

ESSENTIALS OF ECONOMIC THEORY

JOHN BATES CLARK

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PREFACE

In a work on the "Distribution of Wealth," which was published in 1899, I expressed an intention of offering later to my readers a volume on "Economic Dynamics, or The Laws of Industrial Progress." Though eight years have since passed, that purpose is still unexecuted, and it has become apparent that any adequate treatment of Economic Dynamics will require more than one volume of the size of the present one. In the meanwhile it is possible to offer a brief and provisional statement of the more general laws of progress.

Industrial society is going through an evolution which is transforming its structure and all its activities. Four general changes are going on within the producing organization, and the resultant of them, under favorable conditions, should be an enrichment in which all classes would share. Population is increasing, capital is accumulating, technical methods are improving, and the organization of productive establishments is perfecting itself; while over against these changes in industry is an evolution in the wants of the individual consumer, whom industry has to serve. The nature, the causes, and the effects of these changes are among the subjects treated in this volume.

The Political Economy of the century following the publication of the "Wealth of Nations" dealt more with static problems than with dynamic ones. It sought to obtain laws which fixed the "natural" prices of goods and those which, in a like way, governed the natural wages of labor and the interest on capital. This term *natural* as thus used, was equivalent to static. If the laws of value, wages, and interest had at this time been correctly stated, they would have furnished standards to which, in the absence of all change and disturbance, actual values, wages, and interest would ultimately have conformed. The economic theory of this time succeeded in formulating, correctly or otherwise, principles of economic statics and a fragment or two of a science of economic dynamics, although the distinction between the two divisions of the science was not clearly before the writers' eyes. The law of population contained in the work of Malthus is the only systematic statement then made of a general law of economic change. Though histories of wages, prices, etc., furnished some material for a science of Economic Dynamics, none of them attained the dignity of a presentation of law or merited a place in Economic Theory. Students of Political Economy were at that date scarcely awakened to the perception of laws of dynamics, and still less were they conscious of the need of a systematic statement of them. A modest beginning in the way of formulating such laws the present work endeavors to make.

The first fact which becomes apparent when economic progress is studied, is that static laws have a general application and are as efficient in a society which is undergoing rapid transformation as in one that is altogether changeless. Water in a tranquil pool is affected by static forces. Let a quantity of other water rush in and there are superinduced on these forces others which are highly dynamic. The original forces are as strongly operative as ever, and if the inflow were to stop, would again reduce the surface to a level. The laws of hydrostatics affect the waters in the rapids of Niagara as truly as they do those in a tranquil pool; but in the rapids a further set of forces is also operative. In the work referred to, issued in 1899, an effort was made to isolate the phenomena of Economic Statics and to attain the laws which govern them. Necessarily this study made a certain impression of unreality, since it put out of sight changes which are actually going on and are the conspicuous fact of modern life. It assumed the conditions of a world without any such movement and endeavored to formulate laws which, in such a condition, would fix standards of value, wages, interest, etc. It put actual changes out of sight, intentionally and heroically, but with a full recognition of the fact that they are actually taking place and must in due time be introduced and studied. We live in what is *par excellence* an age of progress, and it is in part for the sake of perceiving the laws of progress that we first disentangle from them the laws of rest and make a separate study of these. The world from which change is excluded is unreal, but the *static laws* which can be most clearly discerned by mentally creating such a world have reality. Every day's transactions are governed by them as truly as a physical element like water in active movement is affected by forces which, if they acted alone, would bring it to a state of permanent rest. The first purpose, therefore, of the present work is to show the presence and dominance in the real world of the forces described in the earlier work. It brings static laws into view and endeavors to show how they act at any one particular stage of industrial evolution. Even while changes are examined, the fact is perceived that there are steadily at work forces which, if changes should cease, would make society conform to a certain imaginary static model and makes wages and interest also conform to static standards.

Another purpose of the work is to examine seriatim the effects of different changes, to gauge the probability of their continuance, and to determine the resultant of all of them acting together. It is important to know under what conditions changes proceed at a normal rate, and when the standard of wages rises as it naturally should. As the actual rate of wages pursues its rising standard, but lags somewhat behind it, it is necessary to know what determines the interval between the two, and when the interval is normal. What is called "economic friction" is the cause of this interval and is an element that is amenable to law.

There is to be studied, not only the friction which obstructs the action of natural forces, but positive perversions of the forces themselves. Of these the chief is monopoly; and its influence, its growth, the sources of its power, and its prospect of continuance have to be determined. The actual tendencies of the economic system are against it, and so—if we except a few monopolies created for special ends—are both the spirit and the letter of the civil law. In a country in which law held complete sway, all objectionable monopolies would be held in repression. In order to see how much economic forces can be made to do in this direction, the present work discusses railroads and their charges, and some of the practices of great industrial corporations, and tries to determine what type of measures a government should take in dealing with these powerful agents. In connection with monopoly and with the conditions of economic progress a study is made of trade unions, strikes, boycotts, and the arbitration of disputes between employers and employed, and also of the policy of the state in connection with them, and with money and protective duties.

It is my belief that students should become acquainted with the laws of Economic Dynamics, and that they can approach the study of them advantageously only after a study of Economic Statics. The present work is in a form which, as is hoped, will make it available for use in class rooms, not as a substitute for elementary text-books, but as supplementary to them. It omits a large part of what such books contain, presents what they do not contain, and tries to be of service to those who wish for more than a single introductory volume can offer.

An essential part of the theory of wages here stated was presented in a paper read before the American Economic Association, in December, 1888, and published in a monograph of the American Economic Association in March, 1889; and other parts of this theory were issued at intervals following that date. The theory of value was published in the *New Englander* for July, 1881. I had not then chanced to see the early statements of the principle of marginal appraisal contained in the works of Von Thünen and Jevons,

and did not consciously borrow anything from their writings, but I gladly render to them the credit that is their due. I do not fear that I shall be supposed to have borrowed other parts of the general theory here offered. The theory of capital here stated was first presented in a monograph of the American Economic Association for May, 1888, and the discussion of money of which the present work gives a summary, in articles in the *Political Science Quarterly* for September, 1895, and for June and September, 1896. The discussion of the relation of protective duties to monopoly appeared in the same quarterly for September, 1904.

The author should, perhaps, apologize for the fewness of the citations from other works which this volume contains. The richness of the recent literature of Economic Theory, especially in America, would have made it necessary to use much space if the resemblances and the contrasts presented by points in this volume, and corresponding points in other volumes, had been noted.

Worthy of special attention, if citations had been given, would have been the writings of Professors Irving Fisher, Simon N. Patten, and Frank A. Fetter of this country, and Professor Friedrich von Wieser of Prague, who have worked in various parts of the same field in which the studies here offered belong, and also those of Minister Eugen von Böhm-Bawerk of Vienna, who has treated some of the same themes in a strongly contrasted way. If merited attention were paid to the works of Hadley, Taussig, Carver, Seligman, Giddings, Seager, Walker, and a host of eminent foreign scholars, a large part of the space in the book would have to be thus preëmpted.

I desire most gratefully to acknowledge the assistance which in the preparation of this book I have received from my colleague, Professor H. L. Moore of Columbia University, from my son, Mr. JohnMaurice Clark, Fellow in Economics in Columbia University, and from my former colleague, Professor A. S. Johnson of the University of Nebraska. Besides reading the manuscript and offering valuable suggestions, Professor Johnson has kindly taken upon himself the reading of the proof.

JOHN BATES CLARK.

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CHAPTER I

WEALTH AND ITS ORIGIN

The creation and the use of wealth are everywhere governed by natural laws, and these, as discovered and stated, constitute the science of Economics. Some of them come into operation only when men live in more or less civilized societies and work in an organized way, while others are operative wherever men work at all. Every man who lives must have something that can be called wealth, and, unless it is given to him, he must do something in order to get it. A solitary hunter, living in a cave, eating the flesh of animals and clothing himself in their skins, would create wealth and use it; but he would not take part in a social kind of industry. What he does could not be described as a bit of "social," "national," or "political" economy. Yet the gaining of his living would be an economic operation and would involve a creating and using of wealth. A statement of the laws governing the processes by which such a man makes the earth yield to him means of support and comfort would constitute a Science of the Economy of Isolated Life, which is a part of the general Science of Economics.

Primitive Capital.—If an isolated man hunts with good implements, he gets more game than he would have done if he had not used some of his time in making such implements. It pays such a man to interrupt his hunting long enough to make a spear or a bow and arrows. This amounts to saying that it is an advantage to him to become, in a simple way, a capitalist as well as a laborer; for the primitive implements of the chase are forms of *productive* wealth, or capital. Moreover, if he possesses foresight, he will keep enough food within reach to tide him over periods when game is not to be had, and such a store is another form of capital.

The Field of General Economics.—The economy of a man who works only for himself is subject to laws that are based on his own nature and the character of his material environment. Because he is what he is and because nature is what it is there is a certain way in which he must proceed, if he will live at all, and there are certain conditions which must exist, if he is to live well. The inherent productive power of labor and of capital is of vital concern to him, since he is both a laborer and a capitalist; but he is in no way interested in what we commonly call the relations of labor and capital, since that expression always suggests the dealings of one class of men, who labor, with another class, who own or control productive wealth. The study of such relations takes us at once into the domain of *Social* Economy; but we can study certain universal laws of wealth without at all entering that domain. When we speak of the power that resides in a bow and arrow, we refer to a truth of *General* Economics and one which illustrates the inherent power of capital, though we may be far from thinking of lenders and borrowers in a modern "money market" or of dealings of any one class of men with any other.

The Field of Social Economics.—The moment that we begin to examine economic relations that different classes of men sustain to each other, we enter the realm of *Social* Economics; and we do this whenever we study modern business dealings. Even our hunter would take part in a social economy if he began to sell some of his game; and from that time on his income would depend, not wholly on his relation to material nature, but partly on his relation to other men. A good market for his game would come to be of the greatest importance to him; and a market for anything implies a social method of securing wealth.

Fundamental Facts Common to Primitive Life and Social Life.—The relations which men sustain to each other in civilized industry are thrown into the foreground in the science of Social or "Political" Economy.^[1] It is an organized system of industry in which we are engaged, and it is that which we care most to understand. Until recently we have had a far less satisfactory understanding of the social element in industry—that is, of the relations that men who are producing wealth sustain to each other—than we have had of such general facts as a primitive producer needs to know. We have had, for example, much information concerning the materials which the earth contains and the way to make them useful. We have had a practical knowledge of what wealth is and of the mode of creating it, and we have been able to identify it as we have seen it either in the raw or the finished state. We have known what labor is, how it proceeds and what helps it needs to enable it to make clothing, to prepare food, etc. We have not known as much about the way in which the modern market for such products is regulated, and how a modern tailor or baker shares gains with the man who employs him and provides him with materials and tools, and the main purpose of studying Economics is to get an understanding of such social facts; but this cannot be done without first bringing before the mind the more general facts concerning the inherent nature of wealth itself and of the activities that are always necessary—in uncivilized life as well as in civilized—for creating and using it.

General Facts First in the Natural Order of Study.—The primitive and general facts concerning industry, which, in a broad sense, is the creating of wealth, need to be known before the social facts can profitably be studied; and a statement of the principles of Political Economy should therefore begin by presenting a body of truth which is independent of politics and sociology and so general that it is illustrated even in that simplest of all conditions, in which no market exists and every man makes by his own labor all the goods that he uses. The wealth of a Crusoe, that of a solitary Esquimaux, and that of a pygmy in equatorial Africa have laws as well as that of a European or American employer or bondholder. The qualities in matter which make a share of it important for promoting the welfare of its possessor can be detected in the simplest commodities that are anywhere used. All kinds of industrial products have a common origin. Labor and capital act together in making a birch canoe as truly as they do in producing a transatlantic liner; and the productive power of each of these two agents is everywhere governed by certain general laws. Before ascertaining what is true of wealth when capital has become complex and when laborers have become specialists, each producing one particular part of one product and securing many finished goods in exchange for it, it is well to state some facts relating to wealth which are so general that they appear in all stages of civilization.

The Nature of Wealth.—The old English word *weal* describes a condition of life. It is the state of being "well off," or of having one's wants amply supplied. Well-being in a broad sense of the term may depend largely on a man's state of health, his temperament, his conscience, or his relation to his friends; but the *weal* that is so secured is not described as a state of wealth. That depends on the possession of useful and material things, and the rich man has more of them than other men. The term *wealth*, which originally signified the state of being rich, afterwards came to be applied to the things which make a man rich, and it is thus that the term is used in the science of Economics.

What Things constitute Wealth.—It is clear that useful things, like air, which are at hand in unlimited quantity, do not make any one rich in this comparative sense, for they benefit all alike; and, in so far as they are concerned, all men are on the same level of welfare. Moreover, since they are so abundant as to shower benefits everywhere in profusion, the quantity of them that a man has

at his disposal may be lost or thrown away with entire impunity. He would only have to help himself again from the abounding supply which nature thrusts on him in order to be as well off as he was before. A bucketful of water on the shore of Lake Superior is of no importance to the man who has it. If it were spilled on the sand, the man would have only to dip up another bucketful, with an expenditure of effort that would be too small to take account of. If, however, fresh water were scarce, every bucketful would have its importance, and the loss of that quantity would make a distinct impression on the man's well-being. Whenever each particular part of the supply has this power to make a possessor better off than he would be without it, the substance is a form of wealth. The quality of being *specifically* important is, therefore, the essential attribute of all the concrete forms of wealth. Sand by the seashore does not have any specific importance, since it is so abundant that the gain or loss of a wheelbarrow load would not make a man better off or worse off; but a pile of sand by the side of an unfinished building has this quality. There every barrow load is of consequence, for the available quantity is so small that diminutions reduce and additions increase the wealth of the possessor. Sand on the shore has the inherent power to help make mortar, and water in Lake Superior has the power to quench thirst, but neither of them has the attribute which would make it a form of wealth, namely, specific importance. Particular parts of the supply may be lost with impunity.

