for well-considered investment in these two classes of poor persons, would continue to yield, until a very great quantity had been transferred, a larger return than is obtainable from investment in machinery.   As was shown, however, in an earlier section, only a part of the resources that are transferred is likely to be withdrawn from any form of productive investment.   It follows that *the fact of transferences*—as distinguished from the expectation of transferences—of resources to these two classes of poor persons, for investment in the ways explained, is practically certain to augment the National Dividend.

CHAPTER X

§ 1. As indicated at the close of the seventh chapter, the
fact of a given annual transference of resources from the rich to
the poor is generally associated with an expectation of similar
transferences in the future.   This expectation, in both its
aspects, may exercise an indirect influence in modifying the
quantity of resources devoted to production, and, therefore, in
modifying the magnitude of the dividend.   In the present
chapter I shall consider the effect, in this respect, of an ex-
pectation of transferences from the rich.   This effect differs
fundamentally, according as the transference that occurs is
voluntary or coercive.[1]   Coercive   transferences   sometimes
imply that a given amount of saving, or a given amount of
effort, on the part of a rich person, will yield a reduced net
return to that person.   There is, therefore, a strong *prima
facie* presumption that the amount of waiting and effort that
he undertakes, and, therewith, the magnitude of the national
dividend, will be reduced.   Voluntary transferences, on the
other hand, always imply that a new use has been found, in
which people wish to put some resources more keenly than
they wish to put them into other available uses.   This means
that their desire to possess resources is enhanced, and, there-
fore, that the provision they are willing to make of waiting and

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[1] In the discussion that follows, I leave aside, as of secondary importance,
the indirect effect of the expectation of diminished resources in inducing the
rich to do more work.   The analogous effect of the expectation of increased
resources in inducing the poor to do less work is of much greater significance,
and is discussed in § 3 of the following chapter.

effort, in order to obtain resources, is also enhanced. Hence, the expectation of voluntary transferences from the rich to the poor is likely to exercise an indirect influence, making for an increase, and not for a decrease, in the national dividend. It follows that voluntary transference is, from the standpoint of economic welfare, superior to coercive transference. Let us examine this form of transference first.

§ 2. Voluntary transference is induced, when a way is found by which transference can be made economically profitable to the transferor. At first sight, it seems that no way of doing this can even be conceived. As a matter of fact, however, not only has such a way been conceived, but it has been largely employed in the practice of all civilised countries. The way in question is mutual insurance. All such insurance, whether against fire, accident, sickness, unemployment, or any other " risk," implies a transference of wealth from those who are fortunate and escape the evil, against which insurance has been made, to those who are unfortunate and fall victims to it. Those who escape the evil are, however, in general, richer than the others, because events are only insured against, when their occurrence is expected to diminish, in one way or another, the riches of their victim.[1] Mutual insurance, therefore, implies a transference from the relatively rich to the relatively poor. This transference is, however, one for which, within certain limits, it " pays " the relatively rich to contract. The fundamental reason for this is that, before the event, when the bargain is entered into, it is not, in general, known who the relatively rich and who the relatively poor are going to be. In virtue of the law of diminishing utility, a chance of one in a thousand that I shall lose £10,000 is more burdensome to me than the actuarial value of the chance, namely £10, and I am willing, therefore, to pay a premium of more than £10 to guard myself against this chance. Hence, if there are a sufficiently large number of people in a similar position to myself, to make a mutual insurance arrangement fairly secure on the basis of a premium of not much more than £10, it

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[1] Events that are not of this kind are, indeed, sometimes "insured against"; e.g. A insures the life of B, in which he has no "insurable interest." This kind of transaction, however, is, in reality, not an insurance, but a bet disguised under that name.

will pay all of us to contribute the required premiums into a fund, from which those who, in fact, suffer losses may be compensated. Furthermore, it will pay all of us to do this, even though the adjustment between the premiums paid and the risks carried by different members is imperfect. Within limits, workmen less liable to accident or to unemployment will gain by combining for insurance, on an equal footing, with workmen more liable to these evils. No doubt, the limits, within which advantage from this kind of combination is to be expected by the less vulnerable among any group of insurers, are narrow. The ratio between the premiums charged and the actuarial value of the different risks, with which they are connected, must not differ widely. We shall not, for instance, find a voluntary insurance fund, paying a uniform benefit for sickness or for accident, that includes among its members, at the same premium, workers in safe and healthy trades, and also workers in dangerous and unhealthy trades. Nor shall we find voluntary life insurance associations accepting obviously healthy persons and obvious invalids on equal terms. Nor, finally, shall we find voluntary schemes of insurance against unemployment dealing in this way with workers in the railway industry and also with workers in the highly fluctuating building and engineering trades. Still, though the limits, over which differences between the ratio of premiums to risk may extend, are narrow, they are yet by no means negligible. They make possible a great mass of voluntary mutual insurance and, therewith, of transference from relatively rich persons to relatively poor persons, over and above that which would come about, if it were necessary for the ratio to be exactly equal for all the members of any insurance group.

§ 3. It may be added, in close practical connection with what has just been said, that voluntary transference from the relatively rich to the relatively poor is sometimes economically profitable, when it can be made conditional upon conduct, on the part of the relatively poor, of a kind which the relatively rich believe to be advantageous to themselves. This class of consideration is largely responsible for the willingness of good workmen to allow bad workmen to associate with them in the

enjoyment of unemployment benefit in their unions.   That bad workmen are a more or less definite class is suggested by the figures cited on pp. 336-7, which show that, in the engineering trade and among the London compositors, most of the unemployment occurring is concentrated upon a comparatively small number of persons.   Bad workmen are, indeed, partially excluded from trade unions by an initial test on admission, by limitation of the period during which benefits will be paid (a long period one year meaning a shorter period in the following year), and by the refusal of benefit till premiums have been regularly paid for some time.   This practice of exclusion is, however, generally exercised in a strikingly lenient manner.   The reason is that the event insured against is, not simply failure to find work, but failure to find it in the man's ordinary trade, *at the rate which the trade union considers a proper rate for that trade.*[1]   It is in view of this fact that better workmen, being interested to prevent inferior workmen from cutting into the standard rate, are prepared to include many of them in their fund, though they know that, by doing so, they suffer a direct loss.   They have, in this case, an indirect gain to look to, for which they are willing to pay.   Hence, voluntary insurance against unemployment, worked through a trade society, will tend to embrace, at the same premium, men of more divergent capacities than at first sight seems to be probable.[2]   The fact that "practically one set of men continually pay more than they receive, and another (smaller) number of men as continually receive more than they pay,[3]" is not fatal to the voluntary continuance of the arrangement by both sets of men; though it probably would be fatal, if the

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[1] The hindrance to mobility towards jobs outside that trade is partly met in Denmark by an arrangement allowing the Unemployment Fund to pay, to any one accepting work at a lower paid job, the difference between the wage on that job and the maximum of unemployed benefit.—Schloss, *Insurance against Unemployment,* p. 61.

[2] For example : "The Cigar Makers' Union expends a great deal of money on out-of-work benefit, and the managers of this fund inform us that a large number of the recipients of this relief are infirm persons who cannot earn the average wages, and that many of these are advanced in years" (Henderson, *Industrial Insurance in the United States,* p. 92).   It should be noticed that the danger to *competent* men from the acceptance of low wages by *incompetent* men is generally much exaggerated in popular thought.

[3] *Third Report of the Committee on Distress from Unemployment,* Mr. Booth's Evidence, Q. 10,519.

insured persons belonged to different non-competing trades. In such a case we should expect, as actually happened at St. Gall, under the compulsory scheme which existed there for two years, that strong objection would be made by the workers least liable to be out of a job.

§ 4. The forms of voluntary transference, which we have considered in the preceding paragraphs, have been those induced by the prospect of economic advantage. It is not, however, only in this way that voluntary transferences can be brought about. People may come to provide funds for the poor, in their life-time or at their death, whether privately or through a State agency, in consequence of a development, perhaps in pure altruism, perhaps in affection for that sense of power, which the fact of giving conveys. Nor is it merely to motives of this order that appeal may be made. Transferences of resources from the rich can be purchased, in a delicately veiled manner, by honours and decorations that cost nobody anything. These things are at once symbols and conveyers of reputation ; for, when a worthless man is decorated, those who feel, or pretend to feel, respect for the decorator, offer a vicarious respect to the decorated also. No doubt, in some degree, the issue of fresh decorations may diminish the value to their possessors of those already issued. To confer the Order of Merit broadcast among excellent bricklayers would annihilate its attractive power for the class, in whose behoof it was originally designed. This difficulty can, however, be overcome to a great extent by the creation of new orders, instead of the extension of old ones. It is not impossible, therefore, that, along these lines, inducements might be provided, adequate to secure the transference of a good deal of income from rich people, without the expectation of the transference involving any diminution, but, rather, some appreciable increment, in the waiting and effort furnished by them towards the upbuilding of the national dividend.

§ 5. We now turn to those transferences, which are not voluntary, but coercive, in character. The indirect effects through expectation due to transferences of this kind vary, of course, with the circumstances. For, coercive transferences are, in general, effected by means of taxes, and taxes do not

all influence in the same way the waiting and the effort supplied by the people who are taxed. In the first section of the present chapter, I stated that this form of transference *sometimes* implies a reduction in the net gain that the taxed person may expect from a given output of waiting and effort, and, therefore, is likely to lead to a contraction in the supply of these factors of production. Before discussing cases of this class in detail, we may distinguish from them cases, in which the taxation of the rich does not carry the above implication. The cases I have in mind are those in which the amount of the tax levied on any rich person does not vary with variations in the quantity of waiting or effort that he provides. When this condition is fulfilled, there is no reason why the tax should make his expectation of return from any unit of waiting or effort smaller than it would have been in the absence of the tax. Taxes on true rents and taxes on increments of wealth not due to increments of waiting or effort, fulfil this condition. There would seem to be some scope in practice for these imposts. Considerations of equity, however, are likely to, and, in my opinion, ought to, secure that taxes on true rents shall be small, and that taxes on unearned increments shall be confined to those increments which are so fortuitous, from the standpoint of the beneficiary, that they can reasonably be described as windfalls.[1]

§ 6. The form of taxation described in the preceding section is such that the expectation of it does not check the supply, on the part of rich persons, either of effort or of waiting. I pass now to taxation, so arranged that the fruits of effort are taxed at the same uniform rate when they are "consumed" and when they are saved. At first sight, it might seem that a general income tax would fall under this head. That, however, is not the case ; for, a general income tax, in effect, taxes at a double rate those fruits of effort that are saved. A uniform levy upon the fruits of effort, alike in the consumption and in the saving use, would, however, be secured by a system of taxes proportioned to expenditure on consumable goods. Such a system would strike equally resources that are consumed and, through their future yield,

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[1] Cp. my pamphlet, *The Policy of Land Taxation*, pp. 20 *et seq.*

resources that are saved. Conceivably it might be built up out of a large number of indirect taxes upon particular consumable commodities. In practice, however, it is not feasible to utilise the machinery of indirect taxation for the purpose of effecting any considerable levy upon the expenditure of the rich. First, a large part of their expenditure is devoted to immaterial objects, on which taxes cannot be levied without immense inconvenience—such objects as foreign travel, the direct services of professional musicians, doctors, teachers and so forth. Secondly, many of the material objects, to which the remainder of their expenditure is devoted, are unsuitable channels for large taxation, because the distinction between them and analogous objects consumed by the poor lies in quality rather than in kind. For this reason it is impracticable to impose heavy specific duties upon them, without thereby taxing to an extortionate degree the inferior grades of the same article, which are consumed by the poor; while technical difficulties rule out of court any widely extended scheme of *ad valorem* duties. There are, no doubt, some articles of luxury, such as expensive wines and cigars, the display of crests and coats-of-arms, motor cars, highly rented houses,[1] large estates and so forth, through which the rich can be hit to some extent. The harvest to be reaped in these specialities is not, however, great, while the cost of collection of duties on articles of small consumption is bound to be considerable. Finally, it is obvious that the ordinary indirect taxes on "mass-goods," since only a very small proportion of these goods is consumed by the rich, cannot exact from them any substantial revenue. Hence, if the rich are to be struck at all heavily through taxes on expenditure, the idea of utilising indirect taxes on articles consumed by them must be abandoned. It would seem more practicable to reach the end sought through a modified form of income tax, which should exempt resources devoted to investment in general, just as

[1] The inhabited house duty is, of course, assessed at a higher rate *ad valorem* upon expensive than upon cheap houses. The difficulty about this tax is that those houses, which are merely used as business premises, cannot be regarded, in the way that private residences can be, as indices of taxable "ability." Estates in New Zealand are treated on the same differential plan as that on which houses are treated here.

those devoted to investment in life insurance are ex-
empted now.   Though, no doubt, any plan of this kind
would need to overcome technical difficulties, there is not, I
think, adequate ground for condemning it *a priori*.   If it
could be introduced, we should have obtained an important
instrument, by which taxation could be imposed upon rich
persons, without the introduction of differentiation between
the uses of consumption and of saving.

§ 7. It is obvious that the expectation of taxes framed
upon this plan must tend, to some extent, to check the supply
of industrial effort on the part of rich people, for it implies
a worsened expectation of the returns obtainable from the exer-
cise of any assigned unit of mental ability.   Furthermore, in
so far as it checks the supply of effort, it must indirectly con-
tract the only source from which savings can be made, and
hence, indirectly, the supply of waiting also.   The extent of
the restriction on the supply of industrial effort is determined,
partly by the extent to which the tax drives able men
abroad, and partly by the extent to which it relaxes the
efforts of other able men, who are not driven abroad.   These
two routes may be examined in turn.   The influence of
imposts on the earnings of ability in driving able men abroad
operates through their effect on the comparative income
and general amenities obtainable at home and in foreign
countries.   There is, however, some danger of misapprehen-
sion on this subject.   It is not *necessary* that a tax diminish-
ing the relative advantages of residence in England should
drive any one abroad.   For, when, as between two places,
movement from one to the other involves cost or inconveni-
ence, the earnings of persons of the same ability may
differ by any annual amount, the capitalised value of
which does not exceed the equivalent of this cost and
inconvenience.   There is, in fact, a *locus*, or range, of possible
differences between earnings in the two places, such that any
difference within the *locus* might exist, without movement
between the two places being induced.[1]   In these circum-
stances, if a tax is imposed on earnings in one of the two
places, it is not certain that movement will occur, unless the

[1] Cf. Part II. Chap. IV. § 5.

tax is larger than the difference between the maximum possible excess, compatible with equilibrium, of earnings in A over earnings in B, and the maximum possible excess, compatible with equilibrium, of earnings in B over earnings in A. It is not *probable* that movement will occur, unless the tax is such that its capitalised value is nearly equivalent to half the sum representing the cost and inconvenience of the act of movement. If, therefore, the cost and inconvenience of movement are large, a very large tax would be needed to drive people abroad. In my opinion, a domicile in their native land means so much to many rich men—particularly, since the advantage of wealth is largely social advantage—that the cost and inconvenience of movement would be enormous. I do not think, therefore, that, even in the least favourable case, a reasonable tax upon large earnings derived from ability would have any significant effect in driving ability abroad. There remains the tendency of taxation to check the output of ability on the part of the able men who are not driven abroad. Here, again, in my view, the effect would be small. A moderate impost certainly could not affect the training of ability, and, when an able man is actually engaged in industry, his aim is so largely " success "—an aim in no wise interfered with by a tax absorbing part of his profits —that he is likely to work much the same, whether a moderate tax does or does not prevail. Hence, I do not think that the expectation of any reasonable scheme of taxation upon the expenditure of the rich would have a significant effect in checking the supply of industrial effort on the part of the rich. If this is so, it must also be without significant effect, exercised through the indirect process described at the beginning of this section, upon the supply of waiting. Though, therefore, there is a large theoretical difference, there is no large practical difference, between the class of tax contemplated in this section and those taxes on true rent and on wind-falls that were discussed in the preceding section. The contraction of the dividend, to which the expectation of them leads, is likely to be unimportant.

§ 8. The forms of taxation upon the rich, which are actually employed in England, are not, in the main, of the

above type. The principal among them are general income tax, super-tax, special income tax on income derived from investments and—a form arithmetically equivalent to the preceding—death duties. That portion of the two former kinds of tax which is not an expenditure tax, and the whole of the two latter kinds definitely differentiate against saving. The expectation of an annual transference of resources from the rich, to be effected by means of them, must, therefore, lower the attractiveness of the savings use, relatively to that of the consumption use. Hence, besides checking, to a slight extent, the supply of industrial effort on the part of the rich, and, therewith, the source from which savings can be made, it must also divert from savings in any year a part of the resources, which would normally have been devoted to that use.[1] The check imposed in this way upon the supply of waiting, and, hence, upon the magnitude of the national dividend, can be shown to be greater, the greater is the quantity of the year's income normally devoted to investment, relatively to that normally devoted to consumption.[2] Generally speaking, we are not entitled, as we were in the case of expenditure taxes, to regard the contraction of the dividend likely to be brought about in this way as insignificant. The expectation of a transference of resources from the rich,

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[1] I have not included in the text any discussion of the question, whether the collection of a given revenue by a tax on resources devoted to consumption alone, or by one on those devoted both to consumption and to saving, is likely to check the supply of industrial effort more seriously, on the ground that, in accordance with the reasoning of the seventh section, the check is likely, in both cases, to be very small. It can be shown, however, without great difficulty, that the collection of a given revenue by a tax confined to a single source of demand is likely to check supply more largely than the collection of an equal revenue by a uniform tax upon both sources, unless the demand of the single source, which it is proposed to tax, is decidedly less elastic than the demand of the other source (cf. my *Protective and Preferential Import Duties*, pp. 27-8).

[2] Let the tax imposed be assessed upon unearned income. Then, if R is the amount of revenue, A the amount of saving apart from the tax, B the amount of consumption apart from the tax, e_a the elasticity of the savings use, and e_b the elasticity of the consumption use, the downward movement brought about by the tax in the utility curve representative of savings is approximately equal to $\dfrac{R}{A}$. It can be shown, as a first approximation, that, if ΔA represents the consequent contraction of savings,

effected through taxes which differentiate against savings, is, therefore, more injurious than the expectation of an equal transference, effected through taxes which do not thus differentiate.

§ 9. In formulating the above conclusion, however, I have omitted an important point; for I have discussed under the same general head ordinary taxes on unearned income and postponed taxes, such as death duties. It has now to be observed that the check on the supply of waiting, brought about by the expectation of the latter kind of tax, is likely, *ceteris paribus*, to be considerably smaller than that due to the expectation of the former kind. Let us suppose that a million pounds has to be raised by taxation upon the fruits of industrial investment. It is indifferent to the State whether this annual sum is collected by a tax on the annual returns of all enterprises, or by a tax confined to the annual returns of enterprises that have been established for some time. The choice between the two methods is not, however, indifferent to the persons concerned in the enterprises. Since these persons discount future taxes precisely as they discount all future events, the expectation of taxes levied after the second method will have the smaller restrictive influence upon the quantity of waiting supplied by them. The fact, that distance in time introduces a considerable chance that the investor may no longer be living when the postponed tax falls due, greatly emphasises this difference. Hence, there is a special and not generally recognised advantage in taxation by the method of a *time-limit*. Delay in the levy enables the State to collect a given annual sum, in such wise that the expectation of the levy exercises a smaller restrictive influence upon the supply of waiting, and, hence, upon the magnitude of the national dividend, than would occur if the levy were immediate. The method is illustrated by Dr. Marshall's proposal to exempt from local rates all improvements constructed during the preceding twenty years, but to begin taxing them after twenty years have passed. The same principle underlies the device of granting leases to tramways and other public utility enterprises for periods of time, at the end of which the plant of the enterprises shall pass, at a price agreed upon beforehand, to the local authority. It also

underlay the Brazilian law of 1871, which declared free all children of slaves, to be born subsequently to the passing of the law.[1]   The argument, however, is not yet exhausted.   It has to be observed, further, that the superiority of postponed, over immediate, taxes is enhanced, when the levy is made, not after a distinctive time, during which there is a *chance* of the occurrence of the investor's death, but definitely *at* his death; for, obviously, a certainty influences conduct more strongly than a probability.   Furthermore, there are additional reasons why this form of postponed tax should impose a relatively small check upon the supply of waiting.   In some measure, the stimulus to accumulation consists in the hope of the distinction afforded by dying very rich.   That stimulus is not interfered with by death duties.   On this point Mr. Carnegie observes: " Nor need it be feared that this policy would sap the root of enterprise and render men less anxious to accumulate, for, to the class whose ambition it is to leave great fortunes and be talked about after death, it will be even more attractive, and, indeed, a somewhat nobler ambition, to have enormous sums paid over to the State from their fortunes." [2] One further point may be added.   There is reason to think that a restrictive influence, even smaller than that exercised by death duties, would be exercised by duties on estates, levied, not at the death of the original accumulator, but at that of his first or second inheritor.   On these lines, an ingenious scheme has been suggested by M. Rignano.   According to his plan, resources would be taxed to the extent, say, of one-third, when they descended from their original accumulator to his successor, the remainder would be taxed to the extent of two-thirds, when this successor handed them on, while, at the next succession, the whole of what was left would be absorbed.[3]

[1] Cf. Rignano, *Di un socialismo in accordo colla doctrina economica liberale*, p. 53.

[2] *Problems of To-day*, p. 5.   A possible further incidental advantage of the death-duty method is that, by driving into work some heirs who would otherwise have been idle, it may increase the supply of mental activity available for the building up of the dividend.

[3] Cf. Rignano, *Di un socialismo in accordo colla doctrina economica liberale*. The plan is described by its author in detail thus: " Sia ad esempio A che alla sua morte lasci un patrimonio di un ammontare complessivo *a*; lo Stato intervenga, come coerede, a prelevarne, ad es., il terzo; e i due terzi restanti vadano

There would, of course, be some technical difficulty in the enforcement of any plan of this kind, and it might even be necessary for a law to be passed requiring all legacies to be settled, in such wise that the heirs could not touch the principal. If these difficulties could be overcome, however, there can be no doubt that a given revenue could be obtained by this plan, in such wise that the expectation of the levy of it would invoke a smaller restrictive effect upon the supply of waiting than is associated with the existing system of death duties. Even ordinary death duties, however, differ widely from non-postponed taxes, which differentiate against saving. Our conclusion, therefore, that the expectation of taxes, which differentiate in this way, is, in general, more injurious to the dividend than the expectation of expenditure taxes yielding an equal revenue, may well fail in respect of them. Whether or not it does so fail, there is no means of determining with certainty. It is clear, however, that, when practical difficulties hinder the employment of expenditure taxes as a means of collecting money from the rich, death duties, despite the argument of the third section of Chapter IX., have strong claims upon the attention of statesmen.[1]

a B, da A di suo pieno arbitrio designato come erede. B aumenti col proprio lavoro e col proprio risparmio, o col semplice risparmio sui redditi del patrimonio ereditato, o coll' uno e l' altro insieme, questo patrimonio ereditato 2/3 a di un ammontare complessivo b. Alla sua morte lo Stato divida un tale ammontare 2/3 a + b, nel quale i due patrimoni siano venuti comunque a fondersi e a confondersi, in due parti del valore rispettivo appunto 2/3 a e b, e su questa quota b prelevi pur sempre il terzo, ma sulla quota 2/3 a, che rappresenta l' ammontare del patrimonio che B ha ereditato di prima mano dal suo effettivo accumulatore A, prelevi, invece, una frazione o percentuale maggiore, ad es., i 2/3 (assumendo questa progressività particolare ⅓, ⅔ e, come andiamo ora a vedere, ¾, cioè il 33, il 66, e il 100 per 100, naturalmente a semplice titolo d' esempio)" (*loc. cit.* p. 60). It is pointed out, further, that an arrangement permitting duty-free transfer from A to B, accompanied by the State absorption of everything which A had left to B, when B in turn dies, can be brought under the same general formula ; " la progressività particolare venendo ad essere in tal caso ⅔, ⅓ " (*ibid.* p. 61). Rignano suggests that direct descendants, who come into being after their progenitor is dead, stand, as regards his desire to save for their benefit, in much the same position as distant connections among his contemporaries (*ibid.* p. 87).

[1] It may be well, at this point, to take note of a fallacious popular opinion of some practical importance. Let it be granted that a system of taxation is established, of such a sort that the consequent check upon the supply of waiting, and, therewith, upon the national dividend, is small. It is still argued, on occasions, that the injury done to the absolute share of labour in this country, and, therefore, to economic welfare, will be large, because, it is said, waiting

will be deflected from co-operation with English, to co-operation with foreign, labour. In so far as deflection of this kind occurs, it is true that a special loss is inflicted upon British labour ; for, substantially, a rival to that labour is introduced. In fact, however, the common notion that taxation of the rich operates in any considerable manner to drive capital abroad is without foundation. The claim is that people in general are impelled to send the capital, upon which they rely for income, into foreign, rather than into British, enterprises. Now, it is, no doubt, true that an income tax striking the fruits of waiting, in so far as it impinges on the investments of foreigners in England, lessens the advantage to foreigners of investment here, and, *pro tanto*, stimulates foreign individuals to withdraw their capital, and foreign corporations with plant abroad to withdraw their head offices. This, however, is a minor matter, for foreign investment here is admittedly small in amount. The substantial contention, which we have to examine, is that high direct taxes will drive British-owned capital to foreign fields. This contention does not appear to be correct. Since the English income tax and death duties, unlike the income taxes of the colonies (cf. *Minutes of the Colonial Conference*, 1907, p. 188), are levied on incomes and estates *held* in England, and not merely upon those *earned or built up* there, there is, in general, no inducement for Englishmen resident in England to send their savings abroad for investment, in consequence of high direct taxes here. Hence, apart from deliberate and purposed fraud, if English capital is to be driven abroad, English capitalists must be driven there also ; and this, we have agreed, does not happen to any appreciable extent. Nor is it even true that the supposed indirect effect of high direct taxes, namely, the fear of " Socialism," could rationally drive capital abroad, without driving its owners abroad also ; for, presumably, " Socialism " would not fasten on British factory-owners and leave British owners of foreign securities unscathed. The special injury to welfare through the absolute share of labour, which we have been contemplating in this footnote, is not, therefore, a matter of serious significance.