Varieties of Utility.—We have used the term *importance*, rather than usefulness or utility, to describe the quality which, if it exists in every particular bit of a substance, makes it all a form of wealth. With due care we may use the term *utility*. In a way even a cup of water dipped by a fisherman from the lake is useful, for it renders a service. Though the man might lose it and be no poorer, he cannot say that the thing has no utility of any kind. He can say that it has no importance. What it has we may call *absolute* utility, or the power to do for a man something which he wishes to have done. When the fisherman is thirsty the water will do him good. It has an absolute service-rendering power; and yet this cupful makes the owner no better off than he would be without it, since the service which it is capable of rendering would be rendered whether the man had it or not. Absolute utility in an article is the power to render any service whatever, regardless of the question whether it would be rendered equally well if the article were absent. If conditions were such that the man would have to go thirsty in case he spilled his cupful of water, then this little supply would have what we may term *effective* utility, and this means that the presence of the particular bit is a positive element in conducing to the man's welfare. Usable things have absolute utility even when they are superabundant, but they have effective utility only when the quantity of them is so limited that every particular bit of it is of some importance. Absolute utility and limitation of supply insure to them this quality; and this principle holds true in the economy of the most primitive state as well as in that of a civilized one.

The Origin of Wealth.—Some of the things that have this kind^[2] of utility have been given to man by nature. She has furnished some materials that are useful and has not furnished them in quantities sufficient to prevent them from being *specifically* important. On account of the comparatively niggardly way in which she has doled them out to man, every bit of the supply has a power to benefit him; and if he gains some portions, he goes upward in the scale of well-being, and if he loses some, he goes downward. Wild fruits and fruit trees come in this category; and a savage who should build his hut in a small grove of banana trees, if he could keep other people out of it, would be, by so much, better off than they. The grove and its fruits would constitute their owner's wealth.

Land an Original Form of Wealth.—Land is the original gift of nature to humanity, and wherever there are people enough to make the possession of a particular piece of it important, it becomes a form of wealth. It can be valueless only when population is very sparse; and then an increase in the number of people dwelling on it gives to it early the attribute of specific importance. The land that is accessible to a growing population cannot long be superabundant.

Forms of Wealth produced by Labor.—Few useful goods are presented to man by nature in a finished state, and it is therefore necessary for man to exert himself in order to get the goods that he needs in the condition in which he can use them. He must make raw substances more useful than they naturally are, and as he does this the things become partly products of his labor. Of course the supply of them is limited, since labor is so.

Labor a Wealth Creator.—Labor is a wealth-creating effort, and there is no labor that is successful in attaining its purpose that does not help to bring into a serviceable condition something that can be identified as an economic good or a form of wealth. Some effort, indeed, fails in what it attempts to do and therefore produces nothing. We may build a machine that will not work, or make a product that no one wants; but labor that attains a rational purpose is always economically productive.

Protective Labor and the Attribute it imparts to Useful Matter.—Labor may be classed according to the particular result that it accomplishes. In saying that the banana grove in our illustration is wealth to the savage who resides in it, we had to insert the proviso that he is able to keep other persons out of it. Exclusive possession or ownership is necessary in order that things may continue to be effectively useful to any particular person or persons. If they are superabundant, as we have seen, no part of the supply is important; but it is also true that if they are scarce and a man is not able to keep any of them, they will not serve him. In order that an economic good may be effective, it must be appropriable, and where claimants are numerous and lawless it may take much of the owner's time and effort to keep the article in his possession. The savage must personally protect his goods, and to some extent the civilized man must do so; for however well policed a city may be, it will not do to leave purses or portable goods by the wayside. Protective labor is necessary in all stages of social advancement. In civilized life, indeed, we delegate much of it to a special class of persons,—policemen, judges, lawyers, and legislators,—and this is the most fundamental division of labor that civilization entails; but the work has to be done in any stage of social evolution. Crusoe's goods would have been worth nothing to him if he could not have kept them from the savages who, in time, appeared on his island; and they would have been worth little if he had been forced to spend most of his time in guarding them.

Appropriability is, therefore, a further essential attribute of the things which can make particular men richer by reason of their presence. When such things are actually brought into ownership, their utilities become available, as they would not otherwise be. Effort expended in protecting property is wealth-creating, since it causes those service-rendering powers which otherwise would be only potential in goods to become active. In other words, it gives to things which are otherwise in a condition to be effectively useful a further quality which they require in order that they may actually promote an owner's well-being.

Industrial Labor.—Industrial labor is the antithesis of protective labor, and it invariably changes the qualities of material objects in such a way as to make them useful; that is to say, it directly creates utilities.^[3] These utilities are of different kinds, and the labor may be classified according to the kind it creates.

Elementary Utility.—An elementary utility is created when a substance is either dug out of the ground, as is done in mining, or when it is secured through the vital forces of the earth, as is done in agriculture. Hunting, fishing, and stock raising should be classed with

agriculture, since they use the resources of animate nature to secure for mankind new raw products on which labor will confer further useful qualities. This utility has to be created by men in every stage of industrial development, from that of a tropical savage to that of men in the most advanced civilization.^[4]

Form Utility.—A form utility is created when a raw material is fashioned into a new shape, subdivided, or combined with other materials, as is done in manufacturing and, in a certain way, in commerce. Buying goods in bulk and selling them in small quantities is the creating of form utilities and makes an addition to total wealth. Oil in small cans is worth far more for consumption than it would be if each consumer were forced to buy a tankful. Sugar is worth more to a consumer when it is doled out to him in paper sacks than it would be if it were to be had only in hogsheds. Merchants are not mere exchangers, for they make positive additions to the utility of goods. In primitive life no such class exists; and yet form utilities of every kind are created, since men make for themselves the goods that they use and adapt them in shape and in quantity to their current needs.

Place Utility.—Carrying things to places where they become more useful creates place utilities. In primitive life men do their own carrying; but in civilized states the common carrier does most of it, and so imparts place utility to matter on the most extensive scale. All useful transportation creates this quality, which is a general attribute of wealth; and the operation of so moving matter as to create place utility is one of the general functions of labor.^[5]

Time Utility.—There is, moreover, a kind of utility which depends on the existence of a good at the time when it is needed. Ice in the warm season, a plow in the spring or the fall, a pleasure boat in summer, and anything which, by the aid of capital, is presented to a user when he needs it, illustrate this quality. We may call it time utility, and creating it is a function of capital. We shall see how capital assists in the production of the other utilities; but the creation of time utility it accomplishes without assistance.

Executive and Directive Labor.—Labor involves the whole man, physical, mental, and moral. No labor is so simple that it is not better done when intelligence is used in the performance of it. The savage's hut, his canoe, his bows and arrows, etc., vary in their efficiency and value, not merely according to the time and muscular effort spent in making them, but also according to the efficiency of the thought by which those efforts are guided. There is here the germ of the difference between the executive labor of the modern employee and the directive labor of the manager. Yet no manager directs in more than a general way the muscular movements of his subordinates, and their own intelligence must still be trusted to do much of the directing. The mental labor that guides and controls the physical is universal in industry, but becomes more and more a distinct and dominant factor as civilization increases.

Fidelity as affecting the Productivity of Labor.—The fact that all workmen are largely their own directors brings fidelity into the foreground as an element in determining men's earning power; but this element counts for much more in the civilized state than it does in the primitive one, for here fidelity in directive laborers of the highest type is most important and difficult to secure. One of the greatest problems of modern business is how to make directors and executive officers of corporations faithful to the stockholders who employ them. In the primitive state these problems do not arise. When a man is working for himself, mere interest largely takes the place of fidelity. If to-day any one secures a good house of his own to live in, it is because he employs contractors, overseers, and artisans all of whom are, in the main, faithful to his interests and see that the work of building is properly done. A savage looks after his own interests as his personal work proceeds; and yet even in his case there is the germ of that enthronement of character in the supreme place which is the prominent feature of highly organized industry. In building a hut to shelter his family, a savage puts into his work conscience and affection as well as muscular effort; and when the mother of the family does this work, the altruistic element in it is still more conspicuous. As society becomes highly organized the importance of the moral element in all labor increases till the further progress, or even the existence, of the social order may be said to depend on it. In the world of business there is now distrust and turmoil, and revolutions are feared, because of the unfaithfulness of a class of men to trusts committed to them.^[6]

The Requisites of Production.—If we start with nothing but the earth in its natural state, inhabited by empty-handed men, and seek to know what is necessary in order that some wealth may be created, we find that nothing is absolutely necessary except labor. By working for a few minutes it is possible to get something that will minister directly to wants. Yet if men begin operations in a state of such poverty that they have only their bare hands to apply to the elements about them, they do not commonly get the usable goods immediately. If a savage wants fish and makes the rudest net with which to catch them, he makes what is a *capital good*. This is wanted only for the sake of the consumers' wealth which it will help to produce. The end in view has all the while been fish; but the man works first on an instrument for catching them. He makes the net by mere labor, but he catches the fish by means of labor and the net. Without such instruments to aid in production a dense population could not live at all, and a very sparse one could live only in a meager and precarious way. If the instruments are artificially made, or if they are furnished by nature in limited amounts, they are forms of wealth, or goods; but as their function is not to minister directly to consumers' wants, but to help in making things which do this, we distinguish them by the name "producers' goods" or "capital goods." In contrast with them those commodities which directly minister to wants may be called "consumers' goods."

The Production of Intermediate Goods.—All economic goods are means to an end. Wealth is always mediate. It is usually a connecting link between man's labor and the satisfaction of his wants. Man, the worker, first spends himself on nature, and then nature in turn spends itself on him. In production nature is the recipient, but in consumption the recipient is man. This is saying that man serves himself by means of some element in nature which, under his manipulation, becomes a form of wealth. He thrusts a bit of natural matter between himself as a producer and himself as a consumer. All kinds of wealth, then, stand in an intermediate position between original labor and the gratification that ultimately results from it. Some goods, however, are means in the special sense of standing between labor and other goods. Instruments help to make consumers' goods and these add to man's pleasure. Using a tool is not generally agreeable. The tool stands not only between the effort and the gratification that will ultimately follow, but between the effort and the further material good that will directly produce gratification. The hatchet intervenes between the labor that makes it and the firewood it will cut, while the wood acts directly on the man and keeps him warm. Capital goods are in this special sense mediate. They are not wanted for their own sake, but for the sake of something else that is directly useful.^[7]

All Labor immediately Productive of Wealth.—When a savage abandons the plan of fishing from the shore and gives his labor for a fortnight to making a canoe with which to fish more effectively, he interposes an interval of time between his labor and its ultimate fruits, the consumers' goods. There is no such interval between the labor and the kind of wealth that it first creates, namely, the canoe. This immediate product of labor is itself a form of wealth and at once rewards the laborer, since it is what he needs, though he does not need it for consumption. Industry always pays as it goes and tolerates no hiatus between labor and wealth in some

form.

Organized Industry immediately Productive of Consumers' Goods.—If one man were keeping the stock of canoes of a few fishermen in repair and taking as his pay a share of each day's catch, he would not have to wait for his food any longer than the fishermen themselves. This mode of conducting the industry, however, involves organization. If each fisherman had to make his first canoe, it would be necessary for him to wait for fish; but as soon as a stock of canoes has been obtained and a special set of men assigned to the work of keeping this stock intact in number and quality, that necessity entirely ceases. Five men may do nothing but fish while a sixth keeps their stock of canoes intact by repairing old ones left on the shore and making new ones to replace such as are beyond repairing. Fishing and boat building may go on simultaneously, and all the men may go share and share in each day's catch.^[8] This is a type of what goes on in modern industry, where a complex stock of capital goods always exists and is kept intact by the action of a class of persons who share the returns that come from using the stock. None of these persons has to wait for food, although some of them devote themselves exclusively to the production of tools. This fact shows that the necessity for waiting, as well as working, wherever instruments are in the process of manufacture, is not among the universal phenomena of economics, and that it is not present in that organized industry which we chiefly study. Such a permanent stock of capital goods as the fishing community of our illustration possesses would enable it to get its food, the fish, day by day, by working in different ways and using the permanent stock. If we call this permanent supply of canoes, etc., *capital*, it is, *in a causal way*, mediate wealth, though it is not so in point of time. Some labor is spent each day on it, and itself creates each day some consumers' wealth. These two operations go on simultaneously, and the men who work to maintain the stock and those who use it get their returns together. In very primitive life the work spent on capital goods and that spent on consumers' goods are not always synchronous, but organization and the acquiring of a permanent fund of capital make them so. Work to-day and you eat to-day food that is a consequence of the working. In point of time the canoe makers are fed as promptly as the fishermen, and this fact is duplicated in every part of the industrial system. We shall later see more fully what this signifies, but it is clear that any study of this phenomenon—the synchronizing of labor and its reward—takes us out of the field of Universal Economics, since it does not appear in the industry of primitive beginnings, but is the fruit of organization.^[9]

FOOTNOTES

[1] Past usage renders the somewhat misleading term *Political Economy* more available than the more accurately descriptive term *Social Economics*, as the title of the science which treats of the creation and use of wealth by an organized society. Either title implies the existence of such an organization, but the word *political* calls attention to the fact that it is under a government. The fact that, in a study of wealth, is most important is that the exchanges of products which spontaneously take place create an industrial society whose activities, going on as they do under a government, constitute the subject of the studies which are properly indicated by the traditional term, Political Economy. Government as such is not the subject of those studies.

[2] The term *final* utility is used with much the same significance as specific importance. It is the utility of the last and least important part of the supply, and the use of the term requires us to think of the supply as offered to users unit by unit till the whole amount is in their hands. The first unit, when it stands alone, is more important than any later one will be. The second is of less consequence, and the last is the least important of all. When, however, all have been supplied and are together available for use, one is as important as another. Each one has an effective utility which is measured by the service rendered by the last one. The term *specific* indicates that we measure the importance of the supply of an article not in its entirety, but bit by bit, while the term *effective* is the antithesis of *absolute* and means that each bit of the supply not only renders an absolute service, but renders one which would not be gratuitously rendered by some other part of the supply in case this portion were removed or destroyed. We do not here think of the supply as built up from nothing to its present size bit by bit, but look at it as it stands and measure the importance of any particular quantity. When we speak of final utility, we think of a series of "increments" supplied one after another, and in this case the successive increments become less and less important, since, after some have been supplied, the want of the kind of good that they represent is less keenly felt. The conception of the series of units is merely a means of isolating one unit from a total number and obtaining a mental measurement of its importance which corresponds with the effective importance of any unit in the entire quantity.