CHAPTER XI

§ 1. In the previous chapter I discussed the indirect effect produced on the national dividend, through the conduct of rich persons, by the expectation of the transference of resources *from* them. It is now necessary to discuss the parallel indirect effect produced, through the conduct of poor persons, by the expectation of the transference of resources *to* them. For the purpose of this discussion, it is convenient to divide transferences to the poor into three broad classes—those which do not differentiate either against or in favour of slackness, on the part of the recipients, in contributing work and waiting to build up the dividend, those which differentiate against slackness in this respect, and those which differentiate in favour of slackness. I propose to examine, in turn, the effect on the national dividend of these three classes of transference.

§ 2. Transferences to the poor, which are free from any element of differentiation, can be organised by means of the following device. The members of the community are classified according to the amount of provision that they would probably have made, or, if we will, " could reasonably have been expected to make," for themselves, apart from any transference of resources in their favour ; and grants are made to persons in the lower among these groups, which vary inversely, not with the provision that they actually do make, but with the provision adjudged proper for them to make. The standard set up will, of course, be different for different sorts of people in different positions. For example, the income from savings,

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which a man can reasonably be expected to have secured at a given age, varies with his situation in life. " If a man on 12s. a week has secured for himself an annuity of 1s., his thrift is a much more real thing than if a man on 50s. has got an annuity of 3s." It will be the business of those entrusted with the making of grants to the poor to envisage for themselves, after taking full account of all the circumstances, a reasonable standard appropriate to each of the families coming under their view. On the basis of this standard, they will make their grants to individuals depend, not upon " performance," but upon " capacity," and will, thus, escape the danger of tempting people to perform badly. The root idea of this system is approached in Mr. Wodehouse's report of 1871-2, where he endeavours to distinguish between relief in aid of wages and relief in aid of earnings. " Relief in aid of earnings," he writes, " is clearly inseparable from any system of out-relief. Thus, in all unions, relief is afforded to able-bodied widows with children, and it is clear that all such relief is in aid of an income obtained by the widow by washing, charing, or other similar employments. So, again, in almost every union that I visited, relief is given to old and infirm men, who, though past regular work, are from time to time employed on occasional odd jobs of various sorts. Relief to these two classes of paupers may, I think, be distinguished from that system of relief in aid of wages, which was so generally prevalent prior to the introduction of the present Poor Law." [1] A closer approach to the above idea is made in the treatment which many Boards of Guardians accord to old and infirm women and to widows with several children. They appear to hold that, whereas most of the regular trades followed by men provide persons of average capacity, in full employment and without encumbrances, with fairly adequate earnings, most women's trades do not do this. It is not at all obvious that a widow of ordinary ability, even without children, *can*, with reasonable hours and so forth, earn enough to " maintain herself and provide for the ordinary vicissitudes of life." [2] Hence, we

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[1] Quoted in Appendix vol. xvii. to the *Report of the Royal Commission on the Poor Laws* [Cd. 4690], p. 355.

[2] Cf. *Report to the Poor Law Commission* by Mr. Steel-Maitland and Miss Squire, Appendix vol. xvi. p. 5. The position of widows is, of course, especially

read : " Once a woman is put on the roll (for out-relief), pro-
vided she is not guilty of immorality or frequent intemperance,
she is not disturbed.   Her earnings may rise and fall, but the
relief will not vary.   The inquiry as to her earnings is made
at her first application and rarely afterwards. . . . One
officer put the common practice into a few words : ' We never
bother about what the women earn.   We know they never
earn ten shillings.   They can always find room for half-a-
crown.'   It follows that, in unions where minute inquiry is
the exception—that is to say, in most unions—the pauper
worker is not discouraged from working up to her full
capacity." [1]   The same idea is embodied in the English system
of exacting payment (whether through recoverable loans or
otherwise) from persons, to whom medical aid has been given,
or whose children have been fed by public authority.   A charge
is made, based, not on what the actual service rendered to the
poor man has cost, but on an estimate of the provision, which,
apart from the hope of outside help, he would probably have
made.   Thus, Circular 552 of the Board of Education urges
that, when the parents cannot pay the full cost of meals
provided for their children, " it is better that they should pay
what their means permit, rather than that meals should be
given free of cost." [2]   In other words, an attempt is made so

likely to be difficult in districts where there is no established women's trade.
In such districts, " widows left destitute come at once for poor relief and remain
throughout their widowhood on the rates."   When opportunities for homework
exist, pauperism may be postponed—often at the expense of hours far longer
than a proper interpretation of the minimum standard, stipulated for in the
next chapter, would allow.   (Cf. *ibid.* p. 182.)

[1] *Report to the Poor Law Commission* by Miss Williams and Mr. Jones,
Appendix vol. xvii. p. 334.

[2] *Loc. cit.*, Par. 4.   The Board's Report on the Working of the Act in 1910
shows that the amount of money actually recovered from parents is insignificant.
([Cd. 5131], p. 9.)   There are, of course, practical difficulties in the way of exact-
ing payment for a service which is rendered, whether payment is made or not.
Further, objection is often taken to the device of "recoverable loans," on the
ground that they divert energy from industrial effort to attempts at evading
payment.   As Mrs. Bosanquet observes : " Many a shilling is recklessly wasted
because, if not spent, it will only go to the debt collector " (*Economic Journal*,
1896, p. 223.   Cf. *Minority Poor Law Report*, p. 941).   On the other side, it
is pointed out that the failures of " charge and recovery " have chiefly occurred
in respect of services avowedly rendered to the "destitute " only, and that, in
respect of lunatics, where this restriction does not obtain, considerable contri-
butions from relatives are easily collected.   (Cf. Freeman, *Economic Journal*,
1911, pp. 294, *et seq.*)

to arrange the State's contribution in regard to different families that it shall vary inversely with their capacity to make provision for themselves.

§ 3. It might, perhaps, be thought, at first sight, that the expectation of non-differential transferences to the poor will always leave the contribution of work and waiting on the part of the poor, and, therewith, the magnitude of the national dividend, unaffected. This, however, is not the case. Rather, the effects produced are different, according to the *form* in which resources are transferred. If they are transferred as general purchasing power, in such wise that a beneficiary is promised, say, a pound a week as a gift, independently of anything that he may earn for himself, the utility to him of any n^{th} unit of money earned by him, in general and apart from reactions on his character, is lowered. The disutility, however, of any r^{th} unit of work that he may do remains unaltered. Consequently, if he continued to do the same amount of work as before, the disutility of the last unit of work done would exceed the utility of the money received in exchange for it. It follows that the expectation of a weekly grant will cause the recipient to contract the amount of work that he does, and, therewith, his contribution to the national dividend. The extent to which it will have this effect varies with the magnitude of the grant, and the shapes of the utility curve of money and the disutility curve of work to the man in question; but, in any event, *some* contraction in his contribution to the dividend is likely, *ceteris paribus*, to occur. Again, if the transference is made in the form, not of general purchasing power, but of things designed to satisfy needs, which the recipient, apart from the transference, would have satisfied out of his earnings, the effect is exactly the same as that of a grant in money. If, however, the transference is made in the form of things (not capable of being sold or pawned) designed to satisfy needs which, apart from the transference, the recipient would have left unsatisfied, the result is different. The last unit of money which he earns for himself in industry will be required to satisfy the same needs, and will, therefore, have to him the same utility as it would have had, if no transference had been made. Hence, no contraction whatever

will occur in the contribution which, by work and saving, he makes towards the national dividend.   It follows that, while the expectation of the general run of non-differential transferences to the poor is likely to contract the national dividend somewhat, certain special transferences can be enumerated, the expectation of which is not likely to have any such effect.   Public parks for the collective use of the poor, or flowers for their private use, can be transferred to them by the rich, without the expectation of the transference reacting injuriously upon the dividend.   The same remark evidently applies to general sanitary measures.   The grant from State funds of the expenses involved in such things is on a different footing from the grant of funds for ordinary medical treatment.   As the Poor Law Commissioners write : "Sanitary measures, for the most part, lie beyond the reach of the individual, and are a common need, which must be provided for in common ; while medical treatment is essentially an individual need, and is, for the most part, easily attainable by the individual."[1]   There is reason to believe that, as regards large sections of the less well-to-do grades of workpeople, insurance against unemployment is in a similar position. Messrs. Jackson and Pringle write : " The workers, to whom insurance is a possible actuarial proposition, are fast being restricted to men whose position is almost professional, the spinner, the power-loom over-looker, the joiner, the engineer, the compositor, the man, in fact, who is in charge of the very top section of the productive process.   The whole army beneath him lives in constant danger of being ' economically transformed ' out of self-supporting existence."[2]   This, of course, means that insurance against unemployment costs too much for the lower grades of workpeople to be able, in any circumstances, to purchase it from their own slender resources. The expectation of provision by the State would, therefore, leave their contribution to the national dividend untouched.

§ 4. Let us now turn to transferences which differentiate against slackness in the provision of work and saving on the part of the poor.   The possibility of such transferences was

[1] *Report of the Royal Commission on the Poor Laws*, p. 231.
[2] *Ibid.*, Appendix vol. xix. p. 10.

not recognised until comparatively recent times. Dr. Marshall, however, has now definitely asked: "Should not indoor and outdoor relief be so administered as to *encourage providence,* and to afford hope to those whose means are small, but who yet desire to do right as far as they can?"[1] To effect this, the standards of capacity, which we have already described, offer an easy means. Instead of making grants to poor persons vary inversely with capacity, we should need to make these grants in some way conditional on performance conforming to capacity. Practically, this would mean that persons coming up to the standard adjudged reasonable for them would be treated more favourably than similar persons failing to do this. A rough application of this device is made in the rules governing the grant of old-age pensions in Denmark. In order to qualify for a pension, a man must have worked and saved enough to keep off the rates between the ages of fifty and sixty. Referring to this system, Professor Flux, in agreement with Professor Hansa, while admitting that thrift, labour and private charity are discouraged, so far as they touch the provision for maintenance after sixty, insists: "On the other hand, both thrift and private charity have been stimulated, so far as they are concerned with provision for maintenance, between the ages of fifty and sixty. The motive for maintaining independence during these years is strengthened, and its effectiveness is greatly increased, by the consideration that a limited task, the completion of which is not so distant and uncertain as to deter men from attempting it, is all that is now imposed on the honest and industrious, though indigent, person, or on friends, former employers or others who may be interested in helping him. Many shrink from trying what seems impossible of achievement, and much effort, which would otherwise have remained latent, has been evoked by bringing the task within the reach of a wider circle of persons."[2] There can be little doubt that openings exist for a further application of methods of this kind.

§ 5. There now remain for discussion transferences, which differentiate in favour of slackness on the part of the poor.

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[1] *Economic Journal,* 1891, p. 189.
[2] "Denmark and its Aged Poor," *Yale Review,* 1899, p. 15.

The main part of the transferences that are made under the Poor Laws of modern states are of this kind. All such laws include a guarantee that persons who fail to make provision for themselves up to a certain standard shall receive, whatever their capacity, a grant equal to the difference between the standard and such provision for themselves as they have, in fact, made. This obviously implies differentiation in favour of slackness. Furthermore, differentiation is provided equally, whether assistance is given regularly week by week, or only, as is apt to happen in connection with relief works, during the winter season; for, "to give regularly to a casual labourer 13s. a week employment-relief for four weeks in each year is arithmetically equivalent to subsidising his weekly wages by a shilling throughout the year."[1] It is obvious that the expectation of differential transferences of this kind must diminish the national dividend. No argument in proof of this is necessary. We may, therefore, confine ourselves to a discussion of the influences by which, when a given system of differential transferences has been established, the extent of the consequent reduction of the dividend is determined. These influences are two in number; first, the proportion, in which the provision, that would-be assisted persons are capable of making for themselves, is represented by services helpful to the dividend; secondly, the conditions by which transferences are accompanied. They will now be examined in turn.

§ 6. It is usual to assume that the provision, which a person makes privately for himself, corresponds exactly to his contribution to the national dividend, and that, therefore, the contraction of the aggregate provision thus made, that results from the establishment of any system of transferences to the poor, implies an equal contraction of the national dividend. No doubt, in a rough general way, this assumption is correct. No great error is introduced, when we regard differentiation in favour of small incomes from work and savings as equivalent to differentiation in favour of small contributions to the dividend. There are, however, certain purposes for which this procedure is not legitimate, because there are certain ways in which people can secure income, without making any corre-

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[1] *Report of the Royal Commission on the Poor Laws*, p. 395.

sponding contribution to the dividend. This general fact has large practical importance in the special case of the provision which poor persons frequently make against unemployment, sickness or old age, by way of mutual insurance. If a workman, in old age or in sickness, draws an income from private savings, that income is the payment received by him for equivalent services rendered to the dividend. But, if he draws such an income from the benefit fund of some mutual insurance society, this is not, in general, the case. Let us take an extreme instance. Suppose that a number of persons, *prima facie* with similar prospects, agree to subscribe annually for the needs of any of their number, who may suffer misfortune in the course of the year. Being ignorant as to which of them will so suffer, it is worth while for all of them to enter into the contract. It is plain, however, that income paid over in fulfilment of it is simply income transferred, and does not imply any equivalent of dividend created: it is, in fact, exactly analogous to income obtained from the gift of a friend. Of course, the insurance arrangements of real life are not fashioned in this simple way. Most of the risks insured against by the working classes are of a kind to which a man becomes more liable with advancing years. It is not convenient, however, to set up systems of insurance involving steadily increasing premiums. Such systems have, indeed, been tried, but, in practice, they cannot compete in attractiveness with systems based on uniform annual subscriptions. But, if level-rate systems are to be solvent, in the sense of being competent at any time to fulfil the contracts outstanding against them, even though the influx of new members were to cease, it is necessary that the annual premium be fixed at a rate exceeding the actuarial value of the annual risk involved in the insurance of the younger among the insurers. This means, in effect, that the insurance society holds as reserve, and, therefore, presumably invests, a sum of money equal to the present value of the obligations, which it has contracted in favour of its existing members, *minus* the present value of the probable future premiums to be paid by those members.[1]

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[1] For a good discussion of this matter cf. Gephart, *Principles of Insurance*, chap. viii.

Even, however, when reserves adequate for solvency are built up—as they are compelled by law to be under the Norwegian system of compulsory insurance against accidents—the point made above in regard to a simple assessment society still holds good in great measure. The reserve required for solvency is necessarily much less than the sum which would yield interest sufficient to pay the benefits as they fall due. For, a reserve adequate to this latter purpose would need to be much larger than the whole present value of the obligations contracted with existing members.[1] In the most completely solvent society, therefore, the money paid over in benefits in any year will include, besides income derived from invested funds, a large slice of the subscriptions received during that year ; and, in societies that are not completely solvent, the slice will be still larger. In this country, combining the figures for accumulated funds and for benefits, given, in respect of our principal Friendly Societies, in the Abstract of Labour Statistics for 1907, we find that the " accumulated funds " amounted to $20\frac{1}{2}$ million pounds and the benefits to $3\frac{1}{2}$ million pounds. But, a capital sum of twenty millions will not yield an annual return of more than one million. Hence, of the benefits paid by these societies, much the greater part—some three-quarters of the whole—must have come, not from the fruits of invested moneys, but from contemporary subscriptions by other insurers. We conclude, therefore, that the income, which workpeople provide for themselves against sickness, old age and so on, by means of friendly societies, is not, in the main, income correlated with any substantial contribution to the national dividend. Consequently, for the State to differentiate in such a way as to favour those who make small provision for these needs does not imply substantial differentiation in favour of small contributions to the

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[1] For, if i be the rate of interest and a a given annuity, to begin next year and last for n years, the sum required to yield that annuity at interest without exhausting the principal is $\frac{a}{i}$, but the present value of the annuity is $\frac{a}{i}\left\{1 - \frac{1}{(1+i)^n}\right\}$. It is, indeed, necessary that, besides the reserve just described, an insurance society should keep a further reserve to guard against the occurrence in any year of a quantity of claims in excess of the " probable " annual grant. In large societies however the reserve needed for this purpose is, in general, small.

national dividend. More particularly, for the State to under-
take to pay the insurance premiums against sickness or old
age for all who fail to pay them for themselves, while it would
practically destroy the contribution of insurance premiums
made by workpeople, would not affect to anything approaching
the same extent their contribution to the national dividend.
Mr. Sidney Webb is substantially right, when he argues that
the main effect of such action would be simply to transfer the
burden of supporting the sick and aged from the shoulders of
their fellow-workers to those of the tax-payers as a whole.[1]
This is especially true when the insurance contemplated is
compulsory insurance; for, in that case, apart from special
regulations, on the Norwegian model, enforcing a system of
finance based on "capitalised values," the certainty that the
inflow of young members will not be checked enables the
reserve to be safely maintained at a level much below what
is required for technical solvency.[2]   Hence, differentiation in
favour of poverty, in respect of income derived from insurance,
is not on the same footing as differentiation in favour of
poverty on the whole, and is likely to be responsible for much
less serious consequences to the national dividend.

§ 7. I now turn to the influence which may be exerted by
conditions imposed in connection with differential transferences
of resources to poor persons.   The way in which the expecta-

[1] From this point of view, Mr. Sidney Webb argues strongly in favour of
State provision of the whole costs of insurance, as against provision through
compulsory individual contributions.   His argument is based on the heavy
expense involved in the collection of these contributions.   He writes:
"Regarded as a method of raising revenue, compulsory insurance of all
the wage-earning population, with its elaborate paraphernalia of weekly deduc-
tions, its array of cards and stamps, its gigantic membership catalogue, its
inevitable machinery of identification and protection against fraud, involving
not only a vast and perpetual trouble to every employer, but also the appoint-
ment of an extraordinarily extensive civil service staff—is, compared with all our
other taxes, almost ludicrously costly and cumbersome to all concerned" (*The
Prevention of Destitution*, p. 170).   Indeed, Mr. Webb goes so far as to suggest
that the cost of collection, instead of amounting to 2 or 3 per cent, is likely to
amount to 20 or 25 per cent, of the total revenue raised.

[2] Thus, in the German law of accident insurance, "provision is made only
for payment of the benefits falling due during the current year, leaving the pay-
ments of sums falling due in subsequent years to be met out of the receipts of
such years.   Employers, as has been said, prefer this arrangement, because they
can then retain the money in their business, which sums would otherwise have
been collected by the associations and accumulated in the capitalised values."
(Frankel and Dawson, *Workingmen's Insurance in Europe*, p. 112.)

tion of these transferences threatens to injure the national dividend is, of course, by relaxing the efforts of potential bene-ficiaries to provide an amount of labour—for obvious reasons I here ignore such provision of waiting as the poor may make —in reasonable conformity with their capacities. This effect can, however, be mitigated, if conditions, calculated to deter from failure to attain to such conformity, are attached to the transference of resources. The deterrence required, it must be carefully observed, is not deterrence to persons of abnormally low capacity from making application for assistance. Deterrence of that sort, on the contrary, is exceedingly injurious, in that it is likely to cut off many opportunities for successful curative treatment. The deter-rence we need is deterrence against deliberate slackness on the part of potential recipients of assistance, in exercising such capacities as they possess. In regard to children, old persons and those who are temporarily sick, since capacities are very small, the difference that is likely to be made to the national dividend by the presence or absence of deterrent conditions is of slight significance. In regard to the able-bodied poor, however, the case is different. If large numbers of these are tempted into idleness by the prospect of assistance, the national dividend will suffer great loss. The question, there-fore, how far effective deterrent conditions can be devised, deserves close attention.

§ 8. In current attempts to formulate such conditions, the most frequent, as it is the most obvious, element is insistence upon labour on the part of all able-bodied persons who receive assistance. The importance of this element is well illustrated in some of the evidence given before the Royal Commission of 1832. Thus, Mr. Henderson, in his Memorandum on Liverpool, stated : " The introduction of labour thinned the house very much ; it was sometimes difficult to procure a sufficient supply of junk, which was generally obtained from Plymouth ; when the supply was known to be scanty, paupers flocked in ; but, the sight of a load of junk before the door would deter them for any length of time." [1]   In the same spirit, Mr. Atkinson, Comptroller of

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[1] *Report of the Poor Law Commission of 1832*, p. 161.

the Accounts for the township of Salford, stated : " Finding work for those who applied for relief in consequence of being short or out of work has had a very good effect, especially when the work has been of a different kind from that which they have been accustomed to. In Salford employment to break stones on the highways has saved the township several hundred pounds within the last two years; for, very few indeed will remain at work more than a few days, while the bare mention of it is quite sufficient for others. They all manage to find employment for themselves, and cease for a time to be troublesome ; although it is a singular fact that, when the stock of stones on hand has been completely worked up before the arrival of others, they have, almost to a man, applied again for relief, and the overseers have been obliged to give them relief; but, so soon as an arrival of stones is announced, they find work for themselves again."[1] The information given in Mr. Davy's recent Report on the Poplar Union points in the same direction. So also does the opinion sometimes expressed, to the effect that, in view of the great attraction exercised by the prospect of freedom from work, friendly societies ought to set their out-of-work benefit at no more than one-third of the amount of a member's ordinary wages. Nevertheless, the effectiveness of labour as a deterrent condition is strictly limited. The chief reason for this is the extraordinary difficulty of making a man work for the Poor Law authorities with anything approaching the energy that he would need to put forth for a private employer. It is practically impossible to set relieved persons to work, each at his own trade. Consequently, some general form of labour has to be required. In respect of such labour, it is impossible to fix, for a miscellaneous assortment of different people, any single standard of performance. Hence, the standard exacted has to be measured to each man " with due regard to his ordinary calling or occupation, and his age and physical ability." Since this cannot be tested objectively, " no specified task can be enforced. The capability of the persons employed varies, and it can only be required that each person shall perform the amount of work that he appears to be able

[1] *Report of the Poor Law Commission of 1832*, p. 162.

to accomplish. . . . The standard of accomplishment is practically fixed by the unwilling worker."[1] The fact that resort can, in no case, be had to the ordinary practice of dismissal leaves the Poor Law authority without any real defence against this tendency. Consequently, potential beneficiaries are aware that the labour, which will be imposed upon them, if they become candidates for public assistance, will not be labour of a severe kind. Furthermore, even if this difficulty could be overcome, work for the Poor Law, because its certainty and continuity absolve those engaged in it from the risk, trouble and cost involved in occasional loss of employment and the need of finding a new job, might still prove more attractive than independent labour. No doubt, in certain very special cases, when a homogeneous body of men, usually in regular work, have been struck by a common misfortune—in such a case as that of the cotton famine in Lancashire consequent on the American Civil War, or that of a local failure of the rains making agriculture impossible in some district of India[2]—the deterrent effect of labour alone has, in competent hands, sufficed to prevent relief funds from attracting to idleness persons who would normally have been engaged in industry. "The precedent of the Lancashire cotton famine suggests that public works, carried on under specialised organisation for a limited period, with the object of employing particular classes of persons, deprived of definite situations by some accidental or temporary cessation of their regular employment, and practically certain to resume their ordinary occupations, may prove the easiest method of relieving their transient destitution."[3] For the treatment of distress in ordinary times and in a general way, experience has, however, abundantly proved that the deterrent effect of labour alone is insufficient to prevent the expectation of differential transferences to the poor from breeding idleness, and so injuring the dividend. Disfranchisement and the stigma of pauperism are, in the opinion of practical administrators, also inadequate.

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[1] *Report of the Committee on Distress from Want of Employment*, quoted by Beveridge, *Unemployment*, p. 153.

[2] Cf. Morison, *The Industrial Organisation of an Indian Province*, pp. 272-280.

[3] *Report of the Royal Commission on the Poor Laws*, Minority Report, p. 1129.

Consequently, if really effective deterrence is to be secured, resort must be had to disciplinary measures. This implies detention under control without excessive leave of absence. The necessity for this has so far not been very fully recognised in England, where the casual wards and ordinary workhouses offer accommodation practically to all comers for such periods as these persons may themselves choose. On the Continent the case is very different. Able-bodied men, who fail to support themselves because they will not work, are subjected to long periods of detention in labour colonies. In Belgium such persons may be committed to the penal colony of Merxplas for not less than two years nor more than seven years.[1] The cantonal law in Berne provides for their internment in a labour institution for a time between six months and two years.[2] The German Imperial Penal Code has a similar provision.[3] The practice of the Continent is now coming to be proposed seriously for adoption in this country also. Thus, the Committee on Vagrancy recommended " that a class of habitual vagrants should be defined by Statute, and that this class should include any person who has been three or more times convicted, during a period of, say, twelve months, of certain offences now coming under the Vagrancy Act, namely, sleeping out, begging, refusing to perform his task of work in casual wards, or refusing or neglecting to maintain himself so that he become chargeable to the poor rate." [4] The general result of this discussion is to suggest that careful attention to the subject might enable Poor Law authorities to evolve a system of conditions accompanying differential transferences of resources to the poor, that should deter people from being tempted into idleness by the expectation of these transferences, much more effectively than is done under the existing English system. We cannot, however, seriously expect that the system will ever become perfect enough to prevent the expectation of differential transferences from exercising *some* contracting effect upon the magnitude of the national dividend.

[1] Cf. Dawson, *The Vagrancy Problem,* p. 106.
[2] *Ibid.* p. 179.   [3] *Ibid.* p. 193.
[4] *Report of the Departmental Committee on Vagrancy,* vol. i. p. 59.

CHAPTER XII

§ 1. A COMBINATION of the considerations set out in the three preceding chapters should enable us to say whether the fact, *plus* the expectation of the fact, of any given annual transference of resources from the relatively rich to the relatively poor is likely to increase the national dividend. There can be little doubt but that plans could be devised, which would enable transferences, involving a very large amount of resources, to be made with results advantageous to production. As was shown in Chapter I., such transferences must ultimately have the effect of increasing the real incomes of the relatively poor; and must, therefore, redound to the advantage of economic welfare in a wholly unambiguous way. Transferences which diminish the national dividend, on the other hand, if their annual amount is kept constant, must have the effect of diminishing the real incomes of the relatively poor, to such an extent that their earnings *plus* the transference made to them will ultimately be less than their earnings alone would have been, had no annual transference been made. Transferences of this kind, therefore, redound to the injury of economic welfare in a wholly unambiguous way. There remains, however, one further sort of transference, noticed at the end of Chapter I., whose results are not thus unambiguous. I refer to a system of transferences, varied from year to year, in such a way as to compensate for any reduction that may come about in that part of the income of the poor which accrues to them through earnings. An arrangement of this sort is implicitly intro-

duced, whenever a government establishes a national minimum of conditions, below which it refuses to allow the fortunes of any citizen in any circumstances to fall.   For, the establishment of such a national minimum, implying, as it does, transferences to the poor, of a kind that differentiate in favour of poverty, is likely to diminish the national dividend, while it is, at the same time, likely, for an indefinitely long period, to increase the aggregate real incomes of the poor.   To determine the effect, which the establishment of a national minimum is likely to exercise upon economic welfare, involves, therefore, a balancing of conflicting effects.

§ 2. Before this task is attempted, it is desirable to obtain a clear notion of what precisely a national minimum should be taken to signify.   It must be conceived, not as a subjective minimum of satisfaction, but as an objective minimum of conditions.   The conditions, too, must be conditions, not in respect of one aspect of life only, but in general. Thus, the minimum includes some defined quantity and quality of house accommodation, of sanitary convenience, of food, of leisure, of the apparatus of comfort, of the apparatus proper for promoting safety and health in work, and so on.   Furthermore, the minimum is absolute.   If a citizen can afford to attain to it in all departments, the State cares nothing that he would prefer to fail in one.   It will not allow him, for example, to save money for a carouse, at the cost of living in a room unfit for human habitation.   Again, if a citizen cannot afford to attain the minimum in all departments, but, by failing in one, can remain independent, that too is no defence.   The State will not permit, in particular cases, hours of child labour or woman labour above the minimum, or the acceptance of house accommodation below the minimum, on the ground that, by resort to them, some given family could, and, without resort to them, it could not, support itself; for, if that is the fact, the family ought not to be required to support itself.   There is no defence for the policy of "giving poor widows and incapable fathers permission to keep their children out of school and take their earnings." [1]   Rather, the Committee on the Employment of Children Act are wholly right, when they

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[1] Cf. Henderson, *Industrial Insurance in the United States*, p. 301.

declare : " We feel, moreover, that the cases of widows and others, who are now too often economically dependent on child labour, should be met, no longer by the sacrifice of the future to the present, but, rather, by more scientific, and possibly by more generous, methods of public assistance." [1]

§ 3. There is general agreement among practical philanthropists that the establishment of a national minimum of conditions, at a level high enough to make impossible the occurrence to anybody of extreme want, is desirable, and that whatever transference of resources from relatively rich to relatively poor persons is necessary to secure this, must be made, without reference to possible injurious consequences upon the magnitude of the dividend.[2]   This policy of practical philanthropists is justified by analysis, in the sense that it can be shown to be conducive to economic welfare on the whole, if we believe the misery that results to individuals from extreme want to be indefinitely large ; for, then, the good of abolishing extreme want is not commensurable with any evils that may follow from the diminution of the dividend. Up to this point, therefore, there is no difficulty.   It is evident, however, that our discussion cannot stop at this point.   It is necessary to ask, not merely whether economic welfare will be promoted by the establishment of *any* national minimum, but also by *what* national minimum it will be promoted most effectively.   Now, above the level of extreme want, it is generally admitted that increments of income involve finite increments of satisfaction.   Hence, the direct good of transference and the indirect evil are both finite quantities ; and the correct formal answer to our question is given by the statement that economic welfare is best promoted by the establishment of a national minimum, at such a level that

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[1] *Report*, p. 15.

[2] It is sometimes suggested that those very improvements in the efficiency of labour, which have been discussed in previous parts of this book, are calculated to push some men below the minimum standard.   It is true, as a point of analysis, that increased efficiency of labour is, in effect, equivalent to an addition to its supply, and, therefore, involves a slight reduction in the real wage of a labour unit of given quality.   In view, however, of the elastic character of the demand for labour in general, the number of the unimproved men whom this change would push over the line of the self-support would almost certainly be negligible.

the direct good resulting from the marginal pound transferred to the poor just balances the indirect evil brought about by the consequent reduction of the dividend.

§ 4. To derive from this formal answer a quantitative estimate of what the national minimum established in any particular country at any particular time ought to be, it would be necessary to obtain and to analyse a mass of detailed information, much of which is not, in present circumstances, accessible to students. One deduction of a general kind can, however, be safely drawn. This is to the effect that, other things being equal, the national minimum can be advantageously set higher, the larger is the real income per head of the community. One reason for this proposition is as follows. The contraction of the dividend, due to the expectation of a system of differential transferences, so arranged as to bring all incomes up to a given minimum, tends to be equal to the whole private provision, which would normally have been made by all persons capable of providing for themselves anything less than the minimum. Hence, the contraction will be proportionately greater, the larger is the proportion of men not capable of earning in wages more than the minimum. But, the proportion of such men must be larger, the smaller is the real income per head of the community. This means that, when a community is relatively poor, the establishment of a given national minimum cuts off a larger proportionate amount of the dividend than it would do, if the community were relatively rich. It is probable that this consideration lay behind the recommendation of the 1832 Commission, that the " situation on the whole of able-bodied paupers should not be made really, or apparently, so eligible as the situation of the independent labourer of the lowest class " —that is to say, of the ordinary unskilled labourer of full age and in good health. At that time unskilled labourers formed a very large proportion of the population. To have guaranteed to everybody a situation better than these labourers could ordinarily earn would, therefore, have threatened the nation with the withdrawal from work of a mass of people, whose aggregate efforts were responsible for an important slice of the dividend. To guarantee now a situation better than that

represented by the earnings of an unskilled labourer of 1832 would, however, inflict a much smaller proportionate injury upon the dividend, because the proportion of the population, who are not capable of earning a wage greater than this, has become much smaller. Nor is this all. The guarantee now of a minimum, represented by the situation of the unskilled labourer of to-day, would have a smaller proportionate effect on the dividend than the guarantee of a minimum, equivalent to the situation of the unskilled labourer of 1832, would have had at that time, because the proportion of the dividend contributed by unskilled labour now is smaller than it was then. Considerations of this order supply a valid reason for the view, enunciated above, that a country should establish a higher national minimum as its real income per head increases. A second reason for this view is that, even if the proportion of dividend destroyed by the establishment of a given national minimum were the same in a rich country as in a poor one, the loss of satisfaction due to the destruction of any nth part of the dividend is probably smaller where the dividend is large than where it is small.[1] It follows that, when we have to do with a group of pioneer workers in rough and adverse natural circumstances, the national minimum may rightly allow long hours, insanitary surroundings and low real wages to prevail among the least efficient citizens. As, however, inventions and discoveries progress, as capital is accumulated and nature subdued, the case changes. To employ a portion of the common income to shorten hours, to improve sanitary arrangements, to fence dangerous machinery, to enforce improved housing and education, and to secure to all members a provision of food adequate to full health, becomes more and more clearly advantageous. Thus, it is reasonable that, while a relatively poor country makes only a low provision for its "destitute" citizens, a relatively rich country should make a somewhat better provision for all who are "necessitous."[2]

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[1] Modern opinion is, I think, tending towards this view and away from Bernouilli's suggestion that, after the primary needs have been met, the satisfaction derived from income increases by equal amounts with every successive percentage that is added to it. (Cf. Sidgwick, *Principles of Political Economy*, p. 566.)

[2] This is the term employed by the Majority Commissioners of the 1909 Report on the Poor Laws.

Mr. Henderson, writing of the United States, truly observes : " It is not worthy of a nation like ours to regard social care as merely a means of keeping the weakest members from abject misery and death by starvation." [1]   The wealthy States of the modern world can afford, and, indeed, are in public duty bound, to do much more than this.

[1] *Industrial Insurance in the United States*, p. 43.

PART IV

THE VARIABILITY OF THE NATIONAL DIVIDEND

CHAPTER I

ECONOMIC WELFARE AND THE VARIABILITY OF THE INCOME OF THE REPRESENTATIVE WORKING MAN

§ 1. In the second chapter of Part I. the law of diminishing utility was employed to show that, if a given quantity of resources is available for consumption by two similar men, economic welfare is larger, the more evenly this quantity is shared between them. When the number of our imaginary group was increased from two similar men to many similar men, it was shown to be still true that economic welfare is larger, the more evenly the available resources are divided among them—the degree of evenness of distribution being measured by the standard, or mean square, deviation. It is obvious that the result thus achieved is equally applicable, when, for many similar men at one moment, we substitute one man at many similar moments. When the aggregate consumption of an individual, whose tastes and needs over a series of years are constant, is given, economic welfare is larger the more evenly that consumption is spread over these years.[1] From this proposition we proceed to the further proposition, that the economic welfare of a group of individuals is larger, the more evenly the consumption of the representative member of that group is distributed through time. By an

[1] Of course, if the individual's needs vary—they are likely to be greater in the period when he has a family to support than they are, either before he marries, or after his children become self-supporting—welfare will be greater, the more closely variations in consumption are adapted to variations in needs. For a good account of the way in which a normal working man's needs vary in different periods of his life, cf. Leroy-Beaulieu, *Répartition des richesses*, pp. 452-3.

extension of the argument of the note on p. 25 of Part I. it is readily shown that this latter proposition has equal validity with that just enunciated, when the evenness of the distribution through time of the representative member's consumption is measured by the arithmetical average of the standard, or mean square, deviations of the several members.

§ 2. Let us now return to the case of a community consisting of two similar persons only, and let us suppose that each of these persons A and B is in enjoyment of a variable consumption. Let the normal consumption of A be much larger than that of B. Experience assures us of the existence, alongside the law of diminishing utility, of a further law to the effect that the rate, at which utility diminishes, itself diminishes as a want becomes satisfied, or, in other words, that demand curves are, in general, convex to the origin.[1] From this law it follows directly that the economic welfare of A and B jointly is increased by any system of transferences, which, while leaving the average consumption of each unaltered, diminishes the variability of B's consumption, even though this diminution takes place at the cost of an increase in the variability of A's consumption. From this proposition it is easy to proceed, as before, to the further proposition that the joint economic welfare of two groups of persons, each group being more or less homogeneous, is increased by any system of transferences which, while leaving the average consumption of each group unaltered, diminishes the variability of the consumption of the representative member of the poorer group, even at the cost of an increase in the variability of the consumption of the representative member of the richer group.

§ 3. It will be remembered that, in some portions of Part III. of this volume, we simplified our problem by regarding " poor persons " as roughly equivalent to the manual working classes. The same simplification may conveniently be introduced here. When this is done, the two propositions just set out enable us to reach the following broad conclusion. Any arrangement which, other things remaining the same, diminishes the variability of consumption of the representative working man, even though it involves reciprocal trans-

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[1] Cf. my *Principles and Methods of Industrial Peace*, p. 70.

ferences, which increase the variability of consumption of the representative member of the other classes, tends to make economic welfare larger.   This conclusion follows directly from the abstract argument of the preceding sections.   It may, however, be further enforced by reference to certain realistic considerations, which that argument has left aside.

§ 4. The first of these is that variability of consumption, in general, involves, not merely loss of satisfaction at the moment, but also future consequences injurious to welfare. Furthermore, these consequences are especially important, when the variability attaches to the consumption of poor persons. They work themselves out, partly in the physical sphere, and partly in the moral sphere.   On the one hand, the lack of adequate means, which is likely to arise, from time to time, when consumption is variable, may involve a permanent injury to the strength of those affected, particularly of any young children, whose normal nourishment may need to be cut down.   On the other hand, this lack of means may lead to methods of obtaining the needful provision that threaten to bring about a permanent weakening of moral fibre.   Most obviously, it may lead to resort to the Poor Law, for, as is well known, the curve of pauperism in this country follows about a year behind the curve of unemployment.[1]   Resort to the Poor Law, however, or to vagrancy, marks, according to some, a definite stage of descent.   Mr. Hunter declares that there is a definite line between poverty, where struggle and independence prevail, and pauperism.   " Paupers are not, as a rule, unhappy. They are not ashamed ; they are not keen to become independent ; they are not bitter or discontented.   They have passed over the line which separates poverty from pauperism." [2] And Mr. Beveridge adds that " the men who enter the workhouse or go on tramp, leaving their families to the Poor Law, are, as a rule, those whom adversity, combined, no doubt, with their own weaknesses, has made no longer able-bodied or respectable.   Having once entered, they seldom return to

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[1] The interval is probably partly due to resistance made possible by savings, the pawning of household goods, children's earnings, etc. ; partly to the fact that a check to the *inflow of pauperism* will not involve a diminution of pauperism until the inflow falls below the outflow brought about by death and other causes (cf. Beveridge, *Unemployment*, p. 49).   [2] *Poverty*, p. 3.

industry again."[1]   These evil consequences of the lean months
of a worker's year are, obviously, not fully compensated by
equivalent good consequences in the fat months.

§ 5. The second consideration is as follows.   Variations
in the consumption of the poorer classes generally come about
through causes, which, in different degrees, compel also vari-
ability of employment, in the sense of alternations of working
spells and idle spells.   In some cases, no doubt, arrangements
may be made to ensure that this association shall not occur.
Changes in entrepreneurs' demand for workmen's services
may be carried through in the form of changes from short
time, through full time, to overtime, and *vice versa*, and, when
this is done, variations of employment, in the sense of alter-
nations of working spells and idle spells, are abolished.   In
the majority of industries, however, changes in entrepreneurs'
demand are not carried through in this form.   In general,
they involve variability of employment, in the sense just defined.
This being so, if we wish to determine the full measure of
evil resulting from the *causes* of variability in the consumption
of the working classes, we must add to the effects of this
variability the effects of variability of employment.   That this
variability is, in itself, a further social evil is easily seen.
Apart from the presence of an alternative kind of work, as, for
example, work on land belonging to, or rented by, themselves,[2]
idleness may often exercise a seriously deteriorating influence
—an influence, too, which grows rapidly as the amount of the
idleness grows—upon the economic and general efficiency of
those affected by it.   It is well known, for instance, that
drunkenness is often worst in times of slack employment.[3]

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[1] *Unemployment*, p. 50.   Reasoning of this order, designed to show that
irregularity of earnings is responsible for much pauperism, is based by the
Minority of the Royal Commissioners on the Poor Law on the fact that the
great mass of applicants to Distress Committees are casuals of one kind or
another (*Report*, p. 1151).   It should be observed however, that, under
existing industrial arrangements, casualness falls chiefly to the inefficient, who
would be likely to become paupers, whatever the form of engagement under
which they worked.

[2] In Belgium the cheapness of workmen's tickets on the railways enables
many workers to live in cottages with gardens attached to them, to the cultiva-
tion of which they turn when out of ordinary work (cf. Rowntree, *Unemploy-
ment*, p. 267).

[3] Cf. Charity Organisation Committee's *Report on Unskilled Labour*, p. 56.

The Royal Commissioners on the Poor Law have in evidence : "The enforced idleness on completion of a job naturally throws the men upon their own resources, which is, in nine cases out of ten, the nearest public-house. The frequent change from strenuous hard work to absolute indolence to men of this character naturally tends to gradual moral and physical degeneration, and ultimately the individuals become unfit for work, even when opportunity offers." [1] A large employer of labour, quoted by Mr. Alden, said : " Between 5 and 6 per cent of my skilled men are out of work just now. During the long spell of idleness any one of these men invariably deteriorates. In some cases the deterioration is very marked. The man becomes less proficient and less capable, and the universal experience of us all who have to do with large numbers of working men, is that nothing has a worse effect upon the calibre of such men than long spells of idleness." [2] The Transvaal Indigency Commission report : " Unemployment is one of the most fruitful causes of indigency of a permanent and hopeless kind. However skilled a man may be, he is bound to deteriorate during a long period of unemployment. His hand loses some of its cunning and he acquires the habit of idleness. The tendency is for the unemployed to sink to the level of the unemployable." [3] Men who have once become casuals are not readily reconciled again to regular work. [4] Reference may also be made to the results of a recent American enquiry : " If a period of enforced idleness were a season of recuperation and rest, there would be a good side to lack of employment. But, enforced idleness does not bring recuperation and rest. The search for labour is much more fatiguing than labour itself. An applicant, sitting in one of the charity offices waiting for the arrival of the agent, related his experiences while trying to get work. He would rise at 5 o'clock in the morning and walk 3 or 4 miles to some distant point, where he had heard work could be had. He

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[1] Quoted in the *Minority Report*, p. 1138.
[2] Alden, *The Unemployed, a National Question*, p. 6.
[3] *Report of the Transvaal Indigency Commission*, p. 120.
[4] Some evidence before the Unskilled Labour Committee of the C.O.S. relates how an attempt to convert casual dockers into permanent hands failed through the men refusing to turn up regularly (*Report*, p. 183).

went early so as to be ahead of others, and he walked because
he could not afford to pay car fare. Disappointed in
securing a job at the first place, he would tramp to another
place miles away, only to meet with disappointment
again. . . . As the man told his story, he drove home the
truth that lack of employment means far more than simply a
loss in dollars and cents; it means a drain upon the vital
forces, that cannot be measured in terms of money." [1]   Here
again, as in the case of consumption, it is obvious that the
evil consequences of lean months are not balanced by good
consequences in fat months. Indeed, it may well be that,
when, as often happens, the fat months imply long hours of
overtime, they will not yield any good effects to set against
the evil effects of the lean months, but will themselves add
further evil effects.

§ 6. My third consideration is that, broadly speaking, in
the actual modern world the fact of variability of consump-
tion and employment carries with it, among persons whose
normal resources are meagre, a vivid anticipation of the fact,
or, to put the point otherwise, a strong sense of insecurity and
uncertainty. Sir H. Llewellyn Smith sums the matter up thus:
" It is, I think, a definite induction from history and observa-
tion that, when risk falls outside certain limits as regards
magnitude and calculability, when, in short, it becomes what
I may call a gamblers' risk, exposure thereto not only ceases to
act as a bracing tonic, but produces evil effects of a very serious
kind." [2]   Professor Leroy-Beaulieu, in like manner, declares,
and is surely right in declaring: " It is not the insufficiency
of pay which constitutes, in general and apart from exceptional
cases, the social evil of to-day, but the precariousness of
employment." [3]

§ 7. These three considerations, as I have said, fortify the
conclusion reached in § 3 on the basis of abstract analysis. It
is now thoroughly established that causes tending to diminish
the variability of the *consumption* of the representative
working man, even though they only effect this by means

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[1] *United States Bulletin of the Bureau of Labour*, No. 79, pp. 906-7.
[2] *Economic Journal*, 1910, p. 518.
[3] *Répartition des richesses*, p. 612.

of reciprocal transferences that augment the variability of the consumption of other people, in general increase national welfare. We may, therefore, proceed with confidence to the goal of the present chapter, namely, an analogous proposition concerning the variability of the *real income* of the representative working man. It is true, of course, that variability of consumption and variability of real income are, by no means, the same thing. By resort to saving, or mutuality, or insurance, a group of similar men might conceivably secure a perfectly stable consumption in spite of a highly variable real income. Again, as between two groups of different degrees of wealth, by resort to borrowing through pawnbrokers on pledges, or through relatively well-to-do tradesmen on credit, the poorer of the two might conceivably secure an absolutely stable consumption at the expense of the richer. In actual fact, the conditions of consumption are, in general, rendered by these devices somewhat better than the conditions of income. Still, it is obvious that, even in a world of perfectly rational economic men, much more in the real world, these devices cannot be pressed up to the limit. A group with variable real income will always experience, in *some* measure, variable consumption also. And—which is the point of importance here—the variability of consumption will always be greater, the more variable is the real income. Hence, we conclude that any arrangement which, other things remaining the same, diminishes the variability of the real income enjoyed by the representative working man, even though it involves a system of reciprocal transferences, which increases the variability of consumption of the representative member of the other classes, tends to make national welfare larger.

CHAPTER II

§ 1. BEFORE proceeding with the main argument, we may now pause to examine an incidental matter of great practical importance. It was indicated at the close of the preceding chapter that, when the conditions concerning variability of income in any group are given, those concerning variability of consumption are not rigidly determined. Evidently, then, economic welfare must, in part, depend upon the way in which these two things are related to one another. When the variability of income is given, arrangements which, on this basis, diminish the variability of the consumption enjoyed by the representative working man must, *ceteris paribus*, make economic welfare greater. The different sorts of arrangement that are available for the above purpose thus call for examination. The principal of these are, respectively, mutuality and saving.

§ 2. The method of mutuality, in its purest form, leaves the aggregate consumption of each member over the whole series of years equal to the aggregate income accruing to him over these years, and it also leaves the collective consumption of all the members, in each several year, equal to their collective income. It effects, however, such a transference of income between the different members in each year, that the deviation of collective consumption in each year from average collective consumption is spread evenly among them. If there are n members, and if their collective income in a given year exceeds its average by H, the transferences are so arranged that the individual consumption of each member

exceeds his average individual consumption by $\dfrac{H}{n}$. It is easily
seen that, given the collective consumption in each year and
the individual consumption of each member over all years, a
system of transferences effected on this plan reduces the vari-
ability of the representative man's consumption to the smallest
possible figure. Furthermore, any system of transferences,
which approximates towards the above type, acts, *pro tanto*,
after the same manner. It reduces the variability of the
representative man's consumption below the variability of his
income, and it does this in greater measure, the more closely
it succeeds in equating individual variations of consumption
from the average to $\dfrac{H}{n}$. This description of the method of
mutuality has, it will be noticed, assumed that no transfer-
ence of wealth on the whole is made from any one person to
any other. It has assumed, in fact, that the premiums paid
by every member correspond, not merely to his risks of loss,
but to his actual losses. For the purpose of the present
chapter it is convenient to proceed upon this assumption. In
Chapter X. of Part III. the working of mutuality, as an
instrument for transferring resources from more fortunate
to less fortunate persons, has already been examined. The
present chapter is only concerned with its working as an
instrument, by which the annual consumption of individuals
is approximated to their average, as distinguished from their
annual, income.

§ 3. The method of saving, in its purest form, involves no
transference of income in any year from any one member of
a group to any other. It consists in the retention, by each
individual, of the excess income of good years for use in subse-
quent bad years, in such wise that consumption is always the
same. It is obvious that this method, if carried out com-
pletely, would reduce the variability of consumption of the
representative member of the group to zero. A less complete
application of the method acts, *pro tanto*, after the same
manner. It reduces the variability of the representative
man's consumption below the variability of his income, and
it does this in greater measure, the more closely it succeeds

in equating individual variations of consumption from the average to zero.

§ 4. The method of mutuality and the method of saving are, in practice, often combined together. The reason is that, though the method of saving, adopted in isolation, *can* reduce the variability of consumption of the representative man to zero, it can only do this at the cost of withholding a very large quantity of resources from consumption. Each member needs to retain, on the average, a reserve large enough to make good the variations that occur in his individual income. In any group of persons, however, whose individual circumstances result from partially independent causes, the sum of the variations from the average of individual incomes in any year will be much larger than the variation from the average of the sum of individual incomes. Hence, by saving collectively instead of individually, a group of people can greatly lessen the amount of saving that is required, in order to reduce the variability of the representative man's consumption in any given degree. This combination of the method of mutuality and the method of saving is commonly known as *Insurance*.[1] It is a cheaper way than saving alone of producing a given increment of stability and, therefore, among the poorer classes, to whom cheapness is of vital importance, attempts to foster it have been successful, where—witness the Ghent system of subsidies to provision privately made against unemployment—attempts to foster individual saving have failed.[2]

§ 5. Now, in practice, insurance cannot readily be applied directly to correct variations in individual earnings; for, if it were arranged so as to do this, it would act as a bounty on practices conducive to small earnings. Hence, certain events are selected, the occurrence of which is likely to be correlated

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[1] For aspects of insurance other than those discussed in this chapter, the reader is referred back to Part II. Chapter IV. § 6, and Part III. Chapter X. §§ 2-3.

[2] "The supplementary provision made at Ghent and elsewhere for unorganised workmen has been either a total failure or a not altogether gratifying success. At Strassburg, and in most of the French towns, it has been omitted, and the benefits of the municipal subvention have been confined to members of Trade Unions, in spite of the objections raised on social and political grounds to thus forcing workmen to join such associations" (*Report of the Royal Commission on the Poor Laws*, Appendix, vol. ix. p. 737).

with diminished income, or increased needs, to the individual affected by them, and insurance is taken out against these. The events must be, so far as possible, of such a sort that insured persons are not likely to be induced, either to bring them about intentionally, or to simulate them. The successful development of insurance systems in various lines depends largely upon the extent to which arrangements can be devised in conformity with the above conditions. Two events, namely, death and, subject to the existence of an adequate system of birth registration, the attainment of some specified age are, broadly speaking, free from the risk either of voluntary creation or of simulation; and, with only slightly reduced generality, the same remark applies to definite forms of serious disablement, such as the loss of an arm or a leg. The other two principal events, against which insurance on the part of poor persons extensively prevails, namely "sickness," and failure to find work at some agreed-on wage,[1] are, however, subject to both the above risks. Consequently, insurance against these events has to be hedged round with numerous defensive devices. Of these the most obvious is a rule fixing the benefits connected with the occurrence of the event at a figure considerably less than the loss, which the event is likely to inflict on the person subjected to it. Thus, in the organisation of out-of-work benefit by trade unions, provision is always made, (1) to place the benefit at a much lower sum than the insured man would probably be earning if at work, (2) to limit the duration of the benefit, and (3) to start the benefit some days after unemployment has begun.[2] Besides indirect protective devices of this sort, it is often found desirable to provide directly for supervision against

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[1] When insurance is effected in a trade union, the wage named is, of course, the standard rate of the union. In the case of wider systems of unemployment insurance, the determination of this wage presents, however, some difficulties. The English National Insurance Act determines it as not lower than that at which the man concerned habitually works, or, in the case of an offer of work in another district, than the rate current there.