[3] The term *create* is here used in a somewhat loose sense and does not imply that the man originates matter or even that he always transforms it without calling in, as an aid, the forces of nature. The farmer must depend on vital forces in soil and air in order to raise a crop. What he and other laborers do is to cause the product in some way to come into existence, and he and they may in this sense be said to create the products which would not appear without them.

[4] The distinction between elementary utility and others does not need to be applied with the utmost strictness, for mining creates form utility by breaking up masses of ore, and place utility by making them accessible. Agriculture shapes its products and moves them to places of storage. It is convenient in practice to adhere to the more general classification suggested in the text.

[5] In a way all kinds of production may be analyzed into the moving of matter. In cutting up raw materials a manufacturer moves waste portions away from those that are to be utilized, while combining materials, of course, moves them toward each other. Neither of these operations creates place utility. This quality consists in a relation, not between some materials and others, but between goods and the persons who are to use them. Bringing things to us from a distance changes their local relation to us, and in this is the essence of place utility, and every article that we use must have acquired this quality. The service-rendering power which it possesses is only potential until it reaches a place where the power can be exercised.

[6] On the ground of convenience, we may classify labor as physical or mental, according as the work of muscle or of brain is especially prominent. Digging a ditch requires more than an average amount of strength and not even an average amount of intelligence, and it is, therefore, physical labor rather than mental; while writing a brief or arguing a case in court requires much power of thought and only a small amount of muscular strength, and is typically mental labor. Managing an estate for an absent

owner is more largely a moral function, since the value of the service depends chiefly on the fidelity of the man who renders it; but physical and intellectual labor are also involved. These three types of personal effort are exerted wherever wealth is created.

[7] For an elaboration of the conception of mediate goods the reader is referred to Von Böhm-Bawerk's work on "Positive Theory of Capital" and to John Rae's work on "The Sociological Theory of Capital."

[8] One man might be employed in guarding canoes and fish against theft, which is doing protective rather than industrial labor; and economic forces would tend to give him a share as large as each of the others receives, provided, of course, that the men are of equal capacity as workers.

[9] The conception of capital goods as always putting enjoyments into the future has crept into economic science because in certain illustrations taken from primitive life they seem to have that effect. We shall see that they do not have it at all in *static* social industry, and that they have it only in a limited way in *dynamic* social industry, or that which is carried on by a society undergoing organic change.

CHAPTER II

VARIETIES OF ECONOMIC GOODS

Passive Capital Goods.—Labor spends itself on materials, and these, in their rawest state, are furnished by nature herself. They "ripen" as the work goes on. Every touch that is put on them imparts to them more of the utility which is the essence of wealth. They are technically "goods," or concrete forms of wealth, from the moment when they begin to acquire this utility, though for a time they are in an unfinished state. The function of materials, raw or partly finished, in the physical operation of industry is a passive one, since they receive utility and do not impart it. The iron is passive under the blows of the blacksmith's hammer; leather is passive under the action of the shoemaker's sewing machine; a log is passive under the action of the lumberman's saw, etc. The materials which are thus receiving utilities under the producers' manipulations constitute a distinct variety of capital goods, while the implements which help to impart the utilities constitute another variety, and both kinds are present in all stages of industrial evolution. Savages use raw materials and tools for fashioning them.

Active Capital Goods.—The hammer which fashions the iron, the awl which pierces the leather, and the saw that cuts the log into boards have an active function to perform. They do not receive utilities, but impart them. They manipulate other things and are not themselves manipulated; and except as unavoidable wear and tear injure or destroy them, they are not themselves at all changed by the processes in which they take part. They are the workman's active assistants in the attacks that he makes on the resisting elements of nature. Passive instruments, then, and active ones—things which receive utility, as industry goes on, and those which impart utility—constitute the two generic kinds of capital goods. What is commonly called "circulating capital" is a permanent stock of passive capital goods; and, in like manner, what is usually known as "fixed capital" is such a stock of capital goods of the active kind. The materials and the unfinished goods that are scattered through a modern mill and receiving utility are what the manufacturer would at this moment identify if he were asked to point out the things in which he has circulating capital invested; while the mill, the machinery, the land, etc., which are imparting utility, are what he can point to as now constituting his fixed capital. At a later time there will be other goods of both kinds in his possession, and these will at that time embody the two kinds of capital. While a primitive man would have little occasion to use the term *capital goods*, he would possess both varieties of the goods which the term denotes.

Varieties of Active Capital Goods.—Mere hand tools act as armatures attached to the person of the worker, and they enable him effectively to attack resisting substances. The hammer fortifies the blacksmith's hand against the injuries it would suffer if he delivered blows with his fist, and it multiplies the efficiency of the blows. Machines, however, substitute themselves for the person of the worker and carry the tool through its movements. A steam hammer, so called, is an engine that gets power from a boiler and wields an armature, which is the real hammer, much as a smith would do it, though with far greater force and effect. Machines do rapidly and accurately what a manual laborer would, without them, have to do slowly and imperfectly, by carrying the armature in his own hand and moving it by his own muscular strength. Tools and machines impart "form utility" to materials. Vehicles which carry goods impart "place utility" to them by putting them where they are more useful than they would be elsewhere. Buildings protect goods and workers alike, and enable the operation of transforming them to go on successfully. They also make it possible to store goods at a time when they are not needed and take them out for use when they are needed. In doing this, buildings help to impart "time utility" to the merchandise that is put into them by keeping them intact till the time comes when they will be useful. Tools, machines, reservoirs of water, canals, roadways, buildings, and even land itself are active capital goods, and are, for that reason, component elements of that part of the permanent productive fund which is known as fixed capital. They aid workers in their efforts to bring materials into usable shapes, and this is as true of the hole

in the earth in which a savage stores provisions as it is of a fireproof warehouse in a modern city.

Materials which are at first Passive and later pass into the Active State.—The hammer itself has to be made out of raw material, and, while it is in the making, the material that enters into it is as passive as anything else. While the ore is smelting and while the steel is forging, the future hammer is in a preliminary stage of its existence and is discharging a passive function. When it is completely finished, its period of activity begins, and from this time on it helps to manipulate other things. The materials which enter into consumers' goods go through no such transition. The leather remains passive till, in the form of a pair of shoes, it clothes its user's feet; and at this point it ceases to be a capital good at all. The steel of the hammer is first a passive good and later an active one.

The Use of Capital Goods Universal.—There is no doubt that capital goods are used in the most primitive industry. Implements existed in times too remote for tracing; and even if they had not been used, raw material would have been indispensable. People living in an economic stage so ultraprimitive as to use no mediate goods whatever could sustain life only by plucking wild fruit or gathering fish or other food stuff by hand, and so long as they could do this their industry might conceivably consist in getting consumers' goods by labor only. The rudest pick, shovel, or ax and the simplest hunting implement are early types of what, in "capitalistic production," is represented by mills with their intricate machines, ships, railroads, and the like. Primitive industry has capital but is not highly capitalistic, since labor and a little capital in simple forms are all that it requires. These primitive capital goods are still essential.

Capital.—It might seem that we have already described the nature of capital, but we have not. We have described the kinds of goods of which it consists. A sharp distinction is to be drawn between two ways of treating capital goods, and only one of these ways affords a treatment of capital properly so called. To attain that concept we must think of goods as in some way constituting a stock which abides as long as the business continues. And yet the things themselves separately considered do not abide. Goods are perishable things; no one lasts forever, and some last only a very short time. Raw materials best serve their purpose when they are quickly transformed into usable goods and taken out of the category of productive instruments. Tools may last longer, but they ultimately wear out and have to be replaced.

How Capital Goods Originate and Perish.—If you watch a particular mediate good of the passive kind, say wood in a growing tree, you see it beginning its career as an absolutely raw material, and then under the hand of labor, aided by tools, receiving utility till it takes its final form in some article for a consumer's use, say a dining table. Little labor is applied to it during the first stage of the process, that in which the tree is guarded and allowed to grow to a size that fits it for conversion into lumber; but the cutting, carrying, sawing, and fashioning are done by labor and tools, and under their manipulations the wood "ripens" in the economic sense—that is, it becomes quite fit for consumption. It is ready to serve a consumer as a table, and, when this service begins, the wood that up to this point has been a passive capital good, constantly receiving utilities, will cease to be a capital good at all and begin slowly to wear out in the service of its owner.^[1]

The Transition of Goods from one State to Another.—The beginning of its service in the purchaser's dining room takes the wood of the table out of the category of producers' goods; but there is some raw material that is never destined to emerge from that category and enter another. Its last state of existence as a good will be that in which it is embodied, not in an article for consumers' use, but in an active tool. Our tree might have furnished some of its wood for a wheelbarrow, and if so, that part of it would have been a capital good until it ceased to be an economic good at all. If we watch it as it grows toward its economic maturity, we see it sawed, planed, and otherwise fashioned under the laborer's hand, and maintaining during all this time its passive attitude, just as does the wood that is destined to constitute a table. When the wheelbarrow is completed, it does not, like the table, begin to minister directly to consumers' wants, but begins actively to aid some laborer in a further productive operation. It carries mortar to the wall of an unfinished building and is thus taken out of the list of passive goods—recipients of utility—

and is ranged with other active tools which impart utility. The same thing is true of the steel that is destined to compose the head of a modern woodman's ax or the stone that is in process of fashioning into the rude hatchet of some primitive savage. As raw or partly wrought material it is a passive capital good; later it becomes an instrument of the active sort.

The Ultimate Perishability of all Kinds of Goods artificially Made.—In the end both kinds of material will cease to be capital goods. The raw stuff that goes into food, clothing, furnishings, or the like will become consumers' goods, while the raw material of tools will, in its final form, the tools themselves, have one more lease of life as capital goods. In the end, however, as wheelbarrows, axes, hatchets, and the whole long list of active implements are used up, they cease to be capital goods because they cease to be economic goods at all. They are as truly ordained to be ultimately used up as are food and clothing, and this is true of the most durable things that are artificially made. Walls, roadways, bridges, and buildings slowly deteriorate till the time comes when for productive purposes their room is worth more than their company.

Why the Perishability of Capital Goods does not put Capital out of Existence.—Perishability is the most striking trait of capital goods. Each particular one comes and goes, but there is always a stock of them on hand; for when one is on the point of going, another is ready to take its place and keep up the succession. New tools replace old tools; new materials replace those that are finished and withdrawn, and so it comes about that a stock of such things abides forever. Not one of the individual instruments is permanent, for each one only does its part in keeping up an endless procession. It is the procession that is always there—a moving series of individual goods, not one of which has more than a transient economic career. Each one helps to keep up the supply of permanent capital just as each man, taking his turn in an endless succession of laborers, serves during his brief life to keep up the permanent force of laboring humanity. Men come and go, but "labor"—a mass of working humanity—abides; and so capital goods come and go, but a stock of them abides, kept up by perpetual replacement. We may trace the career of any single instrument from a beginning to an end; but we may, on the other hand, cease to look at any instruments that we single out and identify and look rather at the procession of them; and if we do this, we look at a body which never wastes away, though the things that compose it are, separately considered, forever wasting.

There are many kinds of transient things which, by the same process of renewal, constitute permanent entities. Composing a human body at this moment are certain tissues that can be separately identified; and if we watch any one of them, we shall see it going in a short time to destruction. Yet the body lasts while life continues. Indeed, the evidence of the life itself is the discarding and replacing of the tissues. A living body is a durable thing, though the particular tissues that at any one time compose it are not so. In a like way drops of water make a river, and this is a permanent thing, however rapidly its composition changes. The waterfall that drives the machinery of a mill is permanent, though no particular particle of water remains in it for more than a moment. Society is permanent, though the men who compose it are short-lived. In an exactly similar way a body of capital goods is maintained as a perpetual instrumentality of production. *This is capital properly so called.* It is, as it were, a quasi-living body, perpetuated by the constant replacement of the component parts, which are destroyed as its normal activities go on.

The Difference between Capital Goods and Capital Summarized.—The distinction between capital goods, on the one hand, and capital, on the other, is, then, like that between particular tissues and a living body, or like that between particular particles of water in the river and the river that flows forever. We can single out and watch certain drops of the water as they flow from a spring, and we can trace them through their brief careers, and say truly that the river is composed of fickle and transient stuff; but we cannot say that the river is transient. That is perpetuated by the renewing of the supply of water as the original drops disappear. We can mentally watch a particular man, as he enters the social force of workmen, labors for a time, and drops out of the line, and can see that society is composed of transient material; but society itself is an abiding thing. So we can study a particular bit of ore or wool or leather or a particular hammer or spindle or sewing machine, and in those cases we shall be studying capital goods and finding how perishable they are; but we shall

also see that a stock of them always abides as the capital of economic society. We can cease to look at individual things and study the permanent fund of productive wealth, which is made up of goods like ore, wool, leather, hammers, spindles, and sewing machines. The identity of the things which make up this stock is forever changing. The same list of things we shall never find in the stock on any two dates, but a supply of similar things forever abides. *Capital is this permanent fund of productive goods, the identity of whose component elements is forever changing. Capital goods are the shifting component parts of this permanent aggregate.* They are the particular instruments that, each during its own brief economic lifetime, take their places in the endless procession of things which in its entirety is an abiding productive agent—the co-worker of labor and its perpetual assistant in creating consumers' wealth.