[2] This policy of postponement does not always seem to fulfil its purpose. Thus, the *Economist* (June 19, 1909) writes : "One clause in the Act of 1906 especially encourages workmen to prolong their illness by making compensation payable from the date of the accident, *if the disability lasts more than a fortnight.* The effect is to put a premium on illnesses of between a fortnight and three

fraud. In England it has generally been held that no form of supervision is so effective as the informal inspection of the applicants' colleagues on the fund. With a view to this, the sick benefit funds of English Friendly Societies are, in general, administered locally, even when they are national in character.[1] In like manner, unemployment benefit, where it exists, has almost always been organised through unions of workpeople belonging to particular trades and working together in groups. Recent German experience in regard to sickness insurance suggests, however, that supervision can also be effectively undertaken by large centralised societies, through the agency of an organised staff of inspectors. As regards unemployment also new methods are coming into play. For, what is in effect supervision is exercised passively, both in this country and abroad, by means of the offers of work made through the growing system of Labour Exchanges. Thus, the informal supervision of co-workers appears to be yielding place to more highly elaborated arrangements. Supervision of some sort, however, still remains exceedingly important.

§ 6. The obstacles, which the need of guarding against the creation or simulation of insured events places in the way of insurance, as a means of steadying consumption, reside more or less in the nature of things. Consequently, even in a country of perfectly rational economic men, insurance would necessarily be carried much less far than would suffice to render the representative working man's income stable. Nor,

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weeks, and a Mutual Indemnity Society in South Wales shows that, since the Act, the following curious change has taken place in its own experience :—

	First Half 1907.	Second Half 1907.
	Per 1000 Workmen.	Per 1000 Workmen.
Illnesses of more than 7 and less than 14 days	18·89	7·44
Illnesses of more than 14 days . .	35·08	69·26

These figures require no comment."
[1] Cf. Willoughby, *Working Men's Insurance*, p. 334. In Germany sick insurance was, by the law of 1883, "entrusted to a large number of separate societies, each of which was made absolutely independent of the others as regards its receipts and expenditures" (*ibid.* p. 37). The new law has changed this. (Cf. Frankel and Dawson, *Working Men's Insurance in Europe*, p. 158.)

indeed, could insurance, in any case, be carried up to that point, since each successive increment of stability has a diminishing, and each successive increment of saving involved in the purchase of stability has an increasing, utility. This is sufficiently evident. It is important to observe, however, that the stability of consumption is one of those remoter objects, referred to in the fourth chapter of Part II., whose value is, in reality, greater than actual workpeople contemplating the purchase of them usually judge it to be.[1] Their failure to attain, in this respect, to the ideal of perfectly rational economic men causes insurance to be pressed much less far than it might, even under existing circumstances, be profitably pressed. This fact, together with the causes lying behind it, is brought out very clearly by Mr. Richard Bell. He writes : " During the period of prosperity, when a large number of workers are earning good wages, it is regrettable to think that they do not take care of the few extra shillings they then receive, but indulge so freely in drinking and gambling, so that, when they are meeting with a little depression, they are entirely at the mercy of the employers, and have to put up with circumstances which they otherwise would not." [2]   Failure of this kind to effect possible adjustments is common to the general body of the poorer classes and, indeed, of all classes. It is illustrated by the improvidence of those poor persons, whose income is exceptionally irregular. Mr. Rushbridge's observation to the Charity Organisation Society's Committee on Unemployment is highly relevant : "If I may express an opinion about the dock district, it is that the greatest evil of all is that there is not what the wife calls a Saturday night. If a man gets a job, he is paid for it, and the chances are that the wife sees none of the money." [3]   The same point is brought out, in a less direct way, by the difficulties of a proper adjustment of expenditure, which seem to be experienced by persons in receipt of payments made at long intervals. " Those who have knowledge of workhouses know how often the army pensioner drifts in only because his pension comes quarterly, and he cannot keep it

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[1] Cf. *loc. cit.* § 6.   [2] Rowntree, *Betting and Gambling*, p. 217.
[3] *Report on the Relief of Distress due to Want of Employment*, p. 10.

till he needs it."[1]   It is illustrated again by the claim, often
made on behalf of fortnightly or weekly, as distinct from
monthly, " pays," that they facilitate the organisation of the
workpeople's homes.   A workman told Mr. Carnegie that the
change from the monthly to the fortnightly system was
equivalent, through the saving it introduced by making cash
payments more practicable, to an addition of 5 per cent to
wages.[2]   The point, it may be noted, is recognised in the
recent British Mines Act, by the provision that colliers' wages
shall be paid weekly.   Further evidence of the inadequate
appreciation displayed by workpeople for the advantages of
stability can be produced from another side, by reference to
the devices, which philanthropists and commercial companies
alike find necessary, in order to persuade them to make pro-
vision for the future.   Thus, Mr. Lee, in his interesting dis-
cussion of Thrift Societies, asserts that the cultivation of thrift
among the people is best carried out by the establishment of
a " society which seeks the family in its home by means of a
collector, who calls at stated times, usually once a week.   He
reaches the people in whom the germ of foresight hardly yet
exists, who, accordingly, will not save on their own initiative,
however little is required, to whom thrift must come embodied
in a person, and must come at regular intervals, intervals not
so long but that his next visit is always within the brief
range of their forward vision."[3]   It is found necessary, in
fact, to follow the lead given by betting agencies, with their
elaborate staff of assistants, prepared to visit the wives of
working men when their husbands are out, to tackle domestic
servants, and to waylay workmen in the factory during the
dinner hour.[4]   The need for this kind of action is illustrated
by " the great difference between the contributions to the
burial societies and other forms of saving."[5]   It is brought
out still more vividly by a fact noticed by Miss Jebb.   The
Post Office insures a man of twenty-three at 1d. a week for

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[1] Bosanquet, *The Strength of the People*, p. 263.
[2] Cf. Carnegie, *Problems of To-day*, p. 63.   Cf. also the argument of the
Minority of the Poor Law Commissioners in favour of the compulsory invest-
ment of sums paid in compensation for accidents (*Report*, p. 925).
[3] *Constructive and Preventive Philanthropy*, p. 22.
[4] Cf. Rowntree, *Betting and Gambling*, p. 73.
[5] Miss Octavia Hill, Royal Commission on the Aged Poor, Q. 10,569.

INSURANCE

£10; the Prudential Assurance Company for £7:12s. only. Yet the Prudential, with collectors, has policies up to 142 million pounds; the Post Office, without collectors, up to 790 thousand pounds.[1]

§ 7. In view of the evident failure, on the part of the ordinary poor man, to use insurance for steadying his consumption so far as his own economic interests suggest, it is open to the State to increase economic welfare by applying some spur to him in this direction; and the case for doing this is, of course, made still stronger, when attention is paid to those other advantages of insurance, which are ignored in this chapter, but to which reference has been made in Parts II. and III. Broadly speaking, as was indicated in Part II. Chapter IV. § 6, two forms of spur are available, bounty and compulsion. The present is a convenient opportunity for a further discussion of these. The spur of bounty has been adopted, in varying degrees, by a number of governmental authorities in their relations to private systems of workmen's insurance. In its mildest form, it consists merely in the supply of statistical material and tariffs of risks.[2] The importance of this matter is illustrated by the defects, to which Mr. Henderson draws attention, in the arrangements of the numerous local mutual aid associations in the United States. " The principal evil in connection with these voluntary local societies is that they are generally organised and administered without the aid of competent actuaries and are utterly without scientific foundations. A new society copies the bye-laws of an older society, without any kind of understanding of the probable outcome of the plan." [3] It is clear that this sort of difficulty could be partially mitigated by supervising aid from State officers—though, no doubt, the local societies might not always welcome very heartily such advice as was offered. A second stage of bounty is reached, when the Government provides an institution, through which insurances can be entered into, thus affording to insurers a guarantee against fraud or insolvency. In France, for example, there is a *Caisse nationale des retraites pour la vieillesse*, which, besides offering

[1] *Cambridge*, p. 115.   [2] Cf. Lewis, *State Insurance*, p. 49.
[3] *Industrial Insurance in the United States*, p. 80.

facilities for individual insurance, also offers them for collective insurance.[1]   In like manner, the Massachusetts Savings Bank Insurance Act of 1907 and the Canadian Government Annuities Act of 1908 both provide for the sale of insurance or annuities at low rates under a government guarantee.[2]   A third stage of bounty is reached when the State contributes a subsidy in money.   Such subsidy may be small and conceived on the pattern set out by M. Andrifford in his Report on the Proposed French Law on Mutual Insurance Societies in 1889. He wrote: " To be truly useful, the subsidy of the State ought to be restricted to certain limits, and its true purpose preserved. This purpose is to provoke saving and providence, to encourage the indifferent to affiliate themselves with mutual-aid societies, to persuade the societies themselves to enter the field of old-age insurance, and, possibly, to come to the aid of the societies at the moment of their organisation, or in times of emergency or distress resulting from epidemics or other great misfortunes." [3]   An example of this type of subsidy is that furnished in England by the exemption from income tax of that part of income which is spent on premiums on life insurance policies.   Finally, the most advanced stage of bounty is reached, when the money subsidy granted is large. This is the case with many of the contributions made to insurance against unemployment by towns that have adopted the Ghent system.[4]   Such subsidies have amounted to as much as 50 per cent of the benefits paid.   In Belgium the State subsidy to old-age insurance amounts to 60 per cent.[5]

[1] Cf. Willoughby, *Working Men's Insurance*, p. 122.

[2] Cf. *Quarterly Journal of Economics*, 1910, p. 718.

[3] Cf. Willoughby, *Working Men's Insurance*, p. 180.

[4] This system, which has spread widely in Belgium, is also largely adopted elsewhere.   " In France (1905), Norway (1906), and Denmark (1907), it has been adopted by the State.   It is applied by many of the French towns in making grants to unemployment funds.   In Germany it has been adopted by the Municipality of Strassburg (1906), and has come into the region of practical politics in Munich (1905) and elsewhere.   In Italy it has been applied by the Société Umanitaine of Milan (1905).   In Switzerland it has been adopted, after the failure of direct compulsory insurance, in St. Gall (1905), and is now proposed in Basle (1907)." (*Report of the Royal Commission on the Poor Laws*, Appendix vol. ix. p. 736.)   In England it appears in respect of voluntary insurance against unemployment in the non-scheduled industries of the National Insurance Act.

[5] Cf. Frankel and Dawson, *Working Men's Insurance in Europe*, p. 321. From the point of view of economic welfare it would seem that schemes of this order

The spur of compulsion, as applied to insurance, has been amply illustrated in the German compulsory insurance laws against sickness and accident, and also in those against old age and invalidity; and, in a few towns, attempts have been made to compel insurance against want of work on the part of ordinary able-bodied workmen. In the Hungarian law of 1884 there is an interesting example of partial compulsion, it being provided that, "where the majority of the employés decide to found an aid fund, the minority is also bound to join and to pay a certain percentage of their weekly wages for the maintenance of the fund." [1] Our own Insurance Act has adopted the method of compulsion, in respect of sickness for all trades, and, in respect of unemployment, for the building and engineering trades.

§ 8. If it be granted, on the strength of the arguments advanced in earlier sections, that some spur towards workpeople's insurance is socially desirable, it becomes important to attempt a comparison of the two forms of spur that I have been describing. In making this comparison we must, of course, assume that the method of compulsion, if adopted, will be worked out in such a way that the premiums charged to different insurers are adapted fairly closely to the actuarial value of the risks they run. For, if this is not done, some workpeople will feel that they are being taxed for the benefit of others, and, apart from compensation, in the way either of a State grant or of the enforcement upon these others of conditions prohibiting the offer of work below the standard wage, will resent the system, and will endeavour, as at St. Gall, to break away from it. Given, however, that the method of compulsion is developed on a scientific plan, it has the advantage of freedom from certain practical difficulties, which the rival

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would be improved, if the aggregate amount of subsidy paid to insurance in any industry were made to vary, not only directly with the amount of benefit privately provided, but also inversely with the level of wage prevailing in the different industries; for, if this is not done, prosperous groups of workpeople will be assisted more largely than poor groups. A step in the direction indicated is taken in the law governing State subsidies in France, according to which, "if the unemployed benefit paid by a Fund is of greater amount than 1s. 7¼d. per day, then no subsidy is to be paid in respect of such excess (over 1s. 7¼d.)." (Schloss, *Insurance against Unemployment*, p. 44.)

[1] *Economic Journal*, 1908, p. 632.

method cannot completely escape. For, if bounties are given, they can hardly be given with effect, except through the Trade or Friendly Societies voluntarily established by the workpeople. In all countries, however, a great number of workpeople do not belong to these societies. Consequently, unless the bounty is to be discriminating in its incidence, a rule must be made compelling the societies to allow outsiders, who will not become regular members, nevertheless, to become members in respect of the fund subsidised by the State. A rule of this sort prevails in Denmark and also in Norway,[1] but it is obviously unsatisfactory, and likely to lead—as, indeed, in Norway it has led—to considerable friction. A compulsory scheme is free from this difficulty. A more weighty consideration is as follows. Bounties and compulsion are, neither of them, ends in themselves, but both are means to induce people to insure. Viewed from this standpoint, there can be no doubt that compulsion is to be preferred. It is true, of course, that compulsory insurance does not imply, as popular opinion supposes it to do, universal insurance. For, since in all systems, so far as they are concerned with sickness and unemployment, benefits lapse after a time, highly inefficient men must often become uninsured in spite of the compulsion. The English National Insurance Act, for example, provides that no workman shall receive unemployment benefit for more than one-fifth of the number of weeks during which he has paid contributions. Still, it is plain that, though compulsion does not mean insurance for *all* workpeople, it must, in general, approach much more nearly towards this goal than any system of bounties. Herr Zacker is wholly right, when he asserts : " With compulsory insurance laws, the end is reached in a comparatively short time ; while, even with State subsidies, voluntary plans have only helped a part of the population imperfectly, and those who most need the protection of insurance not at all."[2] We are not, indeed, entitled to draw the inference that compulsion is, in this matter, universally superior to bounties. What people *think* good in such a case goes a long way towards determining what *is* good. And, in a country where

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[1] Cf. Gibbon, *Unemployment Insurance*, p. 192.

[2] Quoted by Henderson, *National Insurance in the United States*, p. 311.

the idea of State compulsion was violently unpopular, that fact might turn the scale in favour of the method of bounties. In fact, however, the unpopularity of compulsion appears to be imaginary rather than real, at all events among the work-people of western Europe. The device of combining with compulsion a certain element of State aid, which has been adopted in the legislation of Germany, France and England, has apparently sufficed to make the " principle " of compulsion palatable.[1]

[1] Cf. *Labour Gazette*, 1911, p. 116, for an account of the French law of 1910 on old-age and invalidity pensions.

CHAPTER III

VARIABILITY IN THE REAL INCOME OF THE REPRESENTATIVE
WORKING MAN, IN RELATION TO VARIABILITY IN THE
AGGREGATE REAL INCOME OF THE WORKING CLASSES

§ 1. WE must now take a step forward. It has been shown
that any cause, which diminishes the variability of the real
income enjoyed by the representative working man, even
though it involves a system of reciprocal transferences, which
increases the variability of that enjoyed by the representative
member of the other classes, tends to make economic welfare
larger. We have now to inquire what conclusions this fact
enables us to draw with regard to the effect on economic welfare
of causes affecting the variability of the national wages bill.

§ 2. It might seem, *prima facie*, that the variability of the
real income of the representative working man necessarily
rises and falls with the variability of the aggregate real income
of the working classes as a whole. If this connection were
valid, we could proceed at once to the inference that national
welfare is increased, *ceteris paribus*, by anything that diminishes
the variability of the aggregate real income of labour. As a
matter of fact, however, the above connection is not valid. It
is, indeed, broadly true that the variability of the income of
the representative working man is not practically susceptible
of diminution, in an important degree, by any cause that does
not, at the same time, reduce the variability of the aggregate
income of the working classes. But, the converse of this pro-
position does not hold good. Causes, which diminish the vari-
ability of the aggregate income of the working classes, may not
merely fail to diminish, but may actually increase, the variability

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of the income of the representative working man. If, indeed, all labour were perfectly mobile between all places and occupations, this result would not be possible. That it is possible under existing conditions is, however, easily shown. The point can be put clearly by means of an imaginary extreme case. Let us suppose that labour is demanded at two points A and B, between which movement is absolutely impossible. If the demand at A is unsteady, and the demand at B steady, the demand at A and B jointly can be made more steady by the introduction of unsteadiness at B, so arranged as to "compensate" the unsteadiness at A. The increased steadiness of the demand of A and B together—implying, of course, increased steadiness in the aggregate earnings of labour at A and B together—which is introduced in this way, does not, however, diminish the variability of the earnings of any workmen. Rather, it has the contrary effect ; for, while the variability in respect of workmen at A is left unaffected, in respect of workmen at B it is increased—a result implying, of course, an increase, and not a diminution, in the variability of the income of the representative working man. In real life, where labour is neither perfectly mobile nor perfectly immobile, the result of analysis is as follows. Causes, which steady the demand for, and, therewith, the real earnings of, labour as a whole, without unsteadying the demand for the labour of any group of workpeople, always diminish the variability of the earnings of the representative working man : causes, which steady the demand for, and real earnings of, the whole, by unsteadying the demand for a part, do not always increase, but sometimes increase and sometimes diminish, this variability.

§ 3. It so happens that the generality of ordinary economic causes, which influence the variability of the aggregate income of labour, belong to the former of the two categories just distinguished. One reason is that they are blind causes, not aiming specially at adjustment—"random in the technical sense," from the present point of view. Any random change, however, impinging on the variability of a part is most unlikely, a priori, to be correlated with the variability of other parts in such a way as to involve a change in the opposite

sense in the variability of the whole. A second reason
is that by far the most important of these ordinary causes,
those, namely, that act through the bounty of Nature or
through business confidence, are of a very general kind, and so
impinge directly upon the whole, without being specialised to
any part. It follows that, in respect of *these* causes, though
not in respect of all causes, the variability of the real income
of the representative working man necessarily rises and falls
with the variability of the aggregate real income of the
working classes as a whole. Hence, in respect of them,
economic welfare is necessarily increased by anything that
diminishes, and diminished by anything that increases, the
variability of the aggregate real income of labour. The
remainder of the present Part, with the exception of the final
chapter, will deal exclusively with causes of this kind.

CHAPTER IV

THE VARIABILITY OF GENERAL PRICES

§ 1. In the course of the following chapters reference will
frequently be made to certain modifying influences, which are
exerted, in one way or another, upon the variability of the
real earnings of the working classes by the fact that the
general level of prices, or, to put the same thing in other
terms, the purchasing power of money, is not constant.   It is,
therefore, convenient, as a preliminary to our main discussion,
that some attempt should be made to investigate the nature and
causes of this inconstancy.   This investigation can be carried
far enough for our present purpose without account being
taken of the variability in the value of different commodities,
other than money, relatively to one another.   We may assume,
therefore, that commodities in general can be reduced to an
equivalent quantity of some one representative commodity, say
wheat, and may confine ourselves to a study of the relation
between money and this " representative commodity."

§ 2. It is a commonplace of economic theory that the
value, or purchasing power, of money is, like every other value,
determined by the interaction of the broad forces of demand and
supply, and that its variations from time to time are determined
by variations arising out of this interaction.   The elasticity
of the demand for money is, as is well known, equal to unity.
Hence, the determinants of the variability of the value of
money are three in number—the variability of the quantity
of money supplied at a given wheat price per unit, the
variability of the quantity demanded at a given wheat price
per unit, and the elasticity of the supply of money in respect

of quantities in the neighbourhood of those normally supplied. We may lay it down that the variability of general prices will be smaller, the smaller are the two variabilities just distinguished, and the greater is the elasticity just referred to. If the variations of the demand schedule and of the supply schedule are independent of one another, this statement exhausts the subject. If, however, variations in the one schedule are causally related to variations in the other schedule, in such wise that an upward movement of the supply schedule involves an upward movement of the demand schedule, this relation enhances the variability of prices: whereas, if the relation is such that an upward movement of the supply schedule involves a downward movement of the demand schedule, it diminishes this variability. The causes, upon which the three magnitudes distinguished above depend, and the character of the relation between the individual variations that make up the two variabilities, will be studied in the following sections.

§ 3. The variability of the quantity of money demanded at a given wheat price per unit is derived from that variability of industry in general, whose character and scope is discussed at length in later chapters of this Part. First, the demand schedule for money, in terms of commodities, rises and falls as the volume of the national dividend of commodities rises and falls; secondly, when the volume of the national dividend is given, it rises and falls as the ratio between the satisfactions, which people look for from the nth unit of money and the nth unit of commodities respectively, rises and falls. The causes which bring about variations in the volume of the national dividend are discussed in a later chapter. Of those that bring about variations in the comparative satisfaction, which people derive from the nth unit of money and the nth unit of commodities, the more important are, on the one hand, changes in expectations as to the effectiveness of investment and, on the other hand, changes in estimates of the advantage of holding money as security against possible difficulties in meeting obligations shortly to fall due. The way in which the former of these causes affects comparative satisfaction and, therewith, the value of money, is easily explained. For,

money being one of those commodities which cannot, like steel or timber or articles acceptable as wages by the working classes, be invested in production, the satisfaction looked for from any n^{th} unit of it, relatively to that looked for from any n^{th} unit of those things, must fall when the desire for investment increases, and rise when that desire diminishes. Since there is no reason why the comparative satisfaction yielded by money and by other non-investible commodities should change in any way, this circumstance implies that the satisfaction yielded by the nth unit of money and of investible and non-investible commodities jointly, that is to say, of commodities in general, must fall with a rise, and rise with a fall, in expectations concerning the fruitfulness of investment. The way in which the other cause operates, namely, variations in the desire for money as a safeguard against failure to meet obligations, does not need to be explained. It is obvious that a rise in people's desire for money for this purpose implies a rise, and that a fall in their desire implies a fall, in the comparative satisfaction looked for from the nth unit of it. But, improved expectations as to investment and diminished fear of bad debts are, in general, the result of an attitude of optimism, and are apt to appear together ; while, in like manner, worsened expectations as to investment and increased fear of bad debts are the result of an attitude of pessimism, and also appear together. Hence, our analysis has revealed two ultimate causes, out of which variations in the demand schedule for money arise, namely, variations in the volume of the national dividend, and variations in the sentiment of the business world. For a discussion of the causes of these causes, the reader is referred forward to Chapters VI. and VII. This completes what it is necessary to say concerning the causes of variability in the demand for money ; for, a more elaborate analysis would not be relevant here. It only remains to register the proposition stated above, that, the smaller is this variability of demand, the smaller will be the variability of general prices.

§ 4. Before passing on to a study of the influences that govern the variability of the supply schedule of money, we may conveniently review the third proposition indicated in the second section. This proposition was to the effect that

the variability of the value of money will be smaller, the greater is the elasticity of the supply of money, in respect of quantities in the neighbourhood of those normally supplied.[1] The discussion of the causes, by which the magnitude of this elasticity is determined, is complicated by the fact that the supply of money in modern civilised States is made up of two parts, money proper in the possession of the public, and bank-money, whether in the form of deposits subject to cheque or of bank-notes redeemable on demand, in the possession of the public. It is, thus, equal in amount to all the money proper in the country, *plus* all the bank-money there, *minus* the money proper held in reserve by the banks against bank-money. If every unit of bank-money were based on a unit of money proper stored in the banks, bank-money and the reserve held against it would cancel one another, and the supply of money would. be equal simply to all the money proper in the country. In actual life, however, bank-money does not consist merely of certificated claims to an equivalent quantity of money proper held in store. To break through the complications introduced by this fact I propose to discuss two artificially simplified cases.

§ 5. First, let us suppose that the supply of money and the supply of money proper are always equal, so that the elasticity of the supply of money is the same as that of the supply of money proper. The magnitude of this elasticity will clearly depend on the characteristics of the substance or substances of which the money is made. If it consists of inconvertible paper notes coined at the arbitrary will of the government, the elasticity will be nil.[2] If it consists of something, which is freely coined, but has few uses outside

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[1] It may be added that, if the supply of money at any point was perfectly inelastic, the consequent enhancement of price variations would be much greater than seems probable at first sight. For, when demand rose so far that the limit of supply was nearly reached, people would become afraid that, if they did not obtain money immediately, they would not be able to obtain it at all, and this fear would react to force the demand still higher. This is the ultimate ground of Bagehot's opinion that, in order to stay a panic, the Bank of England should advertise its willingness to make loans, if required, up to any amount, provided that the security offered is sound and that would-be borrowers will agree to pay a high rate of interest.

[2] Of course, a paper currency regulated on the gold exchange standard system is not one coined at the arbitrary will of the Government.

the currency of the particular country with which we have to do, and is prevented by artificial restrictions from moving easily across the borders of that country, the elasticity will be small.   If it consists of something, which is widely used in foreign currencies or in the arts, the elasticity will be larger. If it consists of two or more substances freely coined, either under a bimetallic or under a symmetallic arrangement, the quantity available in these external uses will be larger than it would be under monometallism, and the elasticity of supply will, therefore, also be larger.

§ 6. Secondly, let us suppose that the supply of money and the supply of bank-money are always equal, and that the supply of money proper, available as reserve against bank-money, is rigidly fixed.   In this case the influences determining the elasticity of the supply of money, in the neighbourhood of the quantity normally supplied, are somewhat more complex.   Roughly speaking, the banks, in determining how much bank-money to provide on a given basis of money proper, balance the gain, which they would get by selling an extra unit of bank-money for commodities, against the addition, which such sale would make to the risk they run of proving unable to meet their notes and deposits on demand.   Consequently, when the price offered for bank-money in terms of commodities rises by, say, one per cent, the percentage by which the supply of bank-money is increased, and, therewith, the elasticity of the supply of bank-money, is larger or smaller, according as the addition to the risk involved in the supply of the marginal unit of bank-money grows slowly or rapidly, in response to a given percentage increase in the supply of bank-money. Now, we know generally that, other things being equal, so soon as the supply of bank-money exceeds the quantity of money proper, on which it is based, the risk carried by the marginal unit of bank-money is larger, the more numerous are the units of bank-money in circulation.   Furthermore, since the difference between small quantities cannot be large, and the difference between large quantities may be large, we have, perhaps, some ground for suspecting that the difference between the risk carried by successive units of bank-money, when much bank-money is supplied, will be greater than that between

the risks carried by successive units, when only a little is supplied. Whether this be so or not, we have clearly no ground for suspecting that the difference between the risks carried by successive units will be smaller in the former case. If it be granted, however, that the latter suspicion is without warrant, it follows that probably the rate of growth of the risks carried by the marginal unit of bank-money, which is brought about by a one per cent increase in the supply of bank-money, is greater, the larger is the quantity of bank-money in existence. Consequently, other things being equal, the elasticity of the supply of bank-money is likely to be smaller in the neighbourhood of large supplies of bank-money than in the neighbourhood of small supplies. This result enables us to establish two important propositions.

§ 7. The first of these is that, *other things being equal,* the supply of money is likely to be more elastic, in respect of all variations in demand, the smaller is the proportion, in which the bank-money issued in normal times exceeds the store of money proper upon which it is based. In this proposition the condition, *other things being equal,* is, indeed, essential. We must not infer from it that the supply of money will be more elastic in a country with a high proportion of bullion reserve than in one with a low proportion, if banking in the former country is conducted through a number of separate and disconnected institutions, while, in the latter, it is founded on a central bank, in which all reserves are concentrated. Neither must we make such an inference as between two countries, if the banks of the country possessing the low proportion of bullion reserve atone for their deficiency in this respect by a large holding of foreign bills of exchange,[1] payable in gold and approaching maturity, or by a large holding of first-class securities with an international market,

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[1] The special character of foreign, as distinguished from domestic, bills is recognised in the Swedish law, which allows the National Bank to issue notes beyond the authorised limit "to an amount equal to the funds of the bank held in foreign countries on current account with the banking and mercantile houses"; and also by the rule of the Austro-Hungarian Bank, which recognises foreign three-months' bills as cover for notes. In Germany, on the other hand, no distinction between foreign and domestic bills is made in the rule compelling the Reichsbank to hold that part of its reserve against notes, which does not consist of gold, in discounted bills.

or even by great undocumented power to borrow bullion from abroad.[1]   With these obvious qualifications, however, the proposition stated in the beginning of this section may be taken as established.   It follows that, if, under the influence of philanthropic motives, or under the persuasion of a State bounty, or as payment for the privilege of issuing against securities, say £10,000,000, out of a total of £30,000,000 worth of £1 notes,[2] the banking world would consent to maintain a larger proportionate reserve of bullion against its liabilities, the elasticity of the supply of money would be enlarged, and the variability of prices would, thereby, be diminished.   *Per contra*, it should be noticed that the American system, under which the Secretary of the Treasury has been accustomed to help banks in times of difficulty, by depositing with them funds normally held in the Treasury, in effect confers a bounty on the keeping of small proportionate reserves,[3] thus diminishing the elasticity of the supply of money and increasing the variability of prices.   The knowledge that the Government would suspend the Bank Act rather than allow the Bank of England to fail may, perhaps, act, to a minute extent, in the same sense in this country.

§ 8. The second important proposition, which the preceding analysis yields, is that, in any country accustomed in normal times to maintain a given proportion between its issues of bank-money and its basis of money proper, the elasticity of the supply of money is not the same in respect

[1] The United Kingdom is strong in this respect, for the reason that it is much against the interest of foreigners to allow a crisis to arise here.   When the Bank of France provided three millions to tide us over the Baring crisis, "Paris was interested in saving the situation ; let there be no mistake about that" (Goschen, *Essays and Addresses*, p. 109).   Further, Europe's complacency toward us is stimulated by the fact that "every one knows that gold, which goes to London, can be got back again" (Withers, *The Meaning of Money*, p. 290). None the less, Goschen suggests that our power is lessened by the fact that foreign countries, formerly on a bimetallic or paper basis, have now gold standards, and so, in crises, will be as eager for gold as we.   "It would seem that the changes in the currency laws of our neighbours have made watchful caution as to our gold reserve more imperative than ever." (*Essays and Addresses*, p. 55.)

[2] Lord Goschen's scheme to this effect, as originally framed—it was afterwards somewhat modified—was described by its author thus : "I would issue £20,000,000 against gold and £10,000,000 against Government stocks.   If the issue took place and were taken up, we should have 20 million more *central* gold —an immeasurably stronger reserve than 30 million sovereigns on which we could not place our hands" (*i.e.* in circulation).—*Essays and Addresses*, p. 122.

[3] Cf. Emery, "Some Lessons of the Panic," *Yale Review*, February 1908, p. 346.

of all quantities, but, other things being equal, is smaller when large quantities, than when small quantities, are being issued.   This much can be stated in a general way.   It should be added, more particularly, that, in some cases, the elasticity is made, after a point, to contract more sharply than it would naturally do by legal rules concerning the ratio of reserve to liabilities.   In the United Kingdom, that part of bank-money, which is in the form of Bank of England notes, must not exceed the gold held against it in the Issue Department by more than a defined amount.   In the United States, not only the note issue, but also that part of bank-money which consists of deposit loans, is limited by law.   In reserve cities liabilities must not stand to reserve in a ratio greater than 100 to 25, and, in non-reserve cities, they must not stand in a ratio greater than 100 to 15.   The effect of this class of rule is to make the elasticity of the supply of money suddenly become zero (on the assumption that the supply of money proper is fixed) after a certain critical proportion between reserve and liabilities has been reached.   The artificial contraction of elasticity is less strong, though there is still some artificial contraction, when, in place of an absolute limit to the ratio of reserve to liabilities, the law provides some form of elastic limit.   So far as that part of bank-money, which is made up of note issue, is concerned, the law governing the Reichsbank, to the effect that all notes issued beyond a defined minimum shall be taxed, has long been the classical example of an elastic system.   The American Currency Act of 1908 is framed on similar lines.[1]   Furthermore, the contraction of elasticity, even under a perfectly rigid system, may at any time be stopped by temporary abrogations of the banking law, by the suspension, for example, of the Bank Charter Act in England or Belgium,[2] or by the suspension of cash payments in America.[3]

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[1] For an account of this Act cf. *Quarterly Journal of Economics*, 1908, pp. 666 *et seq.*

[2] In Belgium the finance minister is allowed by law to set aside at his discretion the rule requiring the National Bank to keep specie in hand " equal to one-third of the combined amount of its bank-note circulation and other obligations at sight" (Palgrave, *Bank-Rate and the Money Market*, p. 184).

[3] In the panic of 1907 formal or informal permission for such suspension was widely accorded by the authorities.   In several of the Western States the

§ 9. So far, we have examined the influences determining the elasticity of the supply of money upon two distinct simplifying assumptions, first, that the supply of money is always equal to the supply of money proper, and, secondly, that the supply of money is always equal to the supply of bank-money, the reserve of money proper, on which the bank-money is based, being fixed. The analysis of these two cases taken together embraces the greater part of what there is to say concerning the actual problem as presented in the real world. The fact, however, that money proper both circulates and acts as a basis of bank-money introduces one further complication, which needs to be discussed. In modern countries wholesale purchases of commodities and retail purchases of commodities by the richer classes are, for the most part, effected with bank - money; while nearly all purchases of manual labour and the bulk of the retail purchases of the poorer classes are effected by money proper. It is evident that, if the value of money rises and falls relatively to one of these two classes of things, it will, in general, rise or fall, in like manner, relatively to the other. Hence, a rise in the demand for money, if it calls out, in the first instance, an increase in the supply of bank-money, produces a secondary effect in causing money proper to be withdrawn from the reserve. For, more money proper is required in the pockets of the community against the enhanced prices of retail commodities, and (in times of booming expectations) against the wages-bill of an increased labour force. The reduction of the reserve, however, tends, in turn, to check the quantity of bank-money, which the banks are willing to provide. Thus, the occurrence of the secondary effect just described renders the supply of money less elastic than it would otherwise be. It follows that, *other things being equal,* the elasticity of the supply of money will be larger, and, therefore, the variability of prices will be

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device of declaring a series of legal bank holidays was adopted. In several other States the banks were informed that they would not be held insolvent, if they paid their depositors a limited amount of cash and settled the balance by certified cheques or drafts on correspondents. Mr. Andrew finds that, " roughly speaking, in two-thirds of the cities of more than 25,000 inhabitants the banks suspended cash payments to a greater or less degree " (*Quarterly Journal of Economics,* 1908, p. 502).

smaller, the greater is the proportion of the community's transactions that are normally effected by bank-money, and the less the proportion normally effected by money proper. It is to be expected that, in sparsely populated districts, where "trips to a bank are too expensive in time and effort to be convenient," the proportion of money proper employed will be relatively large.[1] Thus, "it is now a well-established custom throughout America and Canada to pay the farmer in cash for his grain. The practice is carried so far that many mills in the west now buy the farmers' wheat outright, and sell him his flour, instead of doing an 'exchange' business. . . . Every year, therefore (in June, July, and August), the financial interests of the country, and particularly those of the east, are somewhat strained by reason of the withdrawal of currency from other channels of trade."[2] If the Western farmers were paid in bank-money, instead of in cash, it is probable that the elasticity of the supply of money would be larger, and, therefore, that the variability of general prices in America would be smaller than it is.

§ 10. So far we have studied two out of the three determinants of the variability of general prices, that were distinguished in § 2, namely, the variability of the demand for money and the elasticity of the supply of money. We now pass to the third determinant, the variability of the supply of money. A certain amount of variability in this supply arises out of changes in the proportion which bankers choose to maintain between reserve and liabilities. Changes of this order, so far as they are *derived* from changes in the demand for money, have already been considered in reference to those changes. Independent changes, which alone are relevant here, are of small significance. The most important of them occurs when, through the collection of taxes, the balances of the cheque-paying banks with the Bank of England are transformed into balances of the Government. Since the bank-money issued by the cheque-paying banks varies with their balances, this change causes a contraction of their issues. The aggregate position of the Bank of England being unchanged, no compensating

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[1] Cf. Fisher, *The Purchasing Power of Money*, p. 51.

[2] R. E. Smith, *Wheat Fields and Markets of the World*, p. 277.

expansion is caused in its issues. Consequently, the supply of money varies, though the quantity of money proper is unaltered.[1] For the most part, however, such variations as occur in the supply of money arise out of variations in the supply of money proper. Furthermore, they are, in general, proportioned to these variations. For, when the quantity of money proper available for bank reserves and circulation together is halved, both the quantity of money proper and the quantity of bank-money that is called into circulation by a given demand price will also be halved. Hence the (percentage) variability of the supply of money is, in general, equivalent to the (percentage) variability of the supply of money proper.

§ 11. The variability of this supply depends for its magnitude on the nature of the substance or substances from which the country under review chooses to have its money made. First, if the substance chosen is paper, in the form of inconvertible notes made valuable merely by the *imprimatur* of the State, it is obvious that its quantity can be altered by a stroke of the pen, and that great fluctuations in the supply can, in this way, be brought about. The danger that such fluctuations will be, in fact, induced is the greater, in that the issue of new inconvertible notes in payment of their employés affords a means, by which needy governments can exact a forced loan, without interest, from their subjects. Secondly, if the substance chosen is something that is coined freely, and the supply of which as money, therefore, depends upon general causes, and not upon any arbitrary decision, the variability of supply at a given price will, clearly, be smaller, the larger is the permanent stock, as compared with the annual output, of this substance, or, what comes to the same thing, the more durable is the said substance. Thirdly, if the money consists, not of one substance, but of several " independent " substances, whether combined together in the currency at a fixed ratio, or combined in individual coins in a fixed proportion, it is *probable* that the supply of money at an assigned price will be less variable, the more

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[1] Cf. Withers, *The Meaning of Money*, pp. 250-2, for a discussion of this matter from a somewhat different point of view. The collection of taxes in America, where the Treasury does not, in general, bank its incomings, has a still more markedly disturbing effect.

numerous are the substances of which it is composed.[1]   Finally,
if the substance or substances used as money in one country
have also other uses, whether in that country or in others, it
is obvious that variations in the demand in those uses
imply variations in the supply for monetary purposes in the
country under review.   The most important cases of this
type of variation occur when the same substance is used as
money in several countries.   Specially strong examples are
to be found in respect of the United Kingdom, for the
reason that, unlike the Bank of France and the Reichsbank,
the Bank of England puts no impediments in the way of
furnishing gold for export.   A direct consequence is that, when
a foreigner has a claim on gold in London and wishes to
realize it, he is not prevented from realizing it in the form
of gold.   An indirect consequence is that many foreign traders,
who expect to want gold to finance their international trans-
actions, regularly purchase credits on London, while some
Continental institutions, which expect to want gold for their
reserves, " always keep a portfolio stocked with bills on
London, constantly replaced as they mature, so that, in time of
need, they may take gold from London to replenish the basis
of their note issues." [2]   A further indirect consequence is that
trade between England and the rest of the world is, in general,
financed by bills drawn on London, and not on the places to
which English traders sell.   In short, London is the regular
centre to which, along routes carefully prepared beforehand,
foreigners, who need gold, are accustomed to present their
claims.   English acceptors and discounters are, of course, paid
for the services which they thus render—some estimates put
these services at eighteen millions annually—but, as a penalty
for rendering them, we, as a rule, experience a specially large
variability in the supply of money.   This is, perhaps, the chief
reason for the fact, noted by Sir Inglis Palgrave,[3] that the
official discount rate in this country has fluctuated about
the common mean, both more often and more widely, than

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[1] Cf. Professor Edgeworth's elaborate analysis, *Economic Journal*, 1895,
pp. 448 *et seq.*, and Dr. Marshall's discussion of Symmetalism before the Gold
and Silver Commission ([Cd. 5512-1], Q. 9837).

[2] Withers, *The Meaning of Money*, pp. 171-2.

[3] *Bank-rate and the Money-Market*, pp. 150-1.

the corresponding rates in France, Germany, Belgium and Holland.

§ 12. The discussion of the preceding section, like that dealing with the variability of the demand schedule for money in earlier sections, has taken no account of any causal relations that may subsist between variations of the supply schedule and the demand schedule respectively. As was indicated in § 2, however, our analysis of the influences determining the variability of general prices will not be complete till these relations have been examined. For, as was there indicated, it is obvious that, if upward movements in the demand (or supply) schedule tend to evoke upward movements in the supply (or demand) schedule, prices are made more variable, whereas, if they tend to evoke downward movements of the supply (or demand) schedule, prices are made less variable than they would be, if the movements that take place in the two schedules occurred independently. In order, therefore, to complete our discussion, it is necessary to inquire what, if any, connection between the two sets of movements exists.

§ 13. Reflection along these lines leads immediately to one very important result. When a movement takes place on the part of either schedule which, it is known, will only last for a short time, there is always a tendency for the other schedule to vary in such a way as to reduce the consequent movement of general prices. Thus, the enhanced demand for money, which occurs periodically to meet the needs of holiday makers, of tax payment and so on, since it is known that the money drawn out of the banks will shortly return, finds bankers willing to provide more bank-money, on a given basis of money proper, than they would be willing to provide in response to equal expansions of demand not known to be temporary. In other words, *this sort of* expansion of demand causes a lowering of the supply schedule of money. Its tendency to do this may be impeded, just as the elasticity of supply may be contracted, by rules limiting the ratio of reserve to liabilities; though, if these rules follow the example of the German law of 1907, which allows to the Reichsbank, at the end of the months of March, June, September, and December, an issue of 200,000,000

marks of tax-free notes additional to the normal tax-free issue,[1] the impediment due to them is not likely to be serious. Furthermore, the tendency towards compensatory movement will be much less marked under a many-reserve system of banking than under a one-reserve system, because, in the former case, the knowledge that money will return shortly to the banking system does not carry the knowledge that it will return to the particular bank that let it out.   This point is especially important, in respect of temporary expansions of demand due to monetary panic; as is shown by the fact that, when such temporary expansions are carried far, banking systems based on many reserves are often impelled to pool their many reserves into one.[2]   In any event, however, there is likely to be *some* tendency towards a compensatory lowering of the supply schedule.   In like manner, reductions in the supply of money, which are known to be temporary, such as those resulting from the periodic absorption of coin out of England by the Scotch and Irish banks, are, in part, met by the substitution of a demand for promises to pay money, say, three months hence, for the demand for money itself, the reason, of course, being that money is expected to cost less in commodities by the end of the three months.   Other illustrations could easily be added.   The general result is that, when a variation occurring in either schedule is known to be

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[1] *Economic Journal*, 1910, p. 214.

[2] It is not necessary for my purpose to enter into a discussion as to the nature of a monetary panic.   It should, however, be observed that a rise in the demand for money engendered by such a panic is usually something more than a mere rise in the demand for money.   It is also a rise in the demand for money proper, as distinguished from some form of bank-money, in which confidence is shaken.   As Professor Fisher observes: "The paradox of a panic is well expressed by the case of a man, who inquired of his bank whether it had cash available for paying the amount of his deposit, saying, 'If you can pay me, I don't want it, but if you can't, I do!'" (*The Purchasing Power of Money*, p. 44).   But, since many units of bank-money are normally founded upon one unit of money proper, a given expansion in the quantity of money demanded, accompanied by an expansion in the proportion of this money which the demanders wish to take over in the form of money proper, is equivalent to a much larger expansion in the quantity of money demanded, not thus accompanied.   Hence, the effect of a monetary panic in lowering general prices can be greatly mitigated by the adoption of a policy calculated to maintain public confidence in the redeemability of bank-money.   The issue of a Treasury letter promising the Bank of England indemnity for the issue of notes in excess of the number permitted by the Act of 1844, is, in effect, one form of such a policy.

temporary, this knowledge evokes reactions in the other schedule which, *other things being equal*, substantially restrict the variability of general prices.

§ 14. The fact that, in the special case of those fluctuations of the demand schedule for money, which are known to be temporary, the variability of prices is checked by compensatory movements of the supply schedule, immediately suggests that, in all cases, this variability might be similarly checked, or even eliminated altogether, by the creation of compensatory machinery. For, there is no reason why the control of variations in the supply of money should be left to " blind forces," and no reason why intelligent forces should not deliberately aim at compensation. A plan with this object, based on a suggestion of Ricardo's, has recently been elaborated in detail by Dr. Irving Fisher in the concluding chapter of his work on the *Purchasing Power of Money*. It consists essentially in the establishment of a Board of officials, whose duty it should be to buy and sell currency in terms of bullion, in such wise as to maintain " a par, not with a fixed weight of gold, but with such a weight of gold as should have a fixed purchasing power." [1] The currency thus bought and sold would, on Dr. Fisher's plan, consist of token gold coins ; but there is, of course, no theoretical—though there may be a practical—reason why it should not take the cheaper form of paper. The arrangement suggested would ensure that a unit of money should always have a fixed purchasing power, as interpreted by the official index number of the country making use of it. Any other country, by basing its currency on the currency of that country, on the principle of the gold exchange standard, could also obtain a money, whose purchasing power was fixed in respect of the same index number. No doubt, this kind of " derived " fixity would not be ideal, because stability in terms of the " things in general " consumed in one country is not likely to mean stability in terms of the " things in general " consumed in another. Still, it is probable that " a unit of fixed purchasing power in England would give a more nearly uniform purchasing power in any other civilised country than would an ounce of gold or

[1] *The Purchasing Power of Money*, p. 342.

an ounce of silver."[1]   In order to carry out Dr. Fisher's plan, the Board of Control in the country operating it would, of course, need to retain in store large quantities of gold and of currency.   The real annual cost of the scheme *to the country financing the Board* would be measured by the interest, which it had to sacrifice through the retention of such part of these stores as was not formerly locked up in their own currency and bank-reserves.   It would be exactly analogous to the annual cost to the people of India of the exchange funds of gold and rupees, which they hold in London and Calcutta, for the purpose of keeping the relative value of gold and rupees constant.   The real annual cost of the scheme *to the world* would be somewhat less than its net cost to the authorities behind the Official Board, because, in so far as the gold fund needed was taken from the monetary machines of other countries, its withdrawal would not diminish the efficiency of those machines.   This consideration, together with the fact that the adoption of the scheme in one country would do much towards steadying prices in other countries also, suggests that an Official Board, if erected at all, were best established and financed on an international basis.   It cannot be rigidly proved that, even in that event, the indirect gain accruing from steadier prices would outweigh the direct costs, because there are no means of estimating the magnitude of either of these quantities.   I am inclined, however, to believe that a very considerable net benefit would probably result.

[1] Marshall, *Contemporary Review*, 1887, p. 371.

CHAPTER V

CAUSES THAT BRING ABOUT VARIATIONS IN THE REAL INCOME OF THE WORKING CLASSES

§ 1. WE may now revert to the main argument. The conclusion reached in Chapter III. leads naturally to a study of the general causes, by which the variability of the real income of the working classes is determined. It is convenient to prepare the ground for a direct attack on this problem by analysing, in the first instance, the way in which the effect of these causes is likely to be modified by the special character of working-class consumption. For, of course, in real life, working men are accustomed neither to purchase the same things, nor to purchase them in the same proportions as members of the richer classes. If there was no reason to suppose that the commodities, which play the chief part in their consumption, are either more or less variable in supply than commodities in general, this circumstance would not be relevant to the present discussion. As a matter of fact, however, observation brings out two important points. First, the proportionate part played by food products is much larger in the consumption of workpeople than in that of others. Secondly, raw materials also play a relatively large part in their consumption, since rich people desire goods of high quality, in whose construction human action, whether by way of manufacture or by way of the organisation of retail distribution, and not raw material, is of chief importance. Food and raw material are, however, in the main, grown upon the surface of the ground, and their output is, therefore, subject to the varying influence

of climatic conditions. Consequently, to the causes which determine the variability of the real income of the working classes in terms of commodities in general, it is necessary to add a further cause, by which this variability is somewhat enhanced, namely, the fact that the real income of the working classes is taken over in the form, not of commodities in general, but of certain specially variable commodities. This means that, when the variability of their income, in terms of commodities in general, has been determined, its variability in terms of the things which the working classes actually purchase—in the only sense, that is to say, which has interest for them—is likely to be somewhat larger than this.

§ 2. So much being understood, I shall, henceforth, ignore the special character of working-class consumption, and shall concentrate attention upon the variability of their real income in terms of commodities in general. The adoption of this method enables us to make use of a conception, which, if somewhat abstract, is, nevertheless, illuminating. We may conceive the national dividend as consisting of a continuous stream of commodities, which flows into being at a certain rate every week, which is under the legal control of entrepreneurs and interest-receivers, and which is immediately passed on by them into a reservoir formed by warehouses and shops. Let this stream be known as D. There is also taking place a continuous outflow of so much per week, on the one hand, for the consumption of the legal owners of the commodities, on the other hand, for the consumption of workpeople, to whom these legal owners hand over claims upon commodities in return for work designed to yield future goods. Let the former of these streams be known as A, the latter as B. It is then plain that B is roughly representative of the real income of the working classes. In a stationary state all three streams are constant in volume. The inflowing stream D is equal to $(A + B)$, the sum of the two outflowing streams; and there remains permanently in the shops a *fund*—to be known as C—the component parts of which are always changing, but the aggregate magnitude of which remains constant. In a state which is not stationary, it is possible at any time for a change in the volume of B to be initiated, either by a

spontaneous change in the volume of the inflowing stream D, or by a spontaneous change in the comparative attraction which persons in control of resources feel for the three uses of immediate consumption, storage and investment in the purchase of labour. There are no other ways in which a change in the volume of B can be initiated.

§ 3. The process, by which a change in the volume of the inflowing stream D reacts upon the volume of B, can be easily explained. It is evident that the immediate effect of such a change must be to bring about an equivalent change in the fund of commodities C, which are stored in warehouses and shops. But, to hold commodities in store and to pay them out to workpeople, in return for their services in making further commodities, are alternative or rival uses. When, therefore, the inflowing stream is increased or diminished in volume, it is not likely that the whole of the addition or contraction will be absorbed into the storage use. Rather, we may expect that, while one part of it will be absorbed in this way, another part will go to swell the outflowing stream B, which is paid over in the purchase of labour. Furthermore, two general propositions concerning the magnitude of the latter part may be laid down.[1] The first is that, the larger is the fund of commodities, relatively to the annual turnover, which is normally held in warehouses and shops, the larger is the part of any

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[1] Thus, in a normal year, it is evidently a condition of equilibrium that the marginal utility yielded to entrepreneurs by the A units consumed by them, the B units devoted to wages, and the C units held in store are all equal. The yield of utility from different amounts devoted to each use can obviously be represented by curves. Let the elasticities of these curves—that is to say, the quotient obtained by dividing the proportionate change in utility, which occurs in response to a given small change in resources devoted to any use, by the proportionate change in consumption—be respectively e_a, e_b, e_c. Then, if in any year, the inflowing stream, instead of being equal to D, becomes equal to $(D \pm \Delta D)$, so that the proportionate change in dividend is measured by $\dfrac{\Delta D}{D}$, it is easily proved that the proportionate change in the stream flowing over in purchase of labour (the supply schedule of labour being given), namely $\dfrac{\Delta B}{B}$, is approximately equal to

$$\frac{e_b B}{e_a A + e_b B + e_c C} \cdot \frac{\Delta D}{D}$$

It is clear that this magnitude is necessarily less than $\dfrac{\Delta D}{D}$, and that it diverges from it more widely the larger are C and A relatively to B, and the larger are e_c and e_a relatively to e_b.

change in the inflowing stream that is likely to be absorbed in
the storage use, and, therefore, the smaller is the part that is
likely to reappear as a modification in the volume of the out-
flowing stream B.　For a discussion of the influences by which
the normal size of the storage fund is affected, the reader is
referred back to § 5 of the sixth chapter of Part II.　The
second and more important proposition is that, other things
being equal, the change induced in the volume of B is larger,
the larger is the initiating change in the volume of D.
The process, by which a change in the relative attraction
exercised by the three uses of immediate consumption, storage,
and investment reacts upon the volume of B, is even easier
to understand.　The aggregate of commodities to be distri-
buted in any year consists of the stream that flows into being in
that year, together with the store left over from the preceding
year.　It is evident, without formal argument, that, other things
being equal, when the use of investment in the purchase of
labour comes to be relatively more attractive than before, the
proportion of resources turned into the stream B is increased,
and is increased more largely the greater is the expansion
in the relative attractiveness of the investment use.