The Business Man's View of Capital.—It is as such an abiding entity that a business man regards capital. He describes it nearly always as a sum of money. Thus the capital of a manufacturer is "a million dollars" because a stock of instruments worth that amount is kept intact in his possession. It is not allowed to waste away, however much the constituent parts of it may shift. The waste and renewal which business entails leave the equivalent of the million dollars always on hand, though never in the literal shape of money. A stock of shifting goods always worth a million dollars is, by a figure of speech, described as a million dollars "invested in the goods."^[2]

The Chief Attribute of Capital.—A chief attribute of capital, properly so called, is permanence. If a man's productive fund does not last, he is impoverished. The farmer keeps on hand a more or less constant supply of the implements he has to use. He takes a part of the proceeds of the sale of his crops, puts it into the shape of implements and materials, and in this way keeps an amount of them on hand as the auxiliary capital of agriculture. Particular goods are not constant, but the sum of money or quantum of wealth "invested" in the moving procession of them is so. At any one instant the capital is composed of particular instruments which can be sought out and identified, but at no two instants are the goods the same.

The Reasons for describing Capital as a Sum of Money. —This fact explains the general practice of describing capital in terms of money. The manufacturer just referred to will speak of his capital as "a million dollars" and consider that sum as a "permanent investment" because he knows that while the goods that now represent that value will soon pass from him, the "dollars"—that is, the value which is equivalent to the dollars—will abide. There is, moreover, no failure on his part to discriminate between his capital and literal money, for he knows in what his productive fund consists, and is fully aware that only the minutest part of it is in the shape of actual currency.

Instruments of production compose the fund, but the dollars serve to describe it. They indicate the amount and the abiding quality of it, since they describe what he has invested or embodied in the shifting things and can, by a fair sale, get out of them.

Why Abstract Terms are used in popularly describing Capital. —In certain connections money is, in unintelligent thinking, confused with real capital in ways that we should guard against. In avoiding such errors we need to be even more careful that we do not miss the truth that is at the basis of the common mode of describing capital. A permanent fund that is spoken of as a million dollars invested in a business does not suggest to any one a literal pile of a million silver or paper dollars or of a hundred thousand gold eagles. It suggests what is actually in the business, a procession of things each of which comes into the man's possession and then leaves him, and helps him to keep the constant stock of goods that at any time is a potential million of dollars. A permanent body of any kind, if it is made up of shifting tissues, is commonly described by the use of an abstract term. A waterfall, made as it is of rapidly changing drops of water, is spoken of as a "water power," since the power is the abiding thing. An endless series of living human beings is described as "humanity," since that remains through all personal changes. An endless series of workingmen is described as "labor," and we study the "wages of labor," the "relations of labor to capital," etc., because these are permanent relations. Men come and go, but labor continues and is the source of a permanent income. It is actually the fact that in speaking of the "labor problem" or the "relation of capital and labor" we usually think of "labor in the abstract," as we might term it; but this is very far

from implying that we consider a series of generations of actual workingmen as an abstraction. We may, using terms in a like way, speak of the problem of interest as concerning "capital in the abstract"; but this is far from meaning that we consider an endless series of material instruments of industry an abstraction. We describe these real things by the use of an abstract term, just as we describe a thousand other realities. A "fund," a "value," a "permanent quantum of wealth," is capital; but with the abstract notion the mind always merges the thought of the concrete entity. It is the tools of industry that, in their endless march, come into and go out of the industrial field that we think of even when we use the abstract term. This term, however, saves us from the danger of thinking merely of particular tools that we can identify and trace to their final destruction when we form the concept of capital.

The Importance of discriminating between the Concept of Capital Goods and that of Capital. —Very great is the importance of keeping sharply distinct the two concepts of productive wealth of which one is described by the term *capital goods* and the other by the term *capital*. In the one case we think of a particular thing which we identify, keep in mind, and watch as it goes through its transformations, does its final work, and perishes. The brilliant studies of Professor Böhm-Bawerk are based on the idea that such a tracing of the biography of a particular instrument is the true way to solve the problem of interest. Yet the very term *interest* itself suggests the existence of what we have defined as permanent capital—an abiding fund or sum of wealth that every year yields as an income a certain percentage of itself. The "hundred dollars" yields five dollars; that is, the fund yields a twentieth of the amount which, amid all the changes of its constituent parts, it continues to embody. It is true, indeed, that a study of *all* capital goods which have existed or will exist, with due attention to their relations to each other, would reveal the fact that they maintain such an endless procession as has been here described, and it would thus bring before the mind such a concept of capital as the business man has and describes by the monetary form of expression. By making a synthetic study of capital goods in general, and not separate studies of particular goods as they come and go, we can obtain a grand resultant of the action of all of them, which is nothing less than permanent capital doing its continuous work. Such a comprehensive study of capital goods, if it is carried far enough, becomes a study of the abiding entity, capital. Allowing ourselves, however, to put the abiding entity out of sight and merely to trace the origin, growth, and productive action of separate instruments of production would be disastrous. The undying body in which the particular things are tissues absolutely needs to come into view. The very mention of a problem of interest—of the percentage of itself that a fund of a given amount can annually earn—puts before us at once the permanent entity, capital, and the problems relating to it.^[3]

Labor as a Permanent Entity.—The term *labor* is sometimes used to describe a permanent aggregation of laborers no one of whom lives and works through more than a brief period. Labor is thus analogous to capital and laborers to capital goods. A permanent working force is composed of perishable beings as a permanent producing fund is composed of perishable goods. Both are commonly described by the use of abstract terms, but both are in reality concrete things; and actually to reduce either to a mere abstraction would be to put a material entity out of existence. We instinctively speak of a value—a given number of dollars—in describing a man's capital, but it is dollars "invested in" productive instruments; and we instinctively speak of labor when we mean an abiding force of workingmen. Neither capital nor labor is like an immaterial soul that can live apart from its body. Each consists of a permanent body with a shifting composition. A permanent sum, on the one hand, a permanent amount of working energy, on the other, are always present, but they are in goods and men respectively. Each may well be described by the use of an abstract term, and in practical life it commonly is so; but it is a concrete reality.

Peculiarity of Land as a Capital Good.—One reservation needs to be made when we call capital goods perishable. If we include land under this term, we must make it an exception to the rule of destructibility. It is the only thing that does not go out of existence in the using. It is not a produced good at all and does not stand, like other goods, in an intermediate position between labor and the gratification that labor is intended to produce. Work did not create it and using will not end it. It will be called, in our study, a capital good, for it is a form of wealth which produces other wealth. It

enters into the permanent productive fund that society is using.

Differences between Land and Other Capital Goods Important in Economic Dynamics.—It is in a later part of the study which deals with economic changes—the part which we shall call Economic Dynamics—that the differences between land and artificially made goods become prominent, and these differences will receive due emphasis in their proper place. In studying the law which would govern economic society if no essential economic changes were taking place,—in reducing society, as it were, to a static state,—we find that there is a certain set of characteristics which land shares with those capital goods which are the products of human industry. In static studies it is best to group the productive instruments which men make with the one unmade good which nature furnishes and to recognize that together they embody the permanent fund of productive wealth.^[4]

Mobility an Attribute of Capital.—Even in a static society capital would be permanent, while particular capital goods would be perishable. In dynamic studies another quality of capital, as distinguished from capital goods, comes into the foreground, namely, mobility. It is the power to move without loss from one industry to another. Goods cannot be thus moved with any freedom. A loom cannot be taken out of a woolen mill and made to do duty in a carpenter's shop, nor can a circular saw be made available in weaving. When the loom wears out and needs replacement, it is in the owner's power to procure either another loom or a circular saw, and if he chooses the latter alternative, he causes capital to move into the woodworking business. A whaling ship would not be useful as a cotton mill; but much capital that was once invested in the whale fishery of New England has since found its way into manufacturing. The transfer can often be made without waste. If the earnings of an instrument have sufficed to replace it with another that is like it, they may suffice for producing an instrument that is unlike it. Waste, if it occurs, results from a failure of the original instrument to earn the fund for replacement. Capital which thus abides but passes from one employment to another is a body the identity and the character of whose component parts change. The transfer of capital from one industry to another is a dynamic phenomenon which is later to be considered. What is here important is the fact that it is in the main accomplished without entailing transfers of capital goods. An instrument wears itself out in one industry, and instead of being succeeded by a like instrument in the same industry, it is succeeded by one of a different kind which is used in a different branch of production. Goods have not moved from one branch to another, but capital has done so.

How Capital itself may be Destroyed.—When we speak of capital as permanent, we mean that using does not destroy it as it destroys the tissues of which it is composed. Fires, earthquakes, and business disasters put parts of it out of existence and affect the volume of the fund as a whole; but production itself leaves it intact. It is this very production which destroys capital goods and makes it necessary to replace them.

FOOTNOTES

^[1] In the economic sense consumption is the utilization rather than the destruction of the thing consumed, though many things go rapidly to destruction in the process. Food is destroyed in the moment of using; clothing perishes more slowly by use, and furniture and dwellings more slowly still. Some things that go gradually to destruction during the process of utilization do not perish the more rapidly because of it. A vase, a statue, or a picture is consumed, in the economic sense, by a person's act of looking at it and getting pleasure from it; but this does not hasten its deterioration except as keeping such an ornament where it can be seen exposes it to deterioration or accident. Climbing a hill to get a view "consumes" the hill in a true sense, and looking from the summit over a wide stretch of picturesque country even consumes—that is, utilizes—the landscape; and certainly this act does not injure the thing utilized. The general fact, however, that goods for final use are, as a rule, injured or destroyed either by the act of consumption or by the exposures that are incidental to it, justifies the use of this term to express the receiving of a service from the usable article. It is a process in which the commodity acts on men's sensibilities and, as a general rule, exhausts itself while so doing. It is

worth remembering that this exhaustion of the good is not the essential part of consumption. On the man's side that consists in deriving benefits from the good, while on the side of the good itself it consists in conferring benefit on the man—in doing him good and not in doing itself harm.

[2] We here put out of sight all questions connected with the changing purchasing power of money. This is, in ordinary times, the business man's habit. He considers his capital intact if the number of dollars invested originally in his business still appears on his inventory as representing the net surplus of his assets over his liabilities. If a currency were undergoing rapid inflation, a fixed amount of invested money would represent a shrinking stock of capital goods. This stock would last always, but would grow smaller by a true standard of measurement. All that we are at present interested in knowing is that practical usage treats capital as a permanent fund of productive wealth, and most conveniently describes it as a fixed amount of money "invested" in goods of a productive kind. What is thought of as "money" abides. Of course the practical man does not regard it as actually composed of currency.

[3] Consumers' goods may be regarded in the two distinct ways in which it is necessary to regard capital goods. We may look at particular articles for consumption, as they begin their careers by ministering to their owners' needs, and follow them as they wear out and finally perish. This gives a conception of them which is analogous to the conception of capital goods rather than to that of capital. On the other hand, we may look at the permanent stock of usable articles, which is maintained by the constant coming of new ones to replace those which are worn out, and in this way we get a conception of *permanent consumers' wealth*. The flow of finished goods from the shops to the users offsetting the concurrent destruction of such articles in the users' hands, has the effect of maintaining a permanent fund of consumers' wealth consisting of perishable goods the identity of which is always changing; and this fund is analogous to permanent capital as we have defined it. Professor C. A. Tuttle has advocated the use of the generic term *wealth* to denote the two continuing funds which we have here termed, on the one hand, capital, and, on the other hand, the permanent stock of consumers' wealth. We have preferred to use the term *wealth* in a sense that is generic enough to include both capital and capital goods, and both the permanent stock of consumers' goods and the particular articles that, in turn, compose it. Wealth consists of effectively useful concrete things regarded either as particular articles that can be identified and watched till they perish in the using, or as an abiding stock of articles of this genus, each one of which has in itself only a transient existence. See an article on "The Wealth Concept," by Professor Charles A. Tuttle, in the *Annals of the American Academy of Political and Social Science* for April, 1891, and other articles by the same author.

[4] What is commonly termed land contains elements which perish in the using. Such are deposits of coal, ores, or oil, and those ingredients of loam which are exhausted by tillage. Such elements of the soil are not land in the economic sense. How they should be regarded will be shown in a later chapter.

CHAPTER III

THE MEASURE OF CONSUMERS' WEALTH

In all stages of social development the economic motives that actuate men remain essentially the same. All men seek to get as much net service from material wealth as they can. The more wealth they have, other things remaining the same, the better off they are, and the more personal sacrifice they are compelled to undergo in the securing of the wealth, the worse off they are. Some of the benefit received is neutralized by the sacrifice incurred; but there is a net surplus of gains not thus canceled by sacrifices, and the generic motive which may properly be called economic is the desire to make this surplus large. Except in a perfectly isolated individual life, there is opportunity for ethical motives to affect men's economic actions. Altruism has a place in any *social* system of economics, and so have the sense of justice and the positive compulsion of the law. Altruism does its largest work in causing men to give away wealth after they have acquired it, but conscience and the law powerfully affect their actions in acquiring it. These are forces of which Social Economics has to take account; but the more egoistic motive, desire to secure the largest net benefit from the wealth-creating process, is one of the premises of any economic science. This involves a general pursuit of wealth; but men seek the wealth for a certain personal effect which comes from the use of it, and they measure it, when attained, by means of this subjective effect.

How Specific Utilities are Measured.—As the essential quality of wealth is specific effective utility, we measure wealth by estimating the amount of this quality, and it is always a consumer who must make the measurement. He must discover the importance to himself of a small quantity of a particular commodity. The hunter must find out how much worse off he would be if he were to lose a small part of his supply of game and endure some hunger as a consequence. In doing this he gets the measure of the effective utility of any like quantity of game, since any one specific part of his supply is as important as any other and no more so. The estimate of the importance of such a supply of food material has to be made in this specific way, by taking the amount on hand piece by piece, and not by gauging the importance of the whole of it at once.

Value the Measure of Specific Effective Utility.—If any consumer will estimate the importance to himself of a single unit of goods of a certain kind, and multiply the measure so gained by the number of units he is appraising, he will make a measurement of the value of the total amount.

Values not based on the Importance of the Total Supply of Goods.—It is essential that the consumer, in determining the value of a kind of goods, should not estimate the importance of the supply in its entirety, since that would give an exaggerated measure. Measurements of value are always made specifically, and single units of the supply of goods are appraised apart from the remainder. The total utility of atmospheric air is infinite, since the loss of the whole of it would mean the total destruction of animal life; but the specific utility and the value of air is *nil*, since no one limited part of the supply has any practical importance. A roomful of it might be destroyed with impunity. So the cereal crops of the world, taken as a whole, have almost infinite importance, since their destruction would result in universal famine; but each bushel of grain has an importance that is relatively small. The loss of it would impose no serious hardship upon the average consumer, since he could easily replace it. The value of the crop is determined by the importance of one bushel taken separately and by the number of the bushels. If we estimate the importance of one unit of the supply of anything, express the result of the estimate in a number, and then multiply this by the number of units in the supply, we express the *value* of this total amount. The *total utility* of it, on the other hand, is measured by the benefit which we get from the supply in its entirety, or by the difference between the state we are in when we have it all and that to which we should be reduced if we lost it all and were unable to replace it. To measure any such total utility we contrast, in imagination, our condition with the full supply on hand and a condition of total and hopeless privation, in so far as these goods and similar ones are concerned.

This Method of measuring Wealth Universal.—These principles apply as well to the economy of a solitary islander of the Crusoe type as they do to that of a civilized society. A Crusoe does not need to measure values for purposes of exchange, but he has other reasons for measuring them. It is for his interest to use his own labor economically, and to that end he should not put too much of it into one occupation and too little into another. When, by reason of a large store of wheat on hand, the specific importance of it is small,—or, if we use a common expression, when the utility of the "final increment" of it, which a man might secure by making an addition to his supply, is small,—he should divert his labor to raising goats or building huts, where the utility of the increment of product to be gained is, for the time, greater. The solitary man thus well illustrates the act of the society which, in its own peculiar way, sends labor from one department of industry where the "final utility" of its product is small to another where it is larger. It is all done by measuring the specific importance of goods.^[1]

The Utility of Producers' Goods.—Consumers' goods have a direct utility, which is a power immediately to serve a consumer. Instruments of production, on the other hand, have indirect utility, since all that they are good for is to help produce things that render the immediate service. They have *productivity*, and this has to be measured in determining their value. What we need to know about hoes and shovels, hammers and anvils, spindles and looms, etc., is how much power they have to create the goods that we want for consumption. Here again the measurement has to be made in the specific way. The capital goods have to be taken unit by unit if their value for productive purposes is to be rightly gauged. A part of a supply of potatoes is traceable to the hoes that dig them; but in valuing the hoes we do not try to find out how much worse off we should be if we had no hoes at all. We endeavor simply to ascertain how badly the loss of one hoe would affect us or how much good the restoration of it would do us. This truth, like the foregoing ones, has a universal application in economics; for primitive men as well as civilized ones must estimate the specific productivity of the tools that they use, and make hoes, shovels, or axes according as the procuring of a single tool of one kind becomes more important than procuring one of another kind. Indeed, the measuring of the utility has to be done, as we shall soon see, in a way that is even more specific than this; for the man has to determine not only how many hoes he will make, but how good he shall make them. The quality of each tool has to be determined in a manner that we must hereafter examine with care. The earning power of capital is, as we shall later see, governed by a specific power of productivity which resides in capital goods.

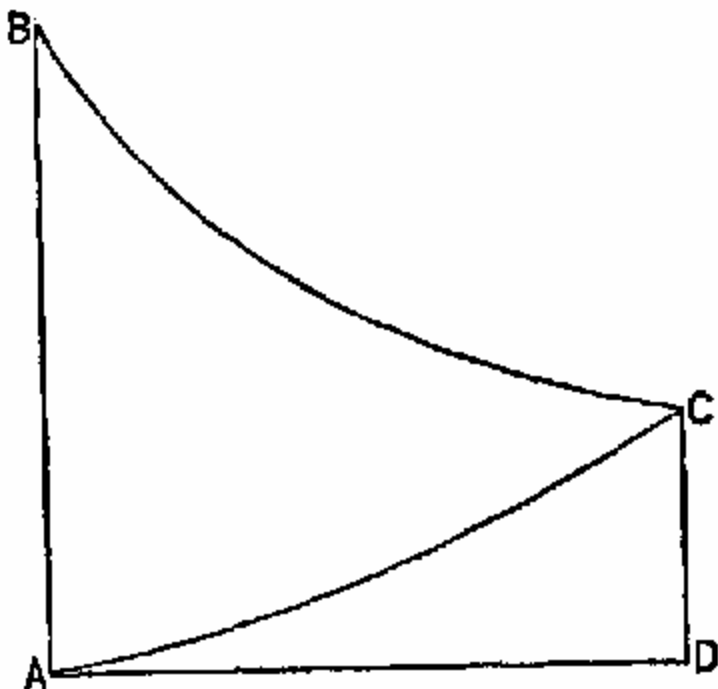
Cost and Utility.—A ripe consumers' good, in exhausting itself on man, benefits him; but during the period in which it is being prepared for use, when it is receiving utilities at the hands of successive producers, it has an opposite relation to the men who handle it. In making the material useful a man confines and tires himself. He is willing to do it if the reward that he expects will more than pay for the sacrifice, but not otherwise. Moreover, this sacrifice itself has to be estimated specifically in a way that is akin to the method of measuring utilities which determines the values of goods. It is necessary for a man to gauge the sacrifice which is entailed on him, not by his labor as a whole, but by a specific part of it. He finds himself in the evening feeling the fatigue and the sense of confinement which the day of labor has imposed and asks himself how much it would burden him to work a little longer. If what he can get by this means pays for the extra sacrifice involved in thus getting it, he will work for the few minutes, but otherwise he will not. His objection to a few minutes of additional work measures what we may call the specific disutility of labor; and men, whether they be primitive or civilized, are forever making such measurements. They consider how much it will cost them to add slightly to the length of their working day or how much it will benefit them to shorten it. In this way they measure the *specific disutility* of labor rather than the *total disutility* of it, since they do not gauge the relief that it would afford to cease working altogether.

The Increasing Cost of Successive Periods of Labor.—It is easy to work when one is not tired, and the first hour or two of labor may even afford a pleasure that largely offsets the burden that it entails; but it is hard to work when one is tired and painfully conscious of the confinement of the shop. Adding anything to the length of a working day imposes on a man the necessity of working at the time when the burden is greatest; and shortening his day, for a like reason, relieves him of

some of his most costly toil.

The Natural Length of the Working Day.—Any laborer, as his work goes on, hour after hour, is certain to reach a point at which it is unprofitable to go farther. However greatly he may need more goods, he will not need them as much as he needs rest and change. It may be that he has worked twelve hours, and that, by working longer, he can improve his wardrobe, his food, or his furnishings; but if he has a tolerable supply of such things, he will hardly choose to add to it by staying in the shop when his strength has been exhausted and he is eager to reach his home.

Specific Cost at its Maximum a Measure of Specific Utility.—Two very important principles are at work whenever a man is performing labor in order to create wealth. The more consumers' wealth he gets, the less important to him are the successive units of it, and the more do these successive units cost him. The tenth hour of labor adds to his supply of food, but this addition is not as important as the supplies that were already on hand. If we divide the supply into tenths and let the man produce a tenth in each successive hour, the first tenth, which rescues him from starvation, is the most important, while the last tenth, which comes nearest to glutting his appetite, is least important. This last increment, however, is produced by the greatest sacrifice, for it is gained by making the working day ten hours long instead of nine.



Let the hours of the working day be counted along the line AD , and let us suppose that a man gets unit after unit of consumers' wealth, as he works hour after hour, and the units grow less and less important. The first and most important we may measure by the vertical line AB . The second is worth less, the third still less, and the last one is worth only the amount CD . This means that the successive units of what we may call general commodity for personal use have declined in utility along the curve BC . On the other hand, as the man's labor has been prolonged, it has grown more and more wearying and irksome. The sacrifice that it involved at first was almost nothing, but the sacrifice of the succeeding hours has increased until, in the last hour, it amounts to the quantity expressed by CD .^[2] As the man has continued to work, the onerousness of working has increased along the ascending line AC until the point has been reached where it is so great that it is barely compensated by the fruits of the labor. The man will then work no longer. If he were to do so, his sacrifice would become still larger and his reward still less. Up to this point it is profitable to work, for every hour of labor has brought him something so useful that it has more than paid for whatever sacrifice he has made in order to get it. Beyond this point this is not the case. The line CD represents the cost of labor at its maximum, and it is this which acts as a measure of effective utility and value.

The Coincident Measure of Cost and Utility.—It now appears that the line CD signifies two different things. It measures the utility of the last unit of the man's consumers' wealth, and it also measures the sacrifice that he has incurred in order to get it. These are opposing influences, but are equally strong. The one, of itself, makes man better off, while the other, of itself alone, makes him worse off. At the last instant of the working day they neutralize each other, though in all the earlier periods the utility secured is greater than the sacrifice incurred and the net gain thus secured has kept the man working.

The Point at which Utility and Disutility are mutually Neutralizing.—At a certain test point, then, production acts on man in such a way as exactly to offset the effect experienced from the consuming of the product. Man, as a consumer, has to measure a beneficial effect on himself, and, as a producer, he has to measure an unpleasant effect. He finds how much he is benefited by the last unit of wealth which he gets for personal use, and also how much he is burdened by the last bit of labor that he performs. If this sacrifice just offsets the benefit derived from the final consumption, it is the best unit for measuring all kinds of utilities. A man secures by means of this final and most costly labor a variety of things, for if he works up to this point every day in the year, he will have at his disposal, say, a hundred hours of labor in excess of what he would have had if he had worked a third of an hour less each day. The product of this extra labor will be taken in the shape of goods

that are also extra, or additional to whatever he would otherwise have secured. They will represent special comforts and luxuries of many kinds. The values of these goods may be measured and compared by means of the quantity of labor that the man has thought it worth while to perform in order to get them. If he values one of them highly enough to think it worth while to work for an extra period of twenty minutes at the end of a day in order to get it, it may be said to have one unit of value; and if he is anxious enough to get something else by doing this on two successive days, this second article may be said to have two units of value. The savage who, by working for an extra hour, makes some improvement in his canoe, and by doing the same thing on another day makes some improvement in his food, establishes thereby the fact that he values these two additional bits of consumers' wealth equally. If he uses ten hours of the same costly kind of labor in making an addition to his hut, he proves that he values that gain ten times as highly as he does either of the others. Establishing values by means of such final costs is a process that goes on in every stage of social evolution.

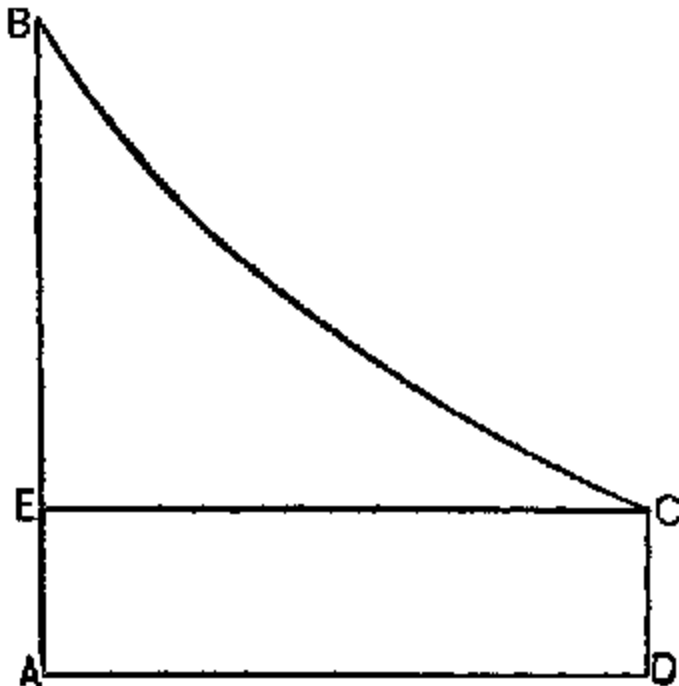
Unlike Results of Creating Wealth and Using it Summarized.—Wealth, then, affects a man as a consumer in one way and the same man as a producer in an opposite way. In the one case the effects are favorable, and in the other they are unfavorable. At a certain test point the two effects may be equally strong as motives to action, and so may be said to be equivalent. The man is impelled to work by his desire for a final unit of wealth, and he is deterred from it by his aversion for the final unit of labor which he will have to incur if he secures the benefit. If he performs the labor and gets the benefit, he neither gains nor loses as the net result of this particular part of his labor, though from all other parts of his labor he gets a net surplus of benefit. It is natural to measure all such economic gains in terms of sacrifices incurred at the test point where these are greatest. This is the labor one would have to incur in order to add the means of gratification to his previous supply of consumers' goods.

Minimum Gains offset Maximum Pains.—Running through and through the economic process are these two different measuring operations. Man is forever estimating the amount of harm that wealth does him when he is in the act of producing it, and the amount of good it does him when he consumes it; and there is always to be found a point where the two amounts are equal. It is the point at which gains are smallest and sacrifices greatest. It is at this point that men measure values in primitive life and in civilized life. How in the intricate life of a modern society the measuring is done we shall in due time see; for the present it is enough that we perceive the universality of the law according to which value is best measured by the disutility of the labor which is most costly to the worker. Organized societies do something which is tantamount to this. It is as though the whole social organism were an individual counting the sacrifices of his most costly labor and getting therefrom a unit for comparing the effective utilities of different goods.

How Primitive Man tests Value.—It is a mistake to suppose that what is essential in value depends on the existence of an actual market in which things are exchanged for each other. In a market, it is true, values are established and their amounts are expressed in ways that cannot be adopted in primitive life. When we buy a thing, we help to fix the value of it and of other things which are like it. The mere ratios in which things exchange for each other in a market are, however, by no means the essence of value itself. That is something deeper and is one of the universal phenomena of wealth. Value, as we have said, is the measure of the effective utility of things, a kind of measure that every one is frequently compelled to employ, whether he is making goods for himself or buying them from others. A producer who has the option of making different things for himself needs to know what variety of goods can be increased in supply with the greatest advantage to himself as a consumer. Adding to the supply of any one of them is getting a "final" or "marginal" unit of consumers' wealth. It is something that is needed less than the things that were already on hand. Without making such a comparison of the importance of marginal units of different commodities he cannot use his resources in the way that will do him the most good.^[3]

How Isolated Men measure Final Utility.—If a cave dweller possesses a store of one hundred measures of nuts, he measures the final utility and the value of this store in the manner which we

have described. If he were to be deprived of the whole stock, he might starve, but this fact does not afford the basis of the value which he puts on the nuts. He measures the importance of this consumers' wealth specifically. He tests the effect of losing one measure and no more, and finds that he could lose the single measure without suffering greatly. The difference between having an appetite fully satiated and having it very nearly so is not serious.