§ 4. Up to this point, our discussion has been conducted
on the tacit assumption that all transactions are made in
kind.　The inflowing stream of commodities in general has
been supposed, as it comes into being, to be passed by those
legally controlling it into warehouses and shops, and after-
wards to be allowed, at their discretion, to leave this reservoir.
All the operations involved have been regarded as direct
operations, consummated without resort to any "medium of
exchange."　In real life, of course, things are not thus
simple.　What happens, broadly, is this.　The entrepreneurs,
farmers and so forth, by whom the inflowing stream of goods
is legally owned, sell the goods for money, as they come into
being, to wholesale houses and shopkeepers.　The proceeds of
this sale they employ, partly as personal income for their
own use, partly in payment of interest to those persons from
whom they hold loans, and partly in the purchase of further
labour.　The money thus distributed is then used by all
parties as a means of purchasing commodities from shop-

keepers; and, in this way, the final distribution of the inflowing dividend is annually effected. In a perfectly stationary state, it is obvious that the round-about character of this procedure does not modify in any respect the results ultimately achieved. The quantity of money passing from shopkeepers to entrepreneurs, as likewise the quantity of goods passing in exchange from entrepreneurs to shopkeepers, is the same every year; the distribution of the money by entrepreneurs is the same; and so also is the quantity of purchases effected by it when distributed. The quantity of commodities annually consumed by each several class and the quantity permanently held in store is not only identical with itself in every year, but is also, at all times, identical with what it would have been had the process involved been direct. Furthermore, in a state of affairs which is not stationary, but in which the money system is so arranged that prices are invariable, it is still obvious that the existence of a round-about process must leave the substance of what happens unchanged. For, though the motives at work operate upon goods through the medium of money instead of directly, yet, since a unit of money always controls the same quantity of goods, the medium is absolutely rigid, and always transfers power exactly as it is received. Finally, in a state of affairs, which, though neither perfectly stationary, nor yet containing a money system so arranged that prices are invariable, is such that all changes in general prices are perfectly foreseen, the intervention of the monetary medium is still without effect; for, full allowance will be made for future price changes in all industrial contracts, including those which deal with wages.[1] In actual fact, however, under the conditions pre-

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[1] It should be observed, to obviate misapprehension, that the above statement is strictly accurate, only if we assume that both parties to all contracts purchase the different commodities and services, of which the dividend is made up, in equal proportions. If they do not do this, a knowledge of the way in which the price of "commodities in general" is going to move will not carry with it a knowledge of the way in which the price of the particular collection of commodities interesting to themselves is going to move. This fact, however, lies beside our main argument. For, whatever imperfections of adjustment may result from the formulation of contracts in terms of "commodities in general," rather than in terms of an ideal—strictly inconceivable—standard, additional

vailing in all modern countries, general prices, besides being variable, are also imperfectly foreseen. In these circumstances, there is clear *prima facie* ground for suspecting that the intervention of the monetary system may modify the effect of forces, whose application is mediated by it. Before, therefore, this chapter is concluded, it is necessary to inquire whether and how far this suspicion is warranted.

§ 5. Under all current monetary systems, when, other things being equal, the inflowing stream of commodities undergoes a spontaneous increase, since commodities have become more plentiful relatively to money, general prices fall; and, when the inflowing stream of commodities undergoes a spontaneous decrease, general prices rise. *Per contra*, when, other things being equal, the comparative attractiveness of the investment use increases, since it involves an outflow of money from the banks, to be expended on wages and material, general prices rise, and, when the comparative attractiveness of the investment use decreases, general prices, for a like reason, fall.[1] But, wage-rates, except when a sliding-scale or some well-organised and plastic system of conciliation exists, cannot

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imperfections are practically certain to result, if the standard actually employed is unstable relatively to commodities in general ; and these additional imperfections will be larger or smaller, according as the variability of the standard relatively to "commodities in general " is larger or smaller.

[1] It is important to observe that a rise of prices does not come about in consequence of *all* kinds of increase in borrowing from the bank, but only in consequence of an increase for the purpose of expenditure on materials and wages. A collapse of business confidence, equally with an expansion, may involve an increase of borrowing. Business men, realising that debts due to them may fail and debts due from them may be claimed, urgently strive to obtain command over the one thing, to which the law accords full power to discharge obligations. To this end, they offer, at greatly reduced rates, all other commodities, and, in an even more marked manner, securities. The rate of discount rises greatly, but general prices, instead of rising, fall. Thus, Mr. Kemmerer, following the general process of reasoning developed by Professor Fisher, rightly observes : " A large demand for call money sometimes is a sign of low confidence and represents liquidation, and sometimes is a sign of high confidence and represents good opportunities for new investment. A small supply of call money, on the other hand, sometimes is a sign of low confidence, and represents a demand for increased bank reserves, or a scarcity of money for current business ; or it may be a sign of high business confidence and good opportunities for investments either in the call market itself or in the time market. For these reasons the same rate for call discount is often accompanied by diametrically opposite conditions of business confidence " (*Money and Prices*, p. 124).

be varied until much friction has been overcome.[1]   Conse-
quently, an increase in the inflowing stream and a decrease in
the attractiveness of the investment use are both accompanied
by what is, in effect, a raising of the supply schedule of
labour in terms of commodities ; and a decrease in the inflowing
stream and an increase in the attractiveness of the invest-
ment use are both, in like manner, accompanied by what is, in
effect, a lowering of the supply schedule of labour.   Since,
however, the demand for labour is, in general, highly elastic,
a raising of the supply schedule involves a diminution, and a
lowering of the supply schedule, an increase in the real
earnings of labour.   It follows that, in respect of variations
in the inflowing stream, the intervention of a normal monetary
system sets in motion a tendency hostile to the effect on the
real earnings of labour, which, apart from the intervention,
would have come about ; while, in respect of variations in
the comparative attractiveness of the investment use, it
sets in motion a tendency calculated to emphasise that effect.
If this statement exhausted our knowledge, we should need to
admit that, in respect of variations of the inflowing stream, the
intervention of a monetary medium might even reverse the
direction of the force acting through it, in such wise as to
make the real earnings of labour fall when, under a regime
of barter, they would have risen, and *vice versa*.   A little
reflection, however, makes it plain that this possibility is not
one that need be seriously taken into account.   For, let us
suppose that the inflowing stream expands.   It is clear that
the real wage-rate, which workpeople ask for the nth unit of
labour, will not rise more than in proportion to the fall of

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[1] Of course, the amount of friction involved varies in different countries, in
accordance with the strength and policy of the workpeople's organisations.
Thus : "Trade union standard rates of wages do not prevail in Germany to the
same extent as in Great Britain.   In consequence, workpeople have greater
liberty in accepting work at wages lower than those at which they have pre-
viously been employed, especially in bad times.   A more speedy return to
employment of some kind, and a consequent reduction in the percentage of
trade-union members unemployed, results from this. . . . Herr Calwer goes as
far as to say that, 'in Germany, up to the present time, it is a fact that, in
the vast majority of cases, men are only allowed to claim benefit when they
find it impossible to obtain employment, even on rather unfavourable, or on
altogether unfavourable conditions.'" (*Report to the Board of Trade on the Cost
of Living in German Towns* [Cd. 4032], p. 521.)

prices, while the real wage-rate, which employers offer, is likely to rise at least as much as this. It is, therefore, very unlikely that the quantity of labour employed will be diminished; and, unless this quantity is diminished very considerably, the aggregate real earnings of labour *must* be increased. When we suppose that the inflowing stream contracts, exactly analogous reasoning is applicable. Hence, the change in general prices, which a variation in the inflowing stream brings about, cannot reverse the primary effect on the real earnings of labour initiated by that variation. We conclude, therefore, that the intervention of a normal monetary system leaves the direction of the effect produced on the aggregate real earnings of the working classes, alike by a spontaneous variation in the inflowing stream of dividend, and by a spontaneous variation in the comparative attractiveness of the investment use, unchanged; but that this intervention, in the former case diminishes, and, in the latter increases, the *quantity* of the above effect.[1]

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[1] The foregoing account may suggest to some readers a difficulty as to the process, by which a change in the comparative attractiveness of the investment use could operate to alter the real earnings of the working classes under a monetary system so arranged as to keep general prices constant. For, though, with a rise or fall in the comparative attractiveness of this use, more or less money would be drawn out from the banks by business men, and paid over in wages, it seems, *prima facie*, impossible that the resulting change in the money income of wage-earners should lead to an alteration in the quantity of goods sold to them by the shops, without, at the same time, altering the prices charged for these goods. The solution of this difficulty is as follows. In order to balance the alteration in the quantity of money drawn out from the banks by business men, the governmental authority, entrusted with the task of keeping general prices constant, would need to alter the terms on which it was prepared to sell or buy money for bullion. By this device it would indirectly cause people in general, and shop-keepers among others, to alter the quantity of money which they hold at command. The final result, therefore, of an increase in the comparative attractiveness of the investment use would be, not only a larger holding of money in the hands of wage-earners, but also a smaller holding in the hands of shop-keepers; and the final result of a diminution in the said comparative attractiveness would be the reverse of this. But, a fall in the holding of money in the hands of shop-keepers, since it will diminish, from their point of view, the value of commodities in terms of money, will make them willing to sell more commodities than before at the old price; and a rise in their holding of money will have the opposite effect. Thus, the difficulty we have been contemplating is dissolved.

CHAPTER VI

THE VARIABILITY OF THE BOUNTY OF NATURE AND OF
FOREIGN DEMANDS

§ 1. In the preceding chapter an attempt was made to trace the way in which spontaneous variations, initiated, on the one hand, in the inflowing stream of commodities known as the national dividend, and, on the other hand, in the comparative attractiveness of immediate consumption, storage and investment, react to produce variations in the real income of the working classes. In both cases it was obvious that the greater these spontaneous variations are, or, in other words, the greater is the variability which they represent, the larger the consequent variability in the real earnings of the working classes is likely to be. It, therefore, becomes necessary to investigate the causes, by which the variability involved in these two forms of spontaneous variation is determined. In the present chapter that task will be undertaken as regards the inflowing stream of commodities.

§ 2. Spontaneous variations in the volume of this stream arise, from the standpoint of the world at large, out of variations in the bounty of nature, and, from the standpoint of a particular country, out of these variations and also out of variations in the desire of foreigners to purchase the goods, which that country produces for export.[1] As a prelude to the examination of these two types of variation separately, we may recall a general proposition, of which use has already been made more than once in this volume,[2] and which is

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[1] Specific inventions are like *enduring* booms in Nature's bounty, and are not, therefore, of first-rate importance for the study of *fluctuations*.

[2] Cf. Part II. Chapter VI. § 6.

applicable to both of them. Variability is always likely to
be smaller when people's eggs are in many, than when they
are in few, baskets. In so far as different baskets are affected
by independent causes, this conclusion is susceptible of direct
mathematical demonstration, and the measure of the probable
effect on variability of the employment of any given number
of baskets can be determined. When the baskets are so
related, that injury to some directly makes probable benefit
to others, the probable effect of a multiplicity of baskets in
reducing variability is larger than this measure indicates. The
above condition is sometimes believed to hold good in regard
to the production of cereals. It has been said that " the crop
yield depends largely on the moisture of the atmosphere," and
that " it is physically impossible that there should be at once
in all Europe, in Asia, and in all America excess of dampness
or excess of dryness." Furthermore, as has been well pointed
out by the *Economist*: " Sowing is taking place in every month
of the year, and a shortage of European harvests is apparent
early enough to influence the acreage put under wheat in the
southern hemisphere, in Australia and Argentina. The effect
of this system on prices has been that, whereas, prior to 1898,
they showed big fluctuations, since that date they have been
remarkably steady, though with a slight upward tendency."[1]
On the other hand, when the baskets are so related, that
injury to some implies a probability of injury to others, the
probable effect of multiplicity is less than that indicated by
our mathematical measure. An obvious example is provided
by the occurrence of a depression in any source of demand ;
for, this is likely to be due to the same cause as, and, therefore,
to be associated with, a depression in many other sources at
the same time. Even, however, in this case, so long as the
fortunes of the different baskets are *in any degree* independent,
multiplicity makes, in some measure, for stability. Hence, our
broad proposition breaks up into the two following principal
forms. First, other things being equal, the more numerous
are the sources from which a country obtains any commodity,
provided that those sources are, in some measure, independent,
the less variable will be the flow of that commodity into its

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[1] *Economist*, April 17, 1909, p. 811.

possession.   Secondly, other things being equal, the more numerous are the foreign sources of demand to which a country sells its exports, provided that these sources are, in some measure, independent, the less variable will be the flow to it of those commodities that it obtains by importation. Partially independent foreign sources of demand are, it should be added, more numerous, the more widespread are a country's exports, both in the sense that they reach many different countries, and in the sense that they embrace many different sorts of goods.

§ 3. Passing more particularly to the variability in the bounty of nature, we may lay it down that this variability is likely, *ceteris paribus*, to be smaller, the smaller is the extent to which the things we sell and buy are of a kind largely affected by natural forces outside human control. Among things so affected the most important, as already indicated, are those crops, which are grown on the surface of the earth, and are, therefore, influenced by fluctuations of climatic conditions.   Some crops naturally are more variable than others.   For example, " few, if any, agricultural crops fluctuate so greatly in yield from year to year as hops. In the year 1878, when the largest number of acres was under hops, viz. 71,789, the home produce is estimated not to have exceeded 700,000 cwt., and in 1905, when the acreage had been reduced to 48,962, the home produce fell little short of 700,000 cwt." [1]   Nearly all crops, however, are variable in a very high degree.   This point is brought out in Mr. H. S. Jevons' paper on " Trade Fluctuations and Solar Activity " in the *Contemporary Review* of August 1909.   " In reality the loss of capital caused in any one year by natural calamities, and even by great wars, is small in comparison with the fluctuations of nature's bounty.   The harvests of grain in 1892 were less than those in 1891 by approximately one thousand million bushels.   If we reckon the average value of such produce at 2s. a bushel, that means that the world was poorer by £100,000,000 worth of goods in

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[1] Committee on Hops, p. v.   Of course, as the Committee point out, allowance must be made for the introduction of more intensive methods of production. This consideration makes the illustration offered above less apposite than it appears to be at first sight.

1892 than it was in 1891. The grain crops of 1902 exceeded those of 1901 by 2500 million bushels, or £250,000,000 worth. These figures would, undoubtedly, be considerably increased, if we took into account cotton, wool, rice, beef, mutton, rubber, dairy produce, tea, coffee, peas, beans, potatoes, fruit, and a multitude of other agricultural products. There is, of course, much counterbalancing, the crop of a particular product being good in some countries whilst it is poor in others; and, in some years, the whole world's crops of certain products may be good, whilst the harvests of the majority of products, perhaps, are bad. I have, however, examined statistics of crops other than grain sufficiently to be convinced that, taken as a whole, they tend to vary nearly in the same way; so that it is quite possible that the figures I have given as to gain and loss from year to year might even be doubled, if taken to refer to all the agricultural and pastoral produce of the world—perhaps, indeed, more than doubled, ·if we could take account of the vast rice and bean harvests of China, upon which the trade to the Far East, and much of the prosperity of Lancashire, so intimately depend." [1] Even in the case of crops, however, the importance of natural forces outside human control, in bringing about variability, is itself, in some degree, subject to human control. In India, for example, the development of irrigation works has done much to mitigate the effects of the vagaries of the seasons in rendering the crops variable.[2] Looking at the matter more generally, we may say that, as wealth increases, people are able to afford more expenditure to buy off irregularity and uncertainty, and so tend to introduce machines to undertake tasks that were formerly left to nature. This point was admirably brought out long ago by Jevons: "The tendency of mechanical improvement is to render work independent of the weather and the seasons. The windmill stands still in calm weather, and the miller wastes his time. The steam-mill can work day and night throughout the year if needed. In former days, the traveller to Ireland had to wait for weeks at Chester or Parkgate on

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[1] *Contemporary Review*, August 1909, p. 185.
[2] Cf. Morison, *The Industrial Organisation of an Indian Province*, pp. 156-61.

the Dee; now, he can cross the Irish Sea several times a day in four or six hours. The voyage to Australia, which I made nearly thirty years ago, at the mercy of the winds and waves for ninety days, is now performed by rapid steam-vessels in forty days or a little less."[1]

§ 4. We pass next to the variability in the desire of foreigners to purchase our exports. The magnitude of this variability depends, partly upon the proportionate extent to which these exports consist of commodities of variable individual demand, and partly upon the number of different places to which they are sent, and the number of different things of which they are made up. For a general discussion of these matters the reader is referred back to Chapter VI. of Part II. It may be added that the variability of the desire of foreigners for our exports depends, not only on the variability of their desire for the things which we export, but also upon the variability of the supply of those things offered from elsewhere. This consideration suggests that the variability, in which we are interested, is likely to be smaller, if we constitute the predominant source of supply for the things exported by us, than it would be if these things were also largely made in other countries. Finally, the variability is likely to be smaller, if our trade does not, than if it does, need to pass through tariff barriers, the height of which is liable, on occasions, to be changed.

§ 5. Finally, one further point remains for consideration. Variations in the bounty of nature and in the desire of foreigners for the goods which we export are alike, in general, causes of variations in the inflowing stream of commodities into this country. So far, however, as the bounty of nature varies within this country, in respect of goods produced here, not for home consumption, but for sale abroad, it is not *certain* that any consequent variation in the inflow of commodities will be brought about. In the special case, in which the elasticity of the foreign demand for our exports is equal to unity, the volume of this inflowing stream will be left unchanged. Following out the line of thought thus suggested, we conclude that, given the variability of nature's bounty and of the desire

[1] *The Principles of Economics*, p. 77.

of foreigners for our exports, the magnitude of the spontaneous variations that occur in the inflowing stream of commodities is partially dependent upon the elasticity of the foreign demand for goods produced here. Other things being equal the variability of the volume of that stream is likely to be greater, the more widely the elasticity of this demand differs in either direction, from unity. If the demand is highly elastic, a shortage in the output here of the exportable goods affected means a great contraction in the quantity of imports obtained in exchange, while, if it is highly inelastic, such a shortage means a great expansion in these imports. If, however, our exportable goods are of such a kind that the demand for them has an elasticity approximately equal to unity, the quantity of imports obtained by their sale will be approximately the same, whatever their amount may be. This contrast is readily illustrated from the circumstances of the export trade of the United States. "Whatever the vicissitudes of the crop," writes Mr. Piatt Andrew, "the value of our cotton exports remains less liable to violent fluctuations than the value of our less extensive wheat exports. The reason is that the price of cotton adjusts itself more closely to the size of the American crop than does the price of wheat (since America provides a larger share of the world's supply of cotton), and this gives greater constancy, both to the value of the crop as a whole, and to the exports."[1]

[1] *Quarterly Journal of Economics*, 1906, p. 340.

CHAPTER VII

§ 1. FROM the causes governing spontaneous variations in the volume of the inflowing stream of dividend, we pass to those governing spontaneous variations in the comparative attractiveness of investment—which involves the purchase of labour —as against immediate personal consumption and storage. Broadly speaking, we may regard the absolute estimate which people entertain of the attractiveness of the consumption use—in technical terms, the form and position of the utility curve relevant to that use—as fixed. Hence, the causes, out of which spontaneous variations in the comparative attractiveness of the three rival uses arise, must be sought among those affecting the absolute attractiveness of one or other of the labour purchase use or the storage use. Furthermore, since the main function of stored goods is to safeguard the holders against the risk of bad debts and other unfortunate results of investment, while the main function of goods devoted to the purchase of labour is to yield further goods in the future, it is easily seen that diminished desire for storage and increased desire for investment, or increased desire for storage and diminished desire for investment, are, in general, correlated results of a deeper-lying common cause, namely, changes in the expectations, which business men entertain concerning the probable yield of resources—or, more accurately, of any nth unit of resources—devoted to the purchase of labour. Improved expectations imply both a diminished desire for the safeguard of storage and an increased desire for the risks of investment and, in like manner, worsened expectations imply both an

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increased desire for the safeguard of storage and a diminished desire for the risks of investment. Hence, in the last resort, the causes, out of which variations in the attractiveness of investment in the purchase of labour, as compared with the rival uses, arise, are found to be equivalent to those which bring about variations in the expectations entertained by business men, as to the yield of any nth unit of resources invested in the purchase of labour designed to make "future goods."

§ 2. If conditions were such that, as a matter of fact, the fruits of investing an nth unit of resources in the production of future goods were always the same, variations in the error made by business men in forecasting these fruits would necessarily be a cause of variations in their expectations, and would, furthermore, be the only cause of such variations. Again, if conditions were such that errors were never made by business men, or that the same error was made always, variations in the fruits, which would, in fact, follow from investing an nth unit of resources in the production of future goods, would necessarily be a cause of variations in business men's expectations, and would, furthermore, be the only cause of such variations. In reality, of course, fluctuations of error and fluctuations of fact both occur. This circumstance implies that, on some occasions, particular changes of fact rightly foreseen and particular changes of error will cancel one another, in such wise that the change in expectation brought about by the two jointly is smaller than the change, which would have been brought about had either of them been acting in isolation. It is well known, however, that, in spite of this fact, when a magnitude is made up of two parts, each of which varies more or less independently of the other, the variability of the whole is likely to be larger, the larger is the variability of either part. Hence, we are entitled to conclude that variations in business men's expectations are caused both by variations in the real yield, which is destined to accrue from the nth unit of resources invested in the purchase of labour, and by variations in the *error* contained in their expectations. Now, variations in the real yield of the nth unit of resources invested in the purchase of labour arise solely out of those variations

in nature's bounty or in foreign demand, which were discussed in the preceding chapter. One division of the causes, by which variations in the expectations of the business world are brought about, has, therefore, already been examined. Variations in the errors contained in business men's forecasts constitute the other division. To study the causes, on which the magnitude of these depends, is the task of the present chapter.

§ 3. There is, clearly, no reason to suppose that, on the average, the judgment of the business world is biassed, either towards undue optimism or towards undue pessimism. Rather, it seems probable that the base-line, as it were, from which variations in error are measured, is not a particular kind of error, but correct judgment. This implies that the variations of error from the average that occur and the absolute errors that occur are identical, and, therefore, that the causes determining the range of variations in error and those determining the range of error are also identical. By this circumstance our task is rendered somewhat simpler than it might otherwise be. It is reduced to that of investigating the influences, by which the magnitude of the typical error occurring in the forecasts of the business world is determined. These influences may be classified roughly into the following groups; (1) the characteristic form of modern industry; (2) the quality of the persons entrusted with the function of making those forecasts upon which action is based; (3) the way, in which the forecasts of different persons react upon one another; and (4) the reproductive power of the errors that are born. I propose to examine these different groups of influences in turn.

§ 4. The characteristic form of modern industry contains two aspects, both of which tend to expand the range of error in business forecasts. The first of these is the exchange aspect. In primitive times we may imagine that each family, or small group, was more or less self-sufficing, and that its industrial activities were, in the main, devoted to the production of things to be consumed by itself. In the modern world, however, practically everything, which each producer makes, is sold to somebody else. Consequently, whereas,

formerly, the forecast relevant to investment in any field was a single forecast as to the physical productivity of that investment, it is now a double forecast, envisaging both this physical productivity and the rate at which the thing produced can be exchanged against the products of other people.   It is obvious that this circumstance widens the range of error, because it compels each business man to take account, in his forecast, of the probable circumstances, not merely of his own industry, but also of a number of other industries, many of which are necessarily unknown to him.

The second aspect of modern industry, by which the range of error is affected, is its "prospectiveness." The way in which this works may be described as follows.   When a man is contemplating the investment of so much resources in the purchase of labour, with a view to obtaining a return of future goods, error is possible, either as to the quantity of future goods, which a given unit of labour will provide for him (whether directly or through exchange), or as to the number of units of labour, which a given quantity of resources will enable him to purchase.   If acts of investment were always decided upon immediately before they were carried out, this latter form of error would be impossible.   In the modern world, however, many works of construction occupy a long time in execution, and, therefore, contracts have to be made, in regard to them, months or even years before much of the labour and material employed upon them will be required.   Thus, there arises the phenomenon of "forward buying," firms engaged in the more advanced processes of production contracting to make at a future date certain purchases at certain rates from those engaged in the less advanced processes.   It is not, however, in general, practicable for advanced contracts to be entered into in respect of labour or of certain raw materials.   Consequently, in reflecting on the terms at which they are prepared to sell for future delivery, most of the firms involved must be content with guess-work concerning a considerable part of their costs.   Each firm, however, in making its guess, is, in general, without information as to the future contracts undertaken by other firms, and is, therefore, apt to ignore the effect, which the execution of these contracts, when they fall due, will

have upon the real price of labour and materials. Hence, a general movement towards optimistic expectation is likely to be carried further than it would be, if contracts and the execution of contracts synchronised ; and a like proposition holds good of a general movement towards pessimistic expectations. Mr. Hull has rightly observed that the effect of forward buying, in expanding the range of variability of business expectations, would be mitigated, if the State were to publish monthly " all pertinent information in relation to the existing volume of construction under contract for future months." [1] For, if this were done, business men would have better warning of impending changes in the real price of labour and materials, in respect of any future contracts into which they might be disposed to enter. It would seem that a like mitigation would be introduced, if the great bulk of any important industry were concentrated under a single hand, since, in that case, the controller of each firm in the industry would automatically become aware of the contracts made on behalf of all the others.

§ 5. I pass to the quality of the persons, to whom the function of making forecasts, which shall be operative, is entrusted. In a primitive community these persons consist exclusively of entrepreneurs, actually engaged in the various industries and devoting to the conduct of them resources belonging to themselves. Their quality alone is relevant to our problem ; and it is obvious that the range of error in the forecasts that are made is likely to be smaller or larger, according as able men are or are not content to adopt business as a career. In the modern world, however, most forms of industry are financed from resources belonging to a great number of other people, besides those who actually manage businesses. Hence, the forecasts of these other persons also are relevant, and it becomes necessary to inquire in what way their admission affects the quality of the forecasting body as a whole.

In order to answer this question, we need to observe that the outsiders, whose forecasts the modern organisation of industry has admitted, consist of two classes of persons, on the one hand,

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[1] *Industrial Depressions*, p. 218.

professional financiers and, on the other hand, casual members
of the general public, who enjoy the excitement of a gamble.
The result of a comparison between the accuracy of forecasts
likely to be made by the professional financier and the ordinary
business man is not at all doubtful. The professional financier
is a specialist in the particular work of making forecasts about
the market, whereas this work is only one item among many
others in the calling of an ordinary trader. Clearly, the
specialist is likely to make better forecasts than the general
practitioner. Secondly, the international character, which the
development of the means of communication has in recent
times given to many industries, has made the advantage
enjoyed by the specialist much greater than it used to be,
when a knowledge of *local* conditions, such as an intelligent
business man would naturally possess, afforded a sufficient
basis for a good forecast. Lastly, the fact of specialisation
gives freer play to the selective agency of bankruptcy, in
eliminating persons who undertake to make forecasts and
cannot make them well. When the functions of financier
and manufacturer are rolled together in one man, the man may
flourish through his manufacturing skill, despite of incompetent
market policy. When the two functions are separated, any-
body, who undertakes the one in which he is incompetent
relatively to other people, is apt to lose his money and be
driven from the field. Furthermore, the efficiency of this
natural selection is augmented by the fact that a professional
financier undertakes a great number of transactions, and that,
therefore, the element of chance plays a small part, and the
element of efficiency a large part, in the result. Hence, there
can be no doubt that the advent into any industry of pro-
fessional financiers means the advent of persons better able
than those already concerned in the industry to forecast future
conditions.

Unfortunately, however, when the work of making opera-
tive forecasts about investment is thrown open to outsiders,
it is not merely professional financiers who come into it. They
are accompanied, on the contrary, by a large number of persons
among the general public, who have no special knowledge or
competence. The equipment for skilful forecasting enjoyed

by these persons is evidently much less than that of the ordinary business men concerned. Furthermore, it may, on occasion, be to the interest, and it is usually in the power, of the professionals, by the spread of false information and in other ways, deliberately to pervert the forecasts of their untutored colleagues. What we have to do, therefore, is to inquire whether the increase of error made probable by the admission of the inferior forecasts of casual outsiders is likely to outweigh, or to be outweighed by, the diminution of error due to the admission of the superior forecasts of professionals.

This question is evidently not one to which any general answer is possible. The comparative importance of the part played by casuals and professionals respectively, in turning resources into various sorts of productive enterprise, depends, partly, on the nature of the industries affected, and, partly, on tradition and custom. It would seem that, when, as is the case in Germany, the flotation of new companies, on the basis of shares of extremely low nominal value, is forbidden by law, a certain number of the poorer and, perhaps, more ignorant persons, who might otherwise make operative forecasts, are driven away.[1] When, again, as is also the case in Germany, responsible bankers stand behind many flotations, the comparative importance of the part played by the casual outsider is further reduced. It is obvious that anything, which gives increased weight to the views of professionals, as against those of amateurs, in the formation of operative business forecasts, tends, *pro tanto*, to diminish the range of error to which those forecasts are liable.

§ 6. We now come to the third group of circumstances, distinguished in an earlier section, that help to determine the general range of error in forecasts, namely, the way in which different forecasters react on one another. This matter is of considerable importance. For, it is plain that, if the errors of the various persons concerned are independent, they will tend, more or less, to neutralise one another, and need not, therefore, in the aggregate, have a very large effect. No

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[1] In Germany shares are, in no case, permitted of a lower face value than £10, and they are not usually permitted of a lower face value than £50. (Schuster, *The Principles of German Civil Law*, p. 44.)

doubt, neutralisation will, in general, be far from complete. Even if it is true that an equal distribution of individual errors between undue optimism and undue pessimism is more probable than any other *specified* distribution—a proposition that is open to doubt—it is, certainly, not true that an equal distribution is more probable than *some* (unspecified) other distribution. On the contrary, it is obviously much less probable. It is practically certain that, at any moment chosen at random, the distribution of individual errors on the two sides of truth will be unequal, and that, at some moments, it will be very unequal. Still, there can be no doubt that the inequality of distribution is likely to be much less, if the different persons concerned act independently than if they draw one another on in the same direction. A tendency towards *common* action among them enormously increases the mean range of error. If the passengers on a ship always walk about independently, there is little danger of their causing much disturbance to its equilibrium, but, if they rush in combined panic from side to side, there is very great danger.[1] It is, therefore, important for us to inquire how far, in the matter of expectations concerning the future, those persons, whose action controls business, do, in fact, tend to act in droves.

§ 7. Experience suggests that, apart altogether from the financial ties, by which different business men are bound together, there exists among them a certain measure of psychological interdependence. A change of tone in one part of the business world diffuses itself, in a quite unreasoning manner, over other and wholly disconnected parts. An expansion or contraction of business confidence " propagates itself by that sympathetic and epidemic excitement, which so largely sways communities of men." [2]   There comes into play a quasi-hypnotic system of mutual suggestion :

> "One with another, soul with soul
> They kindle fire from fire."

This tendency is the more marked, in so far as business men

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[1] Cf. Fisher, *Capital and Income*, p. 297.

[2] Kemmerer, *Money and Prices*, p. 83.

are congregated in close physical proximity to one another in the business sections of large cities.[1]   The psychological inter-dependence of different portions of the business world is, how-ever, comparatively speaking, a small matter.   Besides being bound together by an atmosphere of sympathy, business men are also, and much more firmly, united by the debtor-creditor relation.   For, this relation subsists, not merely between business men and sleeping capitalists, but also between different business men.   In fact, most firms are both borrowers and lenders.   They borrow from one set of people by buying materials from them on credit, and they lend to another set by selling the fruits of their workmanship on credit.   Thus, we have, as it were, a series, in the form A, B, C, D, each member of which is debtor to the one preceding, and creditor to the one succeeding, himself.   This fact implies that, if any good or evil chance happens to one of them, its effects are likely to be passed on to the others. If, to take an extreme case, firm A, which is largely indebted to firm B, fails and is unable to meet its obligations, its fall may carry with it that of B also, and B's fall, in turn, may involve the fall of C.   Furthermore, the measure of this interdependence of fortune among business men is, obviously, increased by every development of business practice towards longer or larger credits between manufacturers of raw materials and manufacturers of finished products, between manufacturers of finished products and wholesalers, and between wholesalers and retail tradesmen.[2]   Now, as will be shown immedi-ately,[3] the forecasts made by business men are largely coloured by their present fortune.   It follows that interdependence of

[1] Cf. Jones, *Economic Crises*, p. 204.

[2] It may be noted that, as between brokers and their clients, credits are kept low by the system of "short settlements."   This system "aims at reducing the risk of loss due to the assumption by weak dealers of risks greater than the funds at their disposal enable them to cover, and, thus, at rendering business more secure, and, being more secure, capable of being carried on with narrower profits.   The parties to the contract may (or in some cases must) deposit a sum of money sufficient to cover any probable loss due to variation of price for a short time, and, if prices vary beyond what the deposit can make good, must increase the deposit."   (*British Association Report*, 1900, p. 4.)   The system, in effect, prevails both among those who speculate on margins on the Stock Exchange and among those who deal in futures on the Produce Exchanges.

[3] Cf. *post*, p. 463.

fortune carries with it interdependence of forecasts, and, thus, allies itself with the psychology of crowds, as a force tending to promote action in droves. There can be little doubt, therefore, that, in the business world as at present organised, a somewhat powerful tendency towards such action prevails. In so far as it prevails, it is responsible for rendering the range of error in business expectations wider than it would otherwise be.

§ 8. I pass to the last group of causes of error distinguished in the second section, namely, the reproductive power of the errors that are born. In a world, where all transactions were conducted in kind, an error that came into being would live its day and would disappear, remaining, throughout its career, the same. In the actual world, however, the errors that come into being are not quiescent inert things. Rather, they are, as it were, self-propagating, with a tendency to grow continually larger, till some external force intervenes to destroy them. This peculiar character is imposed upon them by the fact that transactions are conducted in terms of a standard of purchasing power, whose value, relatively to commodities in general, is liable to vary with variations in the demand for it. The process of their development may be illustrated by an analysis of the events, which we may expect to follow upon the occurrence of an upward movement of error towards optimism. Business men, as was explained in Chapter V., when they anticipate improved fortune from investment, borrow money from the banks, wherewith to buy materials and hire labour. In this way more money is brought into circulation, and prices rise. The rise in prices, however, has not, in general, been perfectly foreseen and adequately allowed for in the terms of contracts concerning wage-rates and—what is more important from the present point of view—interest-rates. Hence, as it were by a trick of fate, business men, who are, in the main, wage-payers and borrowers, are made more prosperous, at the expense of wage-earners and sleeping capitalists, than they would have been in a world ringing perfectly true to the economic harmonies. Furthermore, besides the real change in their fortunes, which this trick brings about, there is also an element of imagined

change. For, when people have more or less money than usual, even though prices have changed in precise correspondence, yet the natural tendency to " think in gold " is apt to make them imagine themselves really richer or really poorer. But, it is a well-known fact that the judgments which people form are biassed by their feelings. When they are, or believe that they are, enjoying good fortune, they are apt to look on the sunnier, when they are suffering bad fortune, on the darker, side of doubt. Success breeds the hope of more success, failure the fear of further failure. Consequently, anything, which improves the fortunes of business men, constitutes a spur to optimistic error; just as anything, which worsens their fortunes, constitutes a spur to pessimistic error. In this way, an error of optimism once made by them is expanded to greater girth. They borrow more money, and, thereby, cause prices to rise still further. By this rise their fortunes are again improved, and, in consequence, the error of their forecasts is again expanded. The process thus begun tends, if it is not interrupted by an external force, to continue indefinitely. An error, that is born a child, waxes towards the stature of a giant. Nor is even this a full account of what happens. For, the error, as it grows, rears up alongside of itself, and gathers further strength from, an ally, which a fluctuating monetary system allows it to create. The reason for this is that changes in general prices are not merely imperfectly, but are also unequally, foreseen. The anticipations concerning them formed by the entrepreneur class are, in general, more nearly correct than those formed by either sleeping capitalists or the wage-earning class. This circumstance implies that business men can reckon, in periods of rising prices, on finding capitalists and wage-earners prepared to offer any assigned quantity of their services at a reduced real rate of payment; and, in periods of falling prices, upon finding them insistently demanding, for any assigned quantity, an increased real rate. In the one case their expectation of profit from investment is enhanced by the expectation of a kind of bonus at the expense of capitalists and wage-earners, in the other case it is contracted by the expectation of a kind of toll, which has to be paid in respect of the services of those classes. Thus,

as Professor Fisher observes : " Inequality (as distinguished from imperfection) of foresight produces over-investment during rising prices and relative stagnation during falling prices." [1] This two-fold fact, that errors possess a tendency both to grow and to rear up for themselves a growing ally, obviously causes the magnitude of the typical error in business forecasts to be much larger than it would otherwise be. The supersession of current forms of monetary organisation by a form, under which general prices should remain constant, would probably reduce that magnitude considerably. [2]

§ 9. The influence exerted on the magnitude of the typical error in business forecasts by the fact that errors possess the power of growth is not, however, fully determined, till some study has been made of the period over which growth is allowed to extend, before it is cut short by an external force ; for, obviously, the magnitude, to which an expanding error is likely to attain, varies directly with the length of this period. Nor is this the only way, in which the normal period of life allowed to a growing error affects the normal range of error in general. For, when an error of any sort, whether of undue optimism or of undue pessimism, is disclosed, the fact of its disclosure naturally causes a revulsion of feeling, which makes probable the occurrence of an error of the opposite sort ; and it is fairly obvious that this latter error is likely to be larger, the larger is the initial error, to the disclosure of which the revulsion of feeling is due. [3]   Hence, not only the average of

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[1] *The Rate of Interest*, p. 286.

[2] In view of the fact, demonstrated in Chapter V. § 5, that the current forms of monetary system make the variations in the real earnings of the working classes, brought about by a given variation in the bounty of nature, smaller than it would otherwise be, we cannot infer absolutely, from what is said above, that the supersession of that form of monetary system by one involving constant prices would, on the whole, diminish the variability of these real earnings. It seems to me, however, that there can be little doubt that this would be the case.

[3] In this connection, it is relevant to observe that the real significance of "business failures" consists in the fact that they are disclosures of optimistic, and, consequently, causes of a revulsion towards pessimistic, error. In themselves they are not of great industrial importance. It seldom happens that, as a result of them, any business enterprise is abandoned ; the normal course is for it to pass, through sale or through a receivership in the interest of bond-holders, into the control of other—very probably more energetic and more able—men, with the net result that a relatively competent entrepreneur is substituted for one who is relatively incompetent. It is, thus, a true saying which Mr. Burton quotes from John Mills : " As a rule, panics do not destroy capital ; they

optimistic errors, but also the average of pessimistic errors is likely to be larger, the larger is the normal period that elapses before optimistic errors are disclosed.   From this circumstance we may draw three inferences.   The first is that the range of error, and, therefore, also of variations of error, in any community is likely to be larger, the larger is the measure in which that community's investments are made for a distant return, such as is promised by railway building, and not for a speedy return.   The second is that, since, on the one hand, industrialists, who have made mistakes, are reluctant to cut their loss and make confession, while, on the other hand, confession can be withheld longer by a man of large, than by one of small, resources, the range of error and of variations of error is likely to be larger, when the average resources of business men are large than when they are small. In confirmation of this view, we may note Mr. Burton's opinion that the interval—some months or even a year— at which crises tend to follow the period of maximum prices, has recently increased, and that the increase has come about because expanding wealth has given to industrialists a larger private reserve fund.   Our third inference is that, since confession of error can be withheld for a longer period, if business men, whose affairs have become involved, are enabled to hang on by means of borrowed resources, the range of error and of variations of error is likely to be larger when facilities for thus hanging on do, than when they do not, exist.   Such facilities are apt to be available, when a creditor's fortunes are so far bound up with those of a potentially insolvent debtor that he dare not recall his loan ; or, they may be made prominent through the adoption of a short-sighted policy on the part of bankers.   It may be added that, when delay in the confession of error is brought about by resort to facilities of the kind just described, there is more than usually strong reason to expect that the delay will make the error that has ultimately to be confessed larger.   For, on the one hand, there is a presumption that a business house, which has committed

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merely reveal the extent to which it has been previously destroyed by its betrayal into hopelessly unproductive works " (Burton, *Financial Crises*, p. 20).

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errors large enough to render it insolvent, is incompetently managed, and is likely to commit further errors in the future, even if its business practice is not worsened; and, on the other hand, this practice is likely to be worsened, because, since the house is already insolvent, further losses fall, not upon it, but upon its creditors. This latter danger can be partly mitigated by the embodiment in the bankruptcy laws of stringent provisions against various forms of fraud and sharp practice.

CHAPTER VIII

§ 1. UP to this point we have carried through two investigations. First, we have examined the way in which a spontaneous variation in the volume of the national dividend, or a spontaneous variation in the relative attractiveness of the different uses open to the dividend, occurring in isolation, might be expected to react on the volume of resources invested in the purchase of labour. Secondly, we have inquired into the causes by which the occurrence and the magnitude of each of the above sorts of variation is determined. It is evident that studies along these lines, successfully conducted, should afford information concerning some of the influences, which affect the variability of the stream of resources turned annually to the purchase of labour. We have now to observe, however, that, in addition to these influences, others also are relevant, upon which nothing that has so far been said throws light. The variability of the real income of the working classes does not depend solely on the magnitude of the variations that occur spontaneously in the national dividend and in the relative attractiveness of the several uses open to the dividend.[1] It depends also (1) upon the *order* in which individual variations of different

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[1] It should, perhaps, be explained that by "spontaneous variations in the volume of the national dividend" is meant variations not induced by variations in the relative attractiveness of different uses, and that by "spontaneous variations in the relative attractiveness of different uses" is meant variations not induced by variations in the volume of the dividend.

magnitude and sign tend to occur, in respect both of the national dividend and of the relative attractiveness of different uses, and (2), upon the character of the correlations, if any, that exist between the above two series of variations. An attempt will now be made to elucidate, in turn, these two points.

§ 2. The reason why the order in which different individual variations occur is significant is as follows. A variation in the volume of resources devoted to the purchase of labour to be employed in making future goods, whether it is the result of a variation in the volume of the dividend, or of a variation in the relative attraction felt for different uses, in general reacts upon the volume of the dividend in future years, and, through this, reacts again upon the volume of the resources devoted to the purchase of labour in those years. The cause of the reaction is, of course, that an expansion or contraction in the funds devoted to the purchase of labour implies, in general, an expansion or contraction in the quantity of labour, whose efforts are directed into occupations calculated to increase production, and, therewith, the inflowing stream of commodities in subsequent years. No doubt, the extent of the reflex influence exerted by variations in the volume of resources, expended on the purchase of labour in one year, upon the volume of the dividend in subsequent years is mitigated by the fact that, when investment is booming, a much larger proportion of the resources that are invested is devoted to enterprises doomed to failure and waste, than is so devoted in times of contracted investment. Furthermore, in times of the latter sort, the amount of *intelligence* put into production is, in general, larger, partly because relatively inefficient business men are likely to be compelled to sell out to others, but mainly because those persons, who remain in business, " are put on their metal, and exert themselves to their utmost to invent improved methods, and to avail themselves of the improvements made by others." [1]   Despite these qualifications, however, there can be little doubt that an expansion in the quantity of resources devoted to the purchase of labour in one year tends to be followed by an expansion of the dividend, and a contraction

[1] Marshall, Evidence before the Gold and Silver Commission [Cd. 5512-1] Q. 9816.

by a contraction of the dividend, in the years that immediately succeed : and, so soon as this is granted, it is obvious that a second reaction must occur in the volume of resources devoted to the purchase of labour in those years. It follows that, if expansions and contractions, whether of the dividend or of the relative attractiveness of the investment use, alternate at short intervals, the variability of the real earnings of labour will be smaller than it would be, if years of expansion and years of contraction occurred at random, and considerably smaller than it would be, if they occurred in such a way that a succession of expansions was generally followed by a succession of contractions. These considerations make necessary an examination of the order in which variations in the bounty of nature—variations in foreign demand need not be specially considered here—and in the relative attractiveness of different uses come about.

§ 3. The order of variations in the bounty of nature can be studied statistically. It seems that a tendency towards the occurrence of successions, more marked than would probably exist if the circumstances of neighbouring years were wholly unconnected, is, in fact, observable. Nor need this tendency be set down as a mere arbitrary fact, of which no explanation is forthcoming. For, Dr. Shaw's inquiry into " An apparent periodicity in the yield of wheat in Eastern England," and Mr. H. S. Jevons' extension of a similar inquiry to the United States appear to reveal the existence of an eleven years' crop period, in close conformity with, and, therefore, presumably caused by, the solar period. So soon as this is understood, the order of the changes that occur in the comparative attractiveness of the investment use and the other uses open to resources might be inferred from what was said in the preceding chapter concerning the self-reproducing activity of business optimism and business pessimism. From the discussion there conducted we know that, if a seed of optimism or of pessimism is planted in any year, and if no new cause intervenes, the seed will multiply continuously. It follows that the predominance of optimism (or of pessimism) in one year makes probable the predominance of optimism (or of pessimism) in the succeeding years. This is the same thing as saying that there

is a tendency, in excess of what would be probable if the circumstances of neighbouring years were wholly unconnected, for years in which the investment use exercises great attractions, and likewise for years in which this use exercises small attractions, to occur in series. Hence, we conclude that, in respect of variations, alike in the bounty of nature and in the comparative attractiveness of different uses, the order in which these changes occur is such as to make the variability of the real earnings of the working classes larger than we should expect it to be, if attention was confined to the magnitude of the changes only.

§ 4. I pass to the question whether, or how far, correlation exists between the series of variations in the bounty of nature and the series of variations in the relative attractiveness of the investment use. The bearing of this matter upon the variability of the real earnings of the working classes is readily apparent. For, let a and b be the variabilities, which each of these series of variations acting alone would bring about. Then, if no correlation exists, the aggregate variability, due to the two series acting together, will probably be larger than either of the above hypothetical variabilities singly, but, since, on occasions, changes due to variations in the bounty of nature and changes due to variations in the relative attractiveness of the investment use are likely partially to neutralise each other, it will probably not be so large as the sum of the two hypothetical variabilities. If there is any tendency for movements in the bounty of nature and movements in business confidence to be negatively correlated, in such wise that, when one is positive the other is probably negative, the aggregate variability will be reduced, and will, in some circumstances, be smaller than either component variability. If, on the other hand, the two sorts of movement are, in any degree, positively correlated, in such wise that a boom in the bounty of nature makes probable a boom in business confidence, the aggregate variability will be increased, and, in the extreme case of perfect correlation, will be equal to, the sum of the two component variabilities. It is evident, therefore, that our study is not complete till the facts concerning correlation have been investigated.

§ 5. As a first step towards this investigation, appeal may be made to the broad facts of psychology, referred to in the preceding chapter. As was there explained, it is chiefly when prosperity is growing, that people, intoxicated with success, are optimistic beyond what the facts warrant; and it is chiefly when prosperity is declining that they are unduly pessimistic. Now, it is, of course, the case that prosperity and adversity among business men may come about in other ways than through expansions and contractions in the bounty of nature. They may be induced, for example, by spontaneous variations in general prices, brought about by changes in the gold supply or in the organisation of banks. It is also, of course, the case that variations in the error of business forecasts may come about from causes which have nothing to do with any form of current prosperity or adversity. Still, there can be little doubt that that form of current prosperity or adversity, which originates in variations in the bounty of nature, is one not unimportant cause of variations in the error of business forecasts. It may, indeed, be objected that an expansion of the bounty of nature would mean, *ceteris paribus*, a fall in prices, and that a fall in prices would injure business men for the benefit of interest-receivers and wage-earners, thus tending to bring about a depression of business outlook. It is easily seen, however, that, though the fall in prices may render the prosperity of the business world smaller than it would have been, if the dividend had expanded but prices had not fallen, it is most unlikely to make it smaller than it would have been, if neither the dividend had expanded nor prices had fallen. Analogous reasoning applies to the case of contractions of the dividend and consequent upward movements of prices. It follows that variations in the bounty of nature are direct causes of, and therefore, of course, are positively correlated with, subsequent variations in the same direction of error in business forecasts. It must, indeed, be remembered that variations in the error of business forecasts are not the same thing as variations in business confidence, or, their equivalent, variations in the comparative attractiveness of the investment use. As was explained on p. 454, variations of the latter kind may be caused, not only by variations in the error of forecasts, but also by variations

in the yield that is truly destined to accrue from the nth unit of resources invested in the purchase of labour. In spite of this complication, however, the demonstration given above, that variations in the bounty of nature and variations in the error of business forecasts are positively correlated, *makes probable* the further proposition that variations in the bounty of nature and variations in business confidence, or the comparative attractiveness of the investment use, are also correlated, though with less intensity, in the same sense.