Let AD represent the savage's total supply of food. AB will represent the utility of the first unit; CD of the hundredth. If we supply the food unit by unit, the utility of the successive increments will decline along the curve BC . When the man has a hundred units of food, no one unit of it is worth any more than the last one, since if any one were taken away, the last one could be put in the place of it.

The *total absolute utility* of the food is measured by the area $ABCD$, but the total *value* will be represented by the rectangle $ADCE$. The area EBC measures the surplus of utility contained in the earlier units in the series.

The Motive for measuring Values in Primitive Life.—Even the cave dweller would have to measure values, and would thus have to apply the principle of final utility, because he would need to spend his limited productive energies in the way that would do him the most good. When he is nearly satiated with food, he needs other things more than he does food stuffs. If he has secured so much of one product that any additional amount that he may get by an hour's labor would be of less use to him than what he could get of some other product by the same amount of labor, it is important for him to change his occupation and produce that thing of which an additional unit—which will perhaps be the final unit of this more desirable article—has the higher degree of usefulness.

Final Utility and Labor Cost.—On the supposition that a small store of roots and nuts were incapable of being replaced by any amount of effort and that no other food were to be had, the utility of it would be indefinitely great, since the man's life would depend on this one increment of food alone. A man would value that life-sustaining good for what it would do for him and without any reference to the amount of work he had performed in order to get it, or to the amount he would have to perform in order to get another store like it. On the supposition that by labor the man could replace this essential supply, the effective utility of it would be gauged by the sacrifice he would have to make in order to replace it. The effective utility of any unit of a good that an hour's labor will produce can never be more than enough to offset the disutility of a marginal or final hour of labor; and thus even a single unit of replaceable food stuff, even when it stands alone and constitutes the whole supply, is valued according to the cost of getting another one like it. A man will prize it

according to his dread of the sacrifice involved in getting the duplicate. If he gets this by adding an hour of labor to his day's work, this fact is an evidence that the importance of the original supply of the food is measured and expressed by this personal cost of replacement; and as any similar quantity in a large supply of food can be duplicated by the same amount of labor, it appears that, by a standard based on cost, the *effective* utilities of all units are equal, that of each one is measured by the "disutility" of an hour's labor and that of the whole supply is this amount multiplied by the number of units that this supply contains.^[4]

How Primitive Man measures the Productivity of Labor and Capital.—There is a truth relating to producers' wealth that resembles the truth that we have just stated with regard to consumers' wealth. The more consumers' goods of one kind a man has, the less is the value that any one of them has to him. The more producers' goods of a given kind a man has, the less is the efficiency that any particular one of them possesses as an aid to labor. The last bit of bread serves the man himself in a less important way than does the first, inasmuch as it gratifies a want that is less intense; and the last implement of a given kind—the last hatchet or spade or arrow—helps him less in his productive operations than did the first one. On the one hand, we have the law of the diminishing utility of successive units of consumers' goods, and on the other hand, we have a parallel law of the diminishing productivity of successive increments of producers' goods.

The Necessity for measuring the Productive Powers of Capital Goods even in Primitive Life. —Now, it is necessary for every producer, though living in the simplest possible manner, to measure in some way the efficiency of the last unit of each kind of productive instrument that he uses. He has, let us say, a certain number of hatchets and of arrows, and he can produce one hatchet with the same amount of labor that would produce an arrow. Now, if a hatchet will do more good than an arrow, he will direct his energies to the making of the hatchet. It is important that any producer should bring the final units of the different parts of his equipment to a certain uniformity of producing power. He must not go on adding to the stock of implement No. 1 when implement No. 2, which could be had by the same expenditure of labor, would do more good; nor must he add to the stock of either of these after he has acquired such a supply of them that the first unit of implement No. 3 would be of greater importance. Measuring the efficiency of producers' goods is necessary in the case of every one who creates wealth at all, and such measurements reveal the fact that the more producers' goods of one kind a man has, the less is the productive power that resides in one of them.^[5]

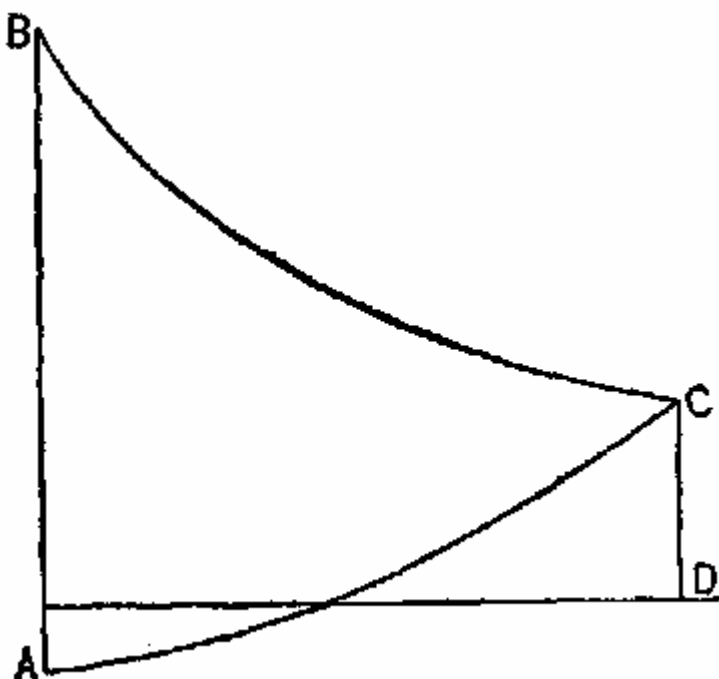
The Foregoing Truths Universal.—All the general facts which have been thus far stated hold true wherever wealth is produced. They do not presuppose the facts of a division of labor and a system of exchanges, and they do not even require that there should be any social organization. Men in the most primitive tribes and even men living in Crusoe-like isolation would create wealth by labor aided by capital. The essence of that wealth would be effective utility, and the measure of this, which is value, would be made in the specific way that we have described. The varieties of capital, the distinction between capital and capital goods, and the law of diminishing productivity of such goods would appear in the most primitive economics as well as in the most advanced. These are by no means all of the facts and principles which are thus of universal application. They are merely a few of the more important and may serve as a foundation or a "Grundlegung," for further study. If we should extend our list of general and basic truths, it would quickly appear that the incomes that have been treated as rent and the various surplus gains which are analogous to rent are universal economic phenomena which it would be not illogical to discuss in the preliminary part of this treatise. What has been stated, however, concerning the laws of diminishing productivity of successive units of producers' wealth, concerning the diminishing utility of successive units of consumers' wealth, and also concerning the increasing burdensomeness of continuous hours of labor, presents the essential principles on which all rents and quasi-rents rest. It is best to study the applications of these principles as they are made in a civilized state.

Universal Economic Truths independent of the Special Facts of Sociology.—This first division of economic science borrows none of its premises from sociology, for the truths which compose it

would abide if there were no society in existence. Basic facts it takes from Physics, Biology, Psychology, Chemistry, etc. Facts concerning man, nature, and the relation between them are material for it, but relations between man and man come into view only in the later divisions. There, indeed, they do come into the very foreground with results which immeasurably enrich the science. What we may call the socialization of the economic process we shall have next before us, and we shall find it full of critical problems involving the future well-being of humanity. Industry is carried on by a social organism in which men are atomic parts and to which nature has given a constitution with laws of action and development. We have first to study the nature of this industrial organism and the mode in which it would act if it were not subject to any constitutional change; and later we must study it in its process of growth. The economic action of a society which is undergoing no organic changes is the subject of Social Economic Statics, while such changes with their causes and effects constitute the subject of the science of Social Economic Dynamics.

FOOTNOTES

[1] For extended discussions of the relations of utility and value the reader is referred to the works of Jevons, Menger, Von Wieser, Von Böhm-Bawerk, and Walras. A study of "effective" utility and its relations to value, by the writer of the present treatise, is contained in the *New Englander* for July, 1881.

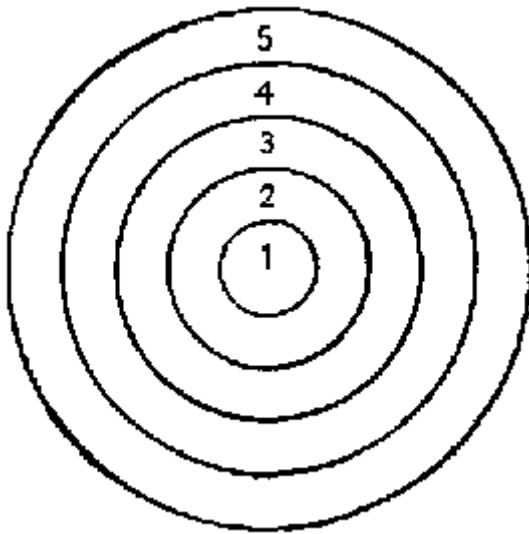


[2] If we should try to describe all the possibilities in the case, we should take account of the fact that a man may get a positive pleasure from his first hour or two of labor and construct a figure thus to express this fact:—



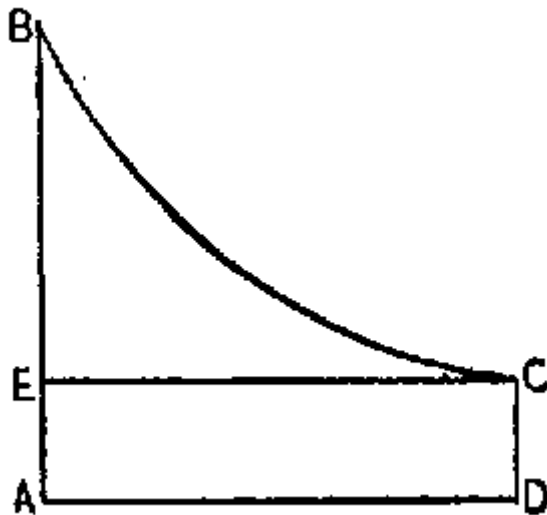
AC is the curve representing the sacrifice entailed by successive hours of labor.

In like manner we should have to recognize the fact that the utility of some kinds of goods may not reach a maximum with the first increment, and should construct a utility curve to express this fact. *BC* here represents the increase and the following decrease in the specific utility of the supply of an article of this kind.



[3] The terms *marginal* and *final* mean essentially the same thing, but the modes of conceiving it differ. When utilities are thought of as supplied one after another, the last is the least important. We may represent a man's enlarging gratifications, not by such a mere series of quantitative increments, but by an enlarging area. We may draw a series of concentric circles, beginning with the smallest, and let this central area inclose the most necessary forms of consumers' wealth. When we draw a second and larger circle, we inclose between it and the first one a zone which includes those forms which come next in importance. By continuing to draw circles we reach an outermost one which bounds a zone in which are included the least important of the consumer's acquisitions. These are the things which he gets with his costliest increment of labor, and the things which lie beyond the circle last drawn would not pay for the sacrifice which acquiring them would cost. In the accompanying figure the fifth zone includes these "marginal" forms of wealth.

[4] Although we may use the terms *final utility* and *effective utility* in a way that makes them nearly interchangeable, it is clear that the qualities for which the two terms stand are by no means identical, and that effective utility must be studied in any complete analysis of value. In distinguishing final utility we assume that the units of the supply of goods of a particular kind are furnished one by one, and we measure the absolute utility of each unit. The line *AB* measures the *absolute* utility of the first unit supplied. This measurement does not take any account of the cost of replacing this unit, for it does not recognize the possibility of replacing it. What is estimated is the absolute importance of the service which this first unit of the article renders, on the supposition that, if this first increment of the supply were wanting, the service would not be rendered at all. It is, in like manner, the absolute utility of the successive increments supplied which declines along the curve *BC*. *DC* measures the *absolute* utility of the final increment, and the area *ABCD* the total absolute utility of the supply. If the goods can be reproduced by labor, the total effective utility is less, since it is measured, as we have seen, by the amount of sacrifice which the replacing of one lost unit would entail multiplied by the number of units in the supply. It is the amount expressed by the area *AECD* which is the amount of the value of the goods, since measure of effective utility and value are the same, both in the case of a single unit and in that of a total supply.



We have discovered two reasons why the effective utility of any one of the earlier units is equal to the absolute utility of the final one. The first reason is that, if any one of them were lost, the final one would be put in the place of it and the consumer would suffer no loss except what would be entailed by going without the last unit. The second reason is that if the consumer should lose any one of the earlier units, he could replace it by the same amount of labor that would replace the final one. We have seen that the line DC of the figure expresses not only the absolute utility of the final unit of goods, but the disutility of the labor of reproducing it or of reproducing any other unit. The cost of replacing the whole supply is expressed by the area $AECD$, on the supposition that the units are replaced, one at a time, by means of labor performed at the end of several working days when the sacrifice is greatest. Total value is thus quantitatively equivalent to total *effective sacrifice of replacement*, as well as to total effective utility. If, by adding a brief period to the length of one working day, a man can make good the loss of one unit of the goods, by adding the same period to the length of a number of working days, he can make good the loss of the total supply. For simplicity we assume that the man's physical condition remains unchanged, and that an extra hour of labor at the end of any one day costs him as much as it would at the end of any other.

[5] The law of diminishing returns of successive units of *capital goods* is based on the same principle as the law of diminishing returns of *capital*, but it is not identical with it. We shall see, in due time, how a permanent fund of producers' wealth actually grows and why each new unit, as it adds itself to the fund, creates a smaller income than did its predecessor.