§ 6. From the point of view of any one seeking a remedy for industrial disease, there remains a third question of dominating interest. In the course of the preceding discussion it has become apparent that three distinct types of variation may be distinguished, namely, variations in the bounty of nature, variations in business confidence directly caused by these variations, and variations in business confidence arising independently of the preceding or contemporaneous condition of the bounty of nature. It is obvious that any knowledge we can obtain as to the relative importance of these several types of variation, as determinants of the variability of the real earnings of labour, should have much significance for statesmen. In his interesting book on *Industrial Depressions* Mr. Hull has attempted to provide knowledge of this kind. According to him, the predominant, and, indeed, the only significant, cause of variability is to be found in variations of business confidence, arising spontaneously without reference to any previous changes in the crops. He holds quite definitely that " the cause of booms and depressions must lie within the industries, where great increases and decreases in the volume of business can and do take place." [1] His argument rests upon two statistical propositions, first, that the variations in the quantity, and, still more markedly, in the value, of output, which occur in respect of works of construction, are much larger than those which occur elsewhere ; secondly, that the order occupied by the principal countries, as regards the severity of the industrial depressions from which they have suffered, corresponds to the order occupied by them as regards output and value of iron production.[2] It must be admitted that these facts appear, at

[1] *Industrial Depressions*, p. 100.   [2] *Ibid*. p. 82.

first sight, to sustain Mr. Hull's contention. Reflection, how-ever, soon shows that, in reality, they do not do this. All that has been established—if, indeed, even this is established—is that the variations which occur in respect of works of construc-tion are larger than those which occur in agriculture. This, however, affords no proof that changes in business confidence, still less changes in business confidence arising independently of preceding crop changes, are the predominant factors governing the variability of investment. For, what has been shown to occur might still occur, even though business expectations never varied at all. Variations in the crops, implying, as they do, variations in the dividend, naturally bring about variations in investment, and the greater part of these variations naturally take place in connection with instrumental goods.[1] Nothing more is needed to explain Mr. Hull's facts. It is, therefore, im-possible to draw from these facts any valid defence of his thesis. Nor is this all. Statistics show that a fairly well-marked positive correlation obtains between changes in the crops and immediately subsequent changes in business activity Mr. H. S. Jevons writes concerning this matter: "The pro-duction of pig-iron is the best evidence of the state of the iron and steel trades, and these themselves vary with the general state of industry in the country (*i.e.* the United States), though perhaps in a somewhat exaggerated manner—I mean that fluctuations of the iron and steel business synchronise closely with those of other trades, but tend on the whole to be more violent. On calculating the production of pig-iron per head of population in the United States year by year, and plotting it as a curve beneath that of the total agricultural production, the connection between the two sets of figures is obvious. The abundant crops of 1870 and 1871 were followed by a great production of iron in 1872 and 1873; the big harvests of 1879 and 1880 were followed by an increased production of iron, which, again, culminated two years later, in 1882; and the bountiful harvest of 1884 pro-duced a spurt in the iron trade two years later. In the years 1888 to 1895 the curve of pig-iron production follows closely that of agricultural production one year later; and, from 1893

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[1] Cf. Part II. Ch. VI. § 8.

onwards, the correspondence of the two curves is most remark-able, making due allowance for the rapid growth of the iron and steel industry."[1]   The same point is made—as Mr. H. S. Jevons notes—by Professor Piatt Andrew.   Summarising a careful study of the influence of crops on business in America, that writer observes: "One cannot review the past forty years without observing that the beginnings of every move-ment towards business prosperity, and the turning-points towards every business decline (movements which frequently, it will be remarked, have antedated the actual outbreak of crises by several years) were closely connected with the out-turn of crops."[2]   At first sight it seems natural to infer, from the correlation thus established, the existence of an underlying correlation between changes in the bounty of nature and changes in business confidence.   Now, there is no reason to believe that any correlation exists between the crop changes of any year and those changes in business confidence which arise without reference to them.   If, therefore, variations in business confidence arising thus independently were the overwhelmingly predominant cause of variability in invest-ment, the existence of any marked correlation of the kind which is, in fact, observed, would be highly improbable.   Conse-quently, it is probable that changes in business confidence, evoked otherwise than by contemporaneous variations in the crops, are not the overwhelmingly predominant cause of variability in the real earnings of labour.   Mr. Hull's con-clusion is, thus, not only unsupported by, but is directly opposed to, such evidence as is available.   Furthermore, to this negative result a positive result may be added.   It is probable that variations in the bounty of nature, coupled with

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[1] *Contemporary Review*, August 1909, pp. 177-8.   In this connection, Mr. H. S. Jevons notes a further interesting fact: "In the 'seventies it took two years for abundant harvests to work their full effect upon the iron industry. By the early 'nineties the activity of industry lagged but one year behind the harvests, while, in recent years, its movement has become simultaneous.   At the present day, the growing crops are discounted—literally turned into money as they stand—either by the farmers themselves or by the merchants to whom the farmers have sold their crops in advance.   Relying upon Government crop estimates, too, manufacturers and wholesale merchants anticipate the demand which will arise from an abundant harvest, and railways the call for rolling stock ; and they place orders reproduced accordingly " (*ibid.*).

[2] *Quarterly Journal of Economics*, 1906, p. 351.

such variations in business confidence as they directly evoke,
constitute a not unimportant cause of variability in the real
earnings of labour.   With the information at present avail-
able, no more precise conclusion upon this matter can be
obtained.

CHAPTER IX

§ 1. Up to this point, we have been considering the effect upon the variability of the real income of the working classes of causes, whose effect upon this aggregate variability is in the same direction as their effect upon the variability of the real income of the representative working man. As was observed in Chapter III., the majority of causes, with which we are likely, in practice, to be concerned, are of this character. There exists, however, one important type of cause, to which the above statement does not necessarily apply. Public authorities recognise the fact, stressed in an earlier chapter, that, other things being equal, economic welfare is likely to be increased, when the variability of the real income of the representative working man is diminished. They also recognise that the contributions to welfare, which changes of this kind furnish, do not, in general, enter into the calculations of private captains of industry. Consequently, they decide, quite rightly, that there is ground for philanthropic or governmental action designed to increase the stability of the earnings of the representative working man, even though such action involves a certain amount of direct cost. The larger the direct cost, of course, the less far it will be socially advantageous to press equalising action. When such action involves the setting of men to work in times of depression on something which is physically perishable, or is liable to lose its value through a change of fashion, and, still more, when it involves the making of employment that is avowedly useless, the direct cost is large. When, on the other hand, workpeople, who would otherwise have been

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unemployed, can be turned to some task of "actual and substantial utility," it may be comparatively small.   This class of
consideration helps to determine from how large a quantity
of equalising action economic welfare would benefit.   In all
circumstances, however, advantage can be obtained from *some*
quantity of equalising action.   So much, public authorities and
private philanthropists often understand.   On the basis of this
understanding, they sometimes deliberately transfer a part of
their demand for labour from times of boom to times of depression, with the express object of making the real income of the
working classes less variable.   The point I have now to urge is
that a cause of this kind, making for diminished variability of the
real income of the working classes as a whole, need not always
succeed in diminishing the variability of the real income of
the representative working man.   A study of the conditions in
which it will, and will not, so succeed is attempted in this chapter.

§ 2. Before this study is entered upon, however, a preliminary objection must be met.   This objection is to the
effect that philanthropy and the State are necessarily impotent
even to reduce the variability of the real income of the
working classes as a whole.   The quantity of resources devoted
to the purchase of labour at any time is, it is asserted, rigidly
determined.   Any resources, which the State or private persons
turn to the purchase of extra labour at one point is necessarily
taken away from the purchase of labour at some other point.
In the words of the Transvaal Indigency Commission: "Wealth
is the only source from which wages are paid, and the State
must levy taxation in order to pay wages to its workmen.
When, therefore, a Government gives work to the unemployed,
it is simply transferring wage-giving power from the individual
to itself.   It is diminishing employment with one hand, while
it increases it with the other.   It takes work from people
employed by private individuals, and gives it to people selected
by the State."[1]   The issue thus raised can, I suggest, be
put most clearly, if, in accordance with our former practice,
we pass behind the distorting veil of money, and recollect
that resources, which come at any time into the hands of
the people in control of industry, are devoted to three

[1] *Report of the Transvaal Indigency Commission*, p. 129.

purposes—immediate consumption by entrepreneurs and capitalists, storage, and the purchase of labour engaged to produce goods for the future. With this conception clearly before us, we can no longer suppose that the labour-purchase fund available at any time is something rigidly fixed; it can, obviously, be enlarged or contracted by the transference of resources between it and the two funds designed respectively for consumption by entrepreneurs and capitalists,and for storage. Such transference may be effected in times of depression without the necessity of any transference being made in the aggregate, if resources are borrowed by philanthropists or by the State in bad times and repaid with interest in good times. It is, no doubt, true that a part of the resources thus borrowed would be taken from funds, which would normally have been devoted by private persons to investment involving the purchase of labour. Another part, however, would be taken from funds which would normally have been stored, and from funds which would normally have been consumed by the relatively well-to-do. Consequently, though the net alteration in the aggregate resources devoted to labour-purchase will be less than the alteration in the resources devoted to this use by the State, there will almost always be some, and there will often be a considerable, net alteration in these aggregate resources. Nor is this all. In civilised countries at the present time there is a further source—wholly ignored by the Transvaal Commissioners—from which the requisite resources could probably be largely drawn, without diminishing in any degree the quantity of those invested in labour-purchase by private entrepreneurs. This source consists in the large sums annually devoted by Charity and the Poor Law to the relief of persons, who have been brought low through the effects of intermittent employment. In so far as the purchase of labour by the State in bad times checked unemployment and the resultant pauperism, the expenses involved in it would be balanced by a corresponding reduction in the expenses incurred by these agencies. For these reasons the objection referred to at the beginning of this section falls to the ground.

§ 3. In passing to the main problem of the present Chapter, I shall consider, first, those devices, by which the

variability of the earnings of labour in all parts of the industrial field can be diminished otherwise than through an increase in the variability of the earnings in some part of the field. As was indicated in Chapter III., there is no question, in regard to these devices, but that a reduction in the variability of aggregate earnings implies a reduction in the variability of the earnings of the representative working man, and, therewith, an addition to economic welfare. The devices referred to fall broadly into two divisions. On the one hand, certain purchasers of a commodity, concerned for the workpeople's interest, dovetail a demand that is necessarily irregular into the interstices of the demands of other purchasers of the commodity, thus making the aggregate demand for it more regular, and, thereby, indirectly causing employers to obtain and use funds for investment in labour more regularly. On the other hand, certain employers, concerned for the workpeople's interest, by unprofitable manufacture for sale or stock in bad times, deliberately keep their investment in wages more regular than, under the existing circumstances, is economically to their advantage. These two divisions may be briefly discussed in turn.

§ 4. Dovetailing action is sometimes the work of careful individual consumers. They decide to buy their clothes, not at times when people in general are buying them, but in the intervals of lull. Sometimes this dovetailing is the work of public departments. The War Office may arrange for the periods of service of the Special Reserve to vary in different localities, in such wise that, in all cases, it shall occur in slack seasons.[1] On the same plan, educational authorities might enforce attendance at training schools upon all youths up to some defined age, during periods of unemployment. " Up to a given age—say 19—[a youth out of employment] should return [to the training school] during any period of unemployment, and develop the knowledge and faculties gained in his previous work. As soon as he becomes unemployed, it should, therefore, be the duty of the employer, under penalty, to advise the head of the training school of the fact, possibly through the medium of the local Labour Exchange. It would forth-

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[1] Cf. *Report of the Royal Commission on the Poor Laws.* p. 411, footnote, and Lord Haldane's suggestion in the *Westminster Gazette*, October 1, 1908.

with become compulsory for the boy to re-enter the training school until he was again able to bring a certificate that he had secured employment." [1]   Boards of Guardians, in ordering . stores, and, in some instances, the Board of Admiralty, in ordering ships, have opportunity for the exercise of a similar steadying influence.   The broad policy in question is clearly implied in a " Circular concerning the Organisation of the Provision of Employment," issued by the Prussian Minister of Commerce in 1904, and quoted in Mr. Schloss's *Report on Foreign Methods of dealing with the Unemployed.*   The Circular runs : " We further request you to have the goodness to direct your attention to those measures, which are calculated to prevent the occurrence of want of work on a wide scale, or to mitigate its effects when it is unavoidable.   Not only the State, but also the provinces, districts, and communes, in their capacity as employers, are bound to do their utmost to counteract the evil in question by paying general and methodical attention to the suitable distribution and regulation of the works to be carried out for their account.   In almost every industrial establishment of importance there are tasks, which do not absolutely need to be performed at a fixed time ; just so in every state and communal administration there are works, for the allotment of which the time may, within certain limits, be freely chosen according to circumstances.   If all public administrations, in making their arrangements, would take timely care to choose for such works times, in which want of employment is to be expected, if especially works in which unemployed people of all kinds, including, in particular, unskilled labourers, can be made use of, were reserved for such times of threatening want of employment as have almost regularly recurred of late in winter in the larger towns and industrial centres, the real occurrence of widespread want of employment could certainly be prevented in many cases, and serious distress warded off." [2]   The same policy is embodied in the proposal of the recent Poor Law Commission concerning irregular municipal work.

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[1] Rowntree, *Unemployment*, p. 21.
[2] *Report on Agencies and Methods of dealing with the Unemployed in Foreign Countries*, p. 108.

They write: "So far as it may be inevitable to employ occasionally other than their own regular workers, or to place contracts, we think that it may be desirable for public authorities to arrange such irregular work so that, if possible, it comes upon the labour market at a time when ordinary regular work is slack. This point has been well put by Professor Chapman, who suggests that, so far as the public authorities' demand for labour fluctuates, it is desirable to liberate such demand from the influences of good and bad trade and seasonality, and then deliberately to attempt to make it vary inversely with the demand in the open market." [1] The policy, thus sketched out, is sometimes stimulated by the Central Government, through a judicious employment of grants in aid to municipalities in times of depression. It might conceivably be stimulated further by the establishment of a system of bounties, to be paid, in such times, on particular sorts of consumption, the funds required being raised, perhaps, by corresponding taxes in times of boom. A step in this direction has actually been suggested in the House of Commons by Mr. Balfour, who evolved the idea that, when industry was depressed, a bounty might be given to firms making for foreign orders, in such wise as to enable them to accept contracts. Some persons might, perhaps, prefer to see the bounty given to firms making for British orders, so that the proceeds of it should go to British rather than to foreign consumers; but this does not affect the general idea.

§ 5. Passing from remedial action by consumers to similar action on the part of employers, we notice that the policy of keeping investment in labour more stable than private economic interests suggest acts somewhat differently, according as the redundant product in bad times is principally sold on the market or retained in stock. When the greater part becomes stock, even a single employer may produce a substantial—or at all events an uncounteracted—effect on the stability of workpeople's earnings. When, however, the main part of the redundant product is thrown on the market, the action of the philanthropic employer, who keeps his hands at work, leads indirectly to other employers dismissing more

[1] *Report of the Royal Commission on the Poor Laws*, p. 411.

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hands than they would dismiss otherwise. The reason is that the larger sales by the philanthropic firm lower the price, and, therefore, cause a diminution in the output of the others. If the philanthropic firm constitutes only a small part of the total market, the negative effect will be *almost* as large as the original positive effect.[1] It is, thus, idle for the State to set men to work, in times of depression, at making and offering for sale things that are ordinarily made by private firms.[2] No such difficulty exists as regards action taken by the general body of employers in any business. This point, if not obvious *prima facie*, becomes obvious on inspection of the mathematical note at the foot of the page. General action of this sort might, of course, be taken by voluntary agreement among " good " employers. It is, however, more likely to come about through the pressure, either of trade unions, or of the law. An example of the former sort of pressure is given by Mr. Schloss thus : " In Lancashire, if workmen are ordered to cease work owing to a furnace being put out on account of depression of trade, the agreement provides that an additional furnace shall not be started within three months, unless half-wages are paid to these men for the time which they have lost through the stoppage." [3] An example of the latter sort of pressure is, of course, afforded by enactments limiting the extent to which systematic overtime is permitted. As regards seasonal trades, such enactments are strongly advocated by the Minority of the Poor Law Commissioners. They write : " The variations in the consumers' pressure can be made much less extreme by means of a legal limitation of the hours of labour. When the hours of cotton operatives were settled by the individual mill-owner, cotton - spinning and weaving were extreme instances of seasonal trades ; and the manufacturer was unable to resist

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[1] A mathematical statement of this proposition is as follows : Let there be n firms, each with an output x and an elasticity of production e, and let the elasticity of the public demand for the commodity be η. Let the output for sale of one of the firms be increased philanthropically by hx units. It can be proved that the consequent net addition to the output of all the firms, including the philanthropic firm, will be equal (within the limits of a first approximation) to $hx \dfrac{\eta}{(n-1)\,e+\eta}$. When n is large, this is obviously small relatively to hx, unless η is very large and e very small.

[2] Cf. Pierson, *Principles of Economics*, p. 292.

[3] *Board of Trade Report on Collective Agreements*, 1910, p. xxviii.

the customers' insistence on instant delivery. Now that the maximum hours are legally fixed, the buyer has learnt to be more regular in his demands. The extreme seasonal irregularity of the London dressmaking trade would undoubtedly be mitigated, if dressmakers were absolutely prevented from working more than a fixed maximum day. Customers would simply not be able to insist on delivery in an unreasonably short time." [1] Such rules are incidentally responsible for other effects, besides that of steadying the labour-purchase fund. In so far as different industries or places boom at different times, they make necessary a greater amount of movement among workpeople. Still, there can be no doubt that, among other things, they do, *pro tanto*, exercise a steadying influence on the aggregate earnings of labour.

§ 6. There remains for discussion a second order of device for diminishing the variability of the aggregate earnings of labour ; the device, namely, of introducing unsteadiness into the demand connected with one group of workpeople, in such wise as to compensate and balance unsteadiness that is known to exist in the demand connected with another group. More concretely, this policy may be stated thus. The main part of the establishments employing a particular sort of labour—or, if we prefer a more limited case, producing a particular sort of commodity—is outside of our control ; but, some portion is within our control. Normally, the controlled establishments would be fairly steady in output, but the other establishments unsteady. The policy we have now in view consists in the deliberate introduction of unsteadiness of a compensating kind into the establishments that are under our control. This policy has won the approval of the Royal Commissioners on Afforestation. They are concerned to satisfy themselves that " that part of sylvicultural work which requires most labour, namely, the establishment of the forest, is of a sufficiently flexible character to be capable of being pushed on when labour is abundant, and suspended when labour is scarce." [2] Having so satisfied themselves, they proceed at once to the conclusion that a policy of artificially

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[1] *Report of the Royal Commission on the Poor Laws.*
[2] *Report of Royal Commission on Coast Erosion and Afforestation*, vol. ii. p. 13.

induced compensatory fluctuations after this fashion is desirable. The same point of view in respect of a much more extended field is adopted by the Minority of the Royal Commissioners on the Poor Law. They write: "We think that there can be no doubt that, out of the 150 millions sterling annually expended by the National and Local Authorities on works and services, it would be possible to earmark at least four millions a year, as not to be undertaken equally, year by year, as a matter of course; but to be undertaken, out of loan, on a ten years' programme, at unequal annual rates, to the extent even of ten or fifteen millions in a single year, at those periods when the National Labour Exchange reported that the number of able-bodied applicants, for whom no places could be found anywhere within the United Kingdom, was rising above the normal level. When this report was made by the Minister responsible for the National Labour Exchange —whenever, for instance, the Percentage Unemployment Index as now calculated rose above four—the various Government Departments would recur to their ten years' programme of capital outlay; the Admiralty would put in hand a special battleship, and augment its stock of guns and projectiles; the War Office would give orders for some of the additional barracks that are always being needed, and would further replenish its multifarious stores; the Office of Works would get on more quickly with its perpetual task of erecting new post offices and other Government buildings, and of renewing the worn-out furniture; the Post Office would proceed at three or four times its accustomed rate with the extension of the telegraph and telephone to every village in the kingdom; even the Stationery Office would get on two or three times as fast as usual with the printing of the volumes of the Historical Manuscripts Commission, and the publication of the national archives. But much more could be done. It is plain that many millions have to be spent in the next few decades in rebuilding the worst of the elementary schools, greatly adding to the number of the secondary schools, multiplying the technical institutes and training colleges, and doubling and trebling the accommodation and equipment of our fifteen universities. All this building and furnishing work, on which alone we

might usefully spend the forty millions per decade that are in question, is not in fact, and need not be for efficiency, done in equal annual instalments. There might well be a ten years' programme of capital Grants-in-Aid, made at the periods when the Minister in charge of the National Labour Exchange reports that the Index Number of Unemployment has reached the warning point, for these works to be put in hand by the Local Education Authorities all over the kingdom to exactly the extent that the situation demands. At the same time the Local Authorities could be incited to undertake their ordinary municipal undertakings of a capital nature, whether tramways or waterworks, public baths or electric power stations, artisans' dwellings or town halls, drainage works or street improvements, to a greater extent in the years of slackness than in the years of good trade. This, indeed, they are already tending to do; and to the great development of municipal enterprise in this direction, setting up a small ebb and flow of its own to some extent counteracting the flow and ebb of private industry, we are inclined to attribute the fact that the cyclical depressions of the last twenty years have been less severely felt in the United Kingdom than were those of 1878-9 and of 1839-42." [1] The way of making the labour-purchase fund less variable, which the above policy embodies, may, no doubt, in some circumstances, also make less variable the earnings of the representative working man. But, as was explained in the third chapter of this Part, it will not have that effect in all circumstances, and whether it will have it or not in any particular case will depend upon the degree of mobility that exists among the workpeople, in respect of whom it is introduced. When a municipal enterprise employs only a part of a particular class of workpeople, the variability of the earnings of the representative working man is likely to be diminished, if production by the municipal enterprise, which

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[1] *Report*, p. 1196. The Minority's argument just quoted is associated with the suggestion that an addition of £10,000,000 to the wages fund of the worst year would suffice to reduce unemployment in that year to the normal amount. This result, which is based upon some statistical evidence given by Mr. Bowley, assumes that the whole of the extra ten millions would go in employing new hands, and none of it in raising wages. That is, obviously, a most improbable supposition. To equate the total wages fund of bad years to that of good would require a sum nearer to 100 millions than to 10 millions.

might have been constant, is made to fluctuate inversely with that of the other establishments employing this class of labour in the neighbourhood. On the other hand, it is not unlikely that this representative variability would be actually increased, if the work done annually upon State forests, which might have been constant, were made to fluctuate inversely with that done in city businesses employing artisans and mechanics.[1] Anything that makes for improved mobility, whether between places or between trades, thus increases the probability that the causes, which steady the demand for the whole of labour, by introducing compensating fluctuations into the demand for a part, would lessen the variability of the earnings of the representative workman. The Minority of the Poor Law Commissioners are certainly correct in their conclusion, though not, perhaps, in their emphasis, when they write : " Whatever force there may be in the plea for permanence of tenure under the present conditions, we think that it will be greatly lessened when there exists an efficient National Labour Exchange and a sufficiently Regularised National Demand for Labour." [2]

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[1] The experience of Belgium seems to show that forest work is well adapted to give winter employment to *unskilled* workmen engaged in the building trade during the rest of the year ; cf. Rowntree, *Land and Labour*, p. 507.

[2] *Report of the Royal Commission on the Poor Laws*, p. 1198. In certain cases the policy of compensatory fluctuations has been handicapped in practice by association with the different, and not necessarily connected, policy of employing in the compensatory work "unemployed persons" under non-commercial conditions. The *Local Government Board Report* for 1907-8 explains how the Board gave grants in aid of work proposed by Distress Committees, when such work was work of "actual and substantial utility," in the execution of which unemployed persons, whose applications had been investigated by the Distress Committees, could be given employment (clxxiv). "When a grant was applied for in aid of works, which would be executed by the town council or urban district council in the ordinary course of events, and of which the cost would normally be defrayed by the council from their own resources, the grant made by us was, as a rule, limited to the excess upon the cost of the work estimated as likely to arise by reason of the employment of unemployed persons" (clxxvi). A policy of this sort suffers from the grave disadvantage of favouring inferior workmen, under conditions highly adverse to efficiency, at the expense of better workers, who do not apply to Distress Committees. Thus, as the Poor Law Commissioners quote from the Bethnal Green Distress Committee : "Carrying out . . . ordinary work at an earlier period than is necessary is directly calculated to have the effect of causing at a future date a reduction in the number of men regularly employed. . . . This means that the better class of workmen . . . become unemployed for the sole reason that the work . . . has been done at an earlier period by the unemployed at a much greater cost and with far less efficiency" (*Report*, p. 383). This association with relief work conditions is not, however, any essential part of the policy of compensatory fluctuations.

CONCLUSION

THE complicated task proposed at the beginning of this volume has now, however imperfectly, been accomplished. We have investigated the general relations that subsist between economic welfare on the one hand, and, on the other hand, the magnitude, the distribution among people, and the distribution in time, of the national dividend. I shall not attempt here any summary of the argument of the preceding pages. Its main drift is already displayed in the Analytical Table of Contents. There remain, however, two reflections of a general kind, which the completion of a study such as this naturally suggests, and a statement of which may serve to round the whole.

The first of these touches the extreme severity of much of the road which it has been necessary to follow. It is a popular delusion, that, while economic science itself is a difficult subject, the discussion of practical problems, in which economic forces play an important part, can safely be undertaken without special preparation. There is no warrant for this view. The study of economic theory is, indeed, difficult; but, the application of the knowledge, which that study wins, to the guidance of practical affairs, is an even heavier task; for, it needs, not only a full understanding of the theory, but also the trained judgment that can balance against one another a large number of qualifying considerations. This would be the case, even if human life were such that economic welfare and welfare in general were coincident terms. But, in fact, man does not live by bread alone; and, therefore, besides estimating the probable economic consequences of his action, a reformer needs always to beware lest, in his

ardour to promote an economic benefit, he may sacrifice unwittingly some higher and more elusive good. The judgment that can accomplish all this is not the birthright of untutored amateurs. The book of statesmanship, to the writing of which I have endeavoured, in this volume, to add a page, is not, and never will be, one that he who runs can read.

If, however, our first reflection touches the difficulty, our second must surely touch the greatness of the practical task, in which students of economic science may make it their ambition to assist. The complicated analyses, which they endeavour to carry through, are instruments for the bettering of human life. The misery and squalor that surround us, the injurious luxury of some wealthy families, the terrible uncertainty overshadowing many families of the poor—these are evils too plain to be ignored. Whether the life of man ends with his physical death, or is destined to pass unscathed through that gateway, the good and the evil that he experiences here are real; and to promote the one and restrain the other is a compelling duty. It is easy, if we will, to make the difficulty of the task an excuse for leaving it unattempted. But, difficulties, which deter the weak, are a spur and stimulus to the strong. To display them, not to conceal them, is the way to win worthy recruits. Neither by the timidity that waits at a distance, nor by the wild rush of undisciplined ardour is the summit of great mountains attained. First we must understand our task and prepare for it; and then, in the glow of sunrise, by united effort, we shall at last, perhaps, achieve.

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