CHAPTER IV

THE SOCIALIZATION OF INDUSTRY

We have now before us a few principles of so general a kind that they apply to the economy of the most primitive state as well as to that of the most advanced. It is not necessary that men should live in any particular relation to each other, in order that, in creating and consuming wealth, they should exemplify these principles. They would do this even though they never came into touch with each other, but lived, as best they could, each man on his solitary farm. Laws of this general kind result from man's relation to nature, and not at all from the relation of different men to each other. Let a man keep wholly aloof from other men, apply his labor directly to nature, and he can produce wealth of the various kinds that we have described. He can secure food, clothing, and other things for his own use, and he can make tools to help him in securing them. He will appraise the consumers' goods according to the law of what has been called *final utility* or, in another view, effective specific utility, and he will also test the comparative usefulness of his various tools by an appeal to the law of final or specific productivity.

Social Economy the Chief Subject of Study.—We care most to know how an organized society produces and uses its wealth, and in making this inquiry we encounter at once phenomena that are not universal. The civilized society creates its wealth coöperatively, by the joint action of its various members; that is, it proceeds by means of a division of labor and an exchanging of products. Moreover, it has, in some way, to share the sum total of its gains among its various members. It has to apportion labor among different occupations for the sake of collective production, which is a grand synthetic operation whereby each man puts something into a common total which is the income of all society. It has, further, to divide the grand total into shares for its different members—an analytical operation in which each man takes something out of the aggregate for his personal use. This is distribution in the narrower sense of that term—the apportionment among the members of a civilized society of the fruits of production. In the wider sense the term also includes the apportionment of the sacrifices incurred in the joint production. Distribution, as thus defined, is the element that appears in economic life in consequence of social organization. This is a secondary element, indeed; for man, nature and their relations and interactions are the primary facts, and the relations of men to each other come logically after these. Social organization, however, is so transforming in its effects as to reduce to small proportions the amount of attention it is worth our while to devote to the economy of the primitive types of life. It is necessary to make some study of that economy, for it is thus that we place before ourselves the fact that there are universal economic laws and perceive distinctly the nature of some of the more important of them.

Facts Peculiar to Socialized Industry.—The term *Political Economy* denotes a science of industry^[1] as thus socialized, for it is a science of the wealth which is produced in an organized way by the people of a more or less civilized state. The general truths which we have thus far stated apply to such an economy, indeed, but they also apply to the wealth-creating and wealth-consuming processes of uncivilized peoples, and even of isolated individuals who have no dealings with each other. They are truths of Economics in the unrestricted sense, and we have now to study the special truths of *Political Economy*. When production goes on by division of labor, as when one man works at one occupation and another at another, phenomena appear that do not appear in more primitive life; and still others appear when, within each occupation, there is a division of functions between the laborer and the capitalist, as is the case whenever one set of men furnish tools of production and another set do the work. The special laws of this highly developed economic system require far more extended study than do those more general laws which are common to it and simpler systems. We now continue to recognize the universal and basic truths which have been stated in the foregoing chapters and proceed to the study of the special principles which apply only to organized economic life.

Specialized Production the Means of Diversified Consumption.—As the kinds of goods that we individually make become fewer, the things which we get and use become more numerous and varied—such is the law of economic specialization. Society as a whole produces an infinite variety of things, and the individual member of it secures for himself goods of very many kinds. The typical modern worker is, in his production, a very narrow specialist, but in his consumption he is far less a specialist than was the rude hunter who was able to enjoy only the few goods which he himself produced. The modern worker's tastes are omnivorous, for he has developed an immense variety of wants and, through social organization, he has acquired the means of satisfying many of them.

The Position of Individuals in the Producing Organism.—When we say that production has been socialized, we mean something very far-reaching. We mean that an organization has grown up in which men are members or parts of members, and that this great organization has undertaken to do the productive work for all the individuals that compose it. For the first time we now recognize a sociological fact among the premises of economic science. When men, whose predecessors may have lived in isolated families or in a society organized for defense or for the mere pleasures of association, now develop a truly economic society, the individual depends on other individuals as well as on nature for the supply of his wants. Economic independence gives way to interdependence, because the fortune of each man is largely dependent, not merely on his own efforts, but on the relations which he sustains to other men. Simple laws of nature still largely control his income, but social laws also have a certain control over it.

Exchanges in their Primitive Stage.—The exchanging of products is, of course, the process with which the organization begins, and this process is introduced by easy and natural stages. The man who at first makes everything for himself develops a particular aptitude for making some one thing; and, though he may still continue to make most things for himself, he finds it advantageous to barter off a part of the supply of the one article for the making of which he is especially well fitted. He seeks out a neighbor whose special aptitude lies in a different direction and who has a surplus of some other article. It may be that one is a successful fisherman and the other is, by preference, a maker of clothing, and that they can get a mutual benefit by an exchange of food for raiment.^[2]

The Intermediate Type of Exchanges and the Final One.—In the next stage a man becomes wholly a specialist, making one kind of product only and bartering it away for others. It might seem, at the first glance, that differentiation has now done its full work; but it is very far from having done so. Making one complete good for consumption is still a complex operation, which can advantageously be subdivided in such a way that one man produces a raw material while another works it up into a useful shape. A gain may be made by a further division of the manufacturing process, whereby the first worker makes only the rawest material, another fashions it somewhat, a third carries the process farther, and a fourth or a still later one completes it. In modern industry the material must often pass through very many hands before it is ready to be made over to the consumer. Each man in the series puts a touch on it and passes it on to his successor.

A'''
A''
A'
A

A''' is an article of consumers' wealth and A is the rawest material that enters into it. A' is this material somewhat transformed; A'' is the same material after it has received the second transformation and needs only a final touch to convert it into A''', in which state it will be ready for the consumer's use. We have here a symbol of what is actually taking place in the industry of the world. Cattle are grazing on western ranches; hides are tanning in the woods of Pennsylvania; leather is going through the many changes that fashion it into shoes in the mills of Brockton; shoes are arranged on the shelves of retailers in New York in readiness for the people who are to wear them. These are stages in the making of a single product, and a thousand different products are coming into existence in a like way.

A Representation of the Groups, or Specific Industries, which compose Economic Society.—If we put beside the series of A's a series of B's and one of C's, we have a much simplified representation of what is actually taking place. There are, in reality, a myriad of different things which almost every consumer uses, and every one of them is made by a series of productive operations like the one we have described. The very fact that there are so many of them that it is hopeless to try to represent them all in the table makes it desirable to illustrate the principle by tabulating only a few and to assume that these few are all that there are. For the purposes that we have in mind it is entirely safe to suppose that a series of A's, one of B's, and one of C's represent all the consumers' goods that society uses. What we wish to ascertain is how the different series work together to furnish an income for each member of society.

The Organization Spontaneous.—Laborers can go where they will, and yet they are in some way brought into an orderly relation to each other, being placed in certain proportions in different industries. Capitalists also are free to invest their funds as they will, and yet there is a certain amount that is naturally devoted to each branch of business. How this apportionment takes place we can most readily ascertain by creating such an imaginary and very much simplified society as this table furnishes.

A'''	B'''	C'''
A''	B''	C''
A'	B'	C'
A	B	C

The series of A's, which we have already studied, represents one kind of raw material ripening into a finished product. B represents a second kind of raw material, which, like the A, is produced by its own set of workers and is then passed on to a second, who transform it into B'—a partly finished product. These then pass it on, as the corresponding set of men passed on the A'. They hand it over to a set of workmen who change it into B'', a nearly completed product, and these hand it over to men at B''', who, by giving the final fashioning, bring it into the form of a finished consumers' good. The C's represent another general group of workers who transform the raw material, C, into the finished product, C'''.

Industrial Groups and Subgroups.—Each of these more general bodies of workmen and employers, such as the entire series of A's, we may call an industrial group, and the divisions within each of them, such as A' or A'', we may term subgroups. The product of a group is a complete article, while that of a subgroup is not a complete article nor any part of an article that can be taken bodily from it. Yet it is a distinguishable element in the article. The product of the shoe factory is certainly not complete shoes, for the owners of the factory buy leather which has already passed through the hands of tanners; and the tanners themselves bought it in the shape of raw hides, which were furnished by still earlier producers. What the shoe factory has done is to impart a new utility to dressed leather by transforming it into shoes. It would be impossible ever to get that utility out again, or to point to any one part of the shoe as the only part that contains it. What the factory has really made is therefore a utility—a distinguishable quality which pervades a concrete thing. It makes the difference between the leather and the shoes. What the tanner has created is, in like manner, another utility, which makes the difference between raw hides and leather. Groups, then, in their entirety produce whole articles for direct use, while subgroups produce distinguishable utilities which are embodied in such articles. The sum total of all the different utilities constitutes the article. It is a complex of useful qualities held together by the fact that they are attached to the same original matter.

Proportionate Production.—All the subgroups working together in an orderly way not only produce the consumers' wealth that society needs, but produce the different kinds of consumers' goods in nicely adjusted proportions. Unless the general order of the group system is disturbed, there is a normal amount of A''' put on the market and also normal amounts of B''' and C'''. This result is attained by influences that run through the productive organism and bring about an adjustment of

the comparative amounts of labor in the different occupations. If competition worked quite freely, this adjustment would be so nice that no military apportionment of forces among different brigades, regiments, etc., made consciously and by the most intelligent commanding officer, could surpass the perfection of it. There would be also an equally fine adjustment of the comparative amounts of capital devoted to different industries. In the actual productive organism each man goes where he will—capitalist, laborer, and employer of capital and labor alike. Each man acts in this respect as though there were no such thing as coercion, and as though he might, with unchecked freedom, do solely what is good in his own sight. By reason of the fact that all are seeking to produce what they can in order that they may get what they can, there comes into operation an organic law which brings the groups and subgroups into a delicate balance, in point of size and output, whereby the grand total of force that society commands is prevented from making too much of one product and too little of another, and is made to do its utmost in getting a large sum total of wealth for the benefit of its various members.

What the "Division of Labor" Involves.—This is the real signification of what it has been common to call the division of labor. It is the socialization of labor, or the gathering of isolated laborers into a great organism that, entirely without coercion, determines in some way what each one shall do, and not only makes the product of the whole a myriadfold greater than without any organization it could be, but causes this product to take certain well-adjusted shapes which, as we shall later see, serve consumers better than they could be served by products in misadjusted proportions.

Capital as well as Labor Apportioned.—As we have said, there is a corresponding division of capital or an assignment of different parts of the total fund to different employments; and this is made in the same way as is the division of labor and results in an equally nice adjustment. Each bit of capital, like each workman, becomes, as it were, a specialist. It may take the shape of an instrument which is capable of performing only its one service, like the loom, which is capable of doing nothing except weaving; but even if the tool is somewhat adaptable, like a hammer which can be used in several trades, it is, as it were, stationed in one trade and held, by economic influences, at that one point in the system. The house carpenter keeps his hammer though the cabinet maker could use it. Each bit of capital helps to create a particular utility, and the number of units of the fund that each subgroup contains is, as we shall see, so arranged as to enable the fund as a whole to do its utmost for the general good. It is all without the use of force, since each bit of capital does what its owner pleases to have it do.

A Government Presupposed.—Of course there must be a government over it all. Such a method of producing wealth could never continue unless property were secure and unless it were made so without much effort on the part of its owners. A blacksmith who should have at one moment to use his hammer as a tool and at another to wield it as a weapon of defense could make but poor headway, and a society in which such a state of things existed in various trades would be too anarchic to permit the elaborate division of trades which is the key to success in industry. The most noticeable fact about organized production is that man is forever letting go the thing he has made or helped to make and allowing it to pass out of sight and reach without losing or greatly imperiling his title to the amount of wealth it represents. He casts his bread on the waters, but they bring him a return for it. Under these circumstances it is impossible for him to protect his product as the savage protects his tools, his clothing, and his hut. What a modern worker makes passes into the hands of other men and gets completely out of the maker's direct personal control. If he wanted it again, he could never find it; and if he could find it, it would be in a new shape and other men would have claims upon it. The man who has sold some hides that in the end have become shoes can hardly identify his product on the shelves of retail shoe dealers all over the country, or perhaps all over the world. If by a miracle he could find the particular bits of leather that in their raw stage he himself has furnished, they would be in new and far more valuable forms than they were when he had possession of them. The shoes contain utilities which the man who furnished the hides cannot claim to have created. They have been changed and improved by elements contributed by many other persons, such as manufacturers, carriers, merchants, etc., and he could never carry away the concrete thing that he himself produced without carrying with it other men's property.

The Surrendering of Goods and the Retention of Values Features of Social Industry.—Socialization of industry means, then, that individuals forego all effort to retain their own concrete products, but that they retain certain parts of the value of the products to which they have made contributions. The value of A''' when it is sold is claimed by men at A''', A'', A', and A according to some principle. The values of B''' and C''' can be followed until they reach the pockets of the men who have contributed their several shares to the making of these things. All this requires a government and a well-developed system of laws and courts for the protection of property, including the protection of it in the form of a claim to a value that is embodied in things which have gone beyond the maker's reach. Property here takes a refined form which requires that the man should forego all desire to keep the literal thing he has made and should make it his aim to retain the value of it in some other form. It is a comparatively simple matter to guard a concrete article which a man has in his possession, though even that requires some energy on the part of the police force and is never quite perfectly accomplished; but it is a far more difficult matter to enforce a claim that a man has against other men, in consequence of some utility that has been created by him but has gone away from him and mingled with utilities created by many other persons in a product that the man will never see. It is the problem of guaranteeing to the shoemaker the due return for the stitches he has put into shoes when the shoes themselves have gone to buyers and wearers in every quarter of the land and many quarters of the globe.

Groups under a Socialistic State.—In *political* economy as distinct from *general* economy we take one premise from sociology and another from politics. We assume that society exists and that it has taken on a political character, by establishing laws with courts to interpret them and officials to enforce them. We do not, however, assume that the direction of industrial affairs is in the hands of such officials. In the main industry is organized in a spontaneous way. Men choose such occupations as they like, and when there are too many of them in one group and too few in another, the rewards naturally increase in the group where a larger force is needed, and this lures men in that direction.

In a socialistic society such adjustments would be made under the direction of the state. Officials would have to decide when more workers are needed in the A series and less in the B series and would have to use either inducements or some kind of compulsion in order to move them from the one group to the other. What we actually have to deal with is a society that shapes itself by the free acts of individuals, and we have to see how, in this way, it organizes itself for production and divides among different claimants the product that, by the joint action of all of them, it creates.

Gains from the Organization of Industry.—The advantages of the division of labor consist in an increase in the quantity of products and in an improvement in their quality, and the quantitative gain is almost beyond computing. The advantage appears mainly in the middle and upper subgroups of the series, which transform the materials, rather than in the lower subgroups, which produce them; and yet there is a gain everywhere from such organization. A man produces far more when he performs the same operation many times than when he goes through a whole series of unlike operations. Moreover, he can perform the single operation far more accurately and can thus attain a more perfect result. He can learn his minute trade more easily than he could a complex one. Where unusual strength or skill is required, the work may be given to persons who have the requisite quality so that a good product can be insured, and none of the labor of these superior workers will need to be wasted on work which inferior labor can perfectly well perform.

Improvement in the Forms of Capital.—The greatest of all the advantages that come from this division and subdivision of wealth-creating processes comes in the way of applying machinery. A machine is a hopeless specialist and can, as a rule, put only a single minute touch on the material submitted to it; and the introduction of machines differentiates capital in a way that is parallel to the minute subdivision of labor. If the machine is to work at all economically, it must put its touch quickly on one after another of a series of articles, as they are submitted to it in uninterrupted succession. If only one kind of machine were employed in the making of shoes—if, for instance, the sewing of the uppers to the soles were done on sewing machines, even though all the rest were done by hand—it would be natural and almost necessary to have one class of workers to

prepare the uppers, another to prepare the soles, and a third to sew them together by aid of the machine. When the several stages of the process are thus given over to different classes of workers, the situation is ripe for the application of more machines, and inventors readily devise apparatus that will perform one or another minute part of the manufacturing process. In the end most branches of manufacture take such shapes that the raw material is intrusted to a series of machines and passes from one to another by a nearly continuous movement, till it emerges from the hands of these automata as complete as any manipulation can make it and ready for the merchants who will convey it to their customers.

Economy of Capital.—There is an economy of capital involved in the fact that instruments can be used thus continuously. A worker does not have to have several sets of tools, many of which would be idle the greater part of the time, as would be the case if the man performed several unlike operations; but the greatest economy comes from the energy, rapidity, and accuracy with which the new instruments act. The tools are far more efficient than they could be if human muscles furnished the power and eyes and nerves supplied the deftness and accuracy that the making of the goods requires. Automata which men set working excel hand tools with men wielding them by a greater ratio than can be calculated.

FOOTNOTES

[1] We use this term in a broad sense, including agriculture and commerce as well as manufacturing.

[2] If we were giving a history of the division of labor, we should have to record the effects of differences of climate and of agricultural and mineral resources in occasioning, at an early period, a territorial division of labor. We are here describing the division of labor which occurs within a society and in consequence of what may be called social economic causes.

CHAPTER V

PRODUCTION A SYNTHESIS; DISTRIBUTION AN ANALYSIS

The essential fact about production, as it is carried on by all society, is that it is a synthetic operation, by which a grand total is made up by the contributions of different industries. There is a corresponding fact about the production which is carried on within a particular line of business, or, as we should express it, within a particular subgroup; for within the subgroup there are laborers, on the one hand, and capitalists, on the other, helping each other to make a joint product. In our table A''', B''', and C''' are the goods of which the social income is composed. Subgroups, such as A, A', etc., help to make this grand total of finished goods; but in A, A', and all the other subdivisions there are laborers and capitalists working together. Farming, mining, cotton spinning, shoemaking, building, and a myriad of other occupations all work together to create an aggregate of goods which constitute the social income. In each of these branches of business there are men and working appliances contributing each a part to the quota that this branch furnishes.

Distribution as an Analysis.—The essential fact about distribution is that it is an analysis. It reverses the synthetic operation step by step, resolving the grand total produced by society into shares corresponding with the amounts contributed by the specific industries, such as mining, cotton spinning, shoemaking, etc. The men who own and work the mines do not keep the ore they secure, nor do they wish to keep it. The ore goes into a stock of goods for the general use of society, and it constitutes a definite addition to the value of that stock. As ore it is transmuted into a myriad of forms, merged with other materials and lost; but the amount that it adds to the total product of society is definite. It is a certain definable quantity of wealth, and that quantity of wealth the producers of the ore should get for themselves. Distribution further resolves the share of each particular industry into final portions for the use of the laborers and capitalists in that industry; and these correspond with the amounts which these laborers and capitalists contribute. The result of distribution is to fix the rate of wages, the rate of interest, and the amount of the profits of employers, if such profits exist; and the general thesis which is here advanced and remains to be proved is that, if society were without changes and disturbances, if competition were absolutely free, and if labor and capital were so mobile that the slightest inducement would cause them to pass from one branch of business to another,^[1] there would be no true profits^[2] in any business, and labor and capital would create and get the whole social income. Moreover, each laborer and each capitalist would get the amount of his personal contribution to this sum total. Amid all the complications of society the modern worker would be in a position akin to that of the solitary hunter in a primitive forest—his income would be essentially of his own making and would include all that he makes. He would not, like the primitive man, get the literal things that he fashions, but he would get the *amount of wealth* that he creates—the value of the literal products which take shape under his hand.

Standards of Wages and Interest.—This accurate correspondence between men's incomes and their contributions to the general earnings of society would exist only in the absence of certain changes and disturbances which it will be our aim, in the latter part of this work, to study. These changes give to society the quality that we shall term *dynamic*, and we shall examine them at length. What can, however, be asserted in advance is that the rates of wages and interest which would prevail if the changes and disturbances were entirely absent constitute standards toward which, in spite of all the changes that are going on, actual wages and interest are continually tending. How nearly in practice the earnings of labor and capital approximate the ideal rates which perfect competition would establish is a question which it is not necessary at this point to raise. We have to define the standard rates and show that fundamental forces impel the actual rates toward them. The waters of a pond have an ideal level toward which they tend under the action of gravity; and though a gale were to force them to one end of the pond and cause the surface there to stand much higher than the surface at the other end, the standard level would be unaffected and the

steady force of gravity would all the while be drawing the actual surface toward it. In our study of Economic Dynamics we shall encounter influences which act like the gale in the illustration, but at present we are studying what is more akin to gravity—a fundamental and steady force drawing wages and interest toward certain definable levels. In our present study of Economic Statics we must seek to discover how these standards are fixed, in the midst of the overturnings which industrial society undergoes.

A'''	B'''	C'''	H'''
A''	B''	C''	H''
A'	B'	C'	H'
A	B	C	H

We have already represented, in a highly simplified form, the synthesis by which the goods which make up the income of society are produced. A, B, and C represent different raw materials, and they are changed by a series of transmutations into A''', B''', and C''', which stand for all the consumers' goods that the society uses. They represent food, clothing, furnishings, vehicles, and countless means of comfort and pleasure.

The Making of Active Instruments of Production.—It is necessary always to have and use a stock of tools, machines, buildings, and other active instruments of production; and as these wear out in the using, it is necessary that there should be persons who occupy themselves in keeping the stock replenished. Under a system of division of labor there would be special industries devoted to the making of new appliances of production to take the place of those which are worn out and discarded, and also to make repairs on those which are still in use. For illustration, we may let the symbol H''' represent all active capital goods that the society uses, the various raw materials which enter into such active goods being represented by H and the partly made instruments by H' and H''. If the stock of appliances is not growing larger, just enough of the articles H''' are made to replace the discarded ones. No producer gets new machinery, but every one keeps his stock intact.

The Simplified Representation Correct in Principle.—We have now a very simple representation of what actually goes on under the name of the division of labor, and yet the representation is in essential points accurate. In reality a very detailed and minute division and subdivision of industries takes place and the varieties of goods produced are innumerable. Society, as a whole, is making the most highly composite product that can be conceived; namely, consumers' wealth in its countless forms. Each of the grand divisions of society—the general groups that we have represented by the series of A's or of B's—makes a complete article; but even that is in its own way far more composite than the symbol indicates, for it is apt to contain several kinds of raw material and to be made up of a large number of distinct utilities, each of which has its own set of producers. This complexity of the process of production does not change the principle of distribution, by which the product is virtually analyzed into its component elements and the value of each element is assigned to those who create it. This principle can be clearly represented by assuming that each subgroup has one distinct utility to create and that it takes only four of these to make an A''', a B''' or a C'''.

A Synthesis within Each Subgroup.—There is within each subgroup a synthesis going on, and this also may be complex. Labor and capital dig ore from the ground—an unusually simple process; and yet there are several distinct operations to be performed before the ore is ready for smelting. When it comes to fashioning the metal into useful shapes, the operations become very numerous and require many subordinate trades even for the making of one product. How many mechanical operations go to the making of a bicycle, an automobile, or a steam yacht? Too many to be represented in any table, but not enough to change at all the principle according to which those who help to make one of these composite products are paid according to their contributions to it. We may consider that all the work that is done in one kind of mill creates one utility. Though there are many subtrades in making a shoe and many more in making a watch, we may proceed as though there were only one transformation of the raw material required in each case. We may let the

division between the contiguous subgroups be made commercially rather than merely mechanically, and regard the establishments that buy material and sell it in a more highly wrought condition as moving it forward by one stage on the road to completion, however many changes they may have made in it in the different departments of their several mills. The difference between shoes, on the one hand, and the leather and findings of which they are made, on the other, thus passes for one utility. A manufacturer of shoes puts his leather and findings through many operations before he has shoes for sale; but it is convenient to call all that the manufacturer imparts to these raw elements before he makes them over in their new form to the merchant, one subproduct.

Further Complexities which may be Disregarded.—One man may be in several of the general groups. It is possible, for example, that he may furnish raw materials which enter into more than one finished article. Iron is so extensively used that it goes into more products than can easily be counted. The man who digs iron ore contributes to the making of bridges, rails, locomotives, buildings, machines, ships, and tools in indefinite number and variety. The price of each of the articles into which any of this material goes contains in itself the price of that part of the raw material which goes into it. There is steel in a ship, and the maker of that part of the output of raw steel which goes into a ship gets his pay from the price of the vessel; and so with the crude metal which goes into a bridge, a building, an engine, etc. What the producer of a material gets from each source tends, under perfectly free competition, to equal in amount what he contributes toward the value of the corresponding article. In terms of our table a miner may furnish ore from which iron is taken for the making of both A''' and B'''; and if so, when the distributive process analyzes these products into their elements, the value of what he has in each case contributed will fall to him. He will be paid according to the help he has afforded in the making of the A''' and the B''', and this fact does not change in principle the manner in which the income of society is divided. If the man helped to make only one thing, he would get a part of the price of that one thing; but if he helps to make several, he will get a part of the price of each of them. Each group has one grand function to perform, such as the making of an A''', and if the man helps in more than one, and is paid accordingly, his total pay is according to the amount he produces in all the different functions he performs, and the principle of distribution works as perfectly as it would if the man were confined to the single subgroup A. For simplicity we assume that he is so.

The Functions of Capitalist, Laborer, and Entrepreneur often performed by One Person.—One person may perform several functions, not only by contributing to the products of several groups, but by contributing in more than one way to the product of one subgroup. He may, for example, both labor and furnish capital, and he may, further, perform a special coördinating function which is not labor, in the technical sense, and scarcely involves any continuous personal activity at all, but is essential for rendering labor and capital productive. What this function is we shall presently see. We shall term it the function of the *entrepreneur*, using this term in an unusually strict way. We shall keep this function quite distinct from the work of the superintendent or manager of a business.

How Much the Term "Labor" Covers.—We include under the term *labor* all effort expended in a routine way in carrying on business. The overseers in the shops, the bookkeepers, clerks, secretaries, treasurers, agents, and, in short, all who perform any of the labor of management for which they get or can get salaries are laborers in the comprehensive sense in which we use the word. It comes about that the employer usually labors; for he does the highest and most responsible work in his own mill or shop. It is not, however, in his capacity as *entrepreneur*, or "*undertaker*," that he labors; for, as the *entrepreneur*, properly speaking, he employs and pays for all the work that receives a stipend. He may employ himself, indeed, and set aside a stated sum to pay his own salary; but this means that in his capacity as *entrepreneur* he needs a good manager and hires himself to act in that capacity. Scrupulous fidelity is the most important quality that a manager can possess, and the employer can always trust himself to possess it so long as it is his own interests that he controls.

Entrepreneur and Capitalist.—In the same way we include in the capital of an establishment whatever invested funds the employer himself supplies, as well as what he hires from others. Here

again a man is likely to serve in more than one capacity, for as an *entrepreneur* he hires capital and as a capitalist he lets it out for hire, so that in the one capacity he hires capital from himself acting in the other capacity. The man "puts money" into his own business and gets interest for the use of it.

The Different Functions of the Same Man distinguished in Business.—This distinction between the different functions that one person may perform is not a mere refinement of theory, but is something that is recognized in business and has great practical importance. In a corporation officials who are also stockholders receive salaries that are usually reckoned on the basis of the amount that they could get in the market if they were to enter the employment of other corporations and do the same kind of work they are now doing. Favoritism may give them considerably more than this amount, but even then this amount is the basis of the calculation which fixes their stipend. If they are paid more than their work is worth to their own corporations, what they get is something besides wages or any other normal and legitimate income. If they accept for their time less than they are worth, they make a donation to the corporation. Neither filching something for nothing out of the returns of the corporation, nor giving it a gratuity, is to be here assumed as existent, since we are not dealing with the phenomena of quasi-plunder or eccentric benevolence. The character of wages of management, as the reward for a high grade of labor, is recognized in business life, and the salary of the manager, whether he is a stockholder or not, is usually expressed in a definite sum of money and is gauged, crudely or accurately, according to his value as a servant of the company.

Dividends often Composite.—In like manner it is important in the bookkeeping of a company to ascertain how much of the return to the stockholders is merely interest on the capital they have themselves invested and how much is true profit, or the net gain which is over and above interest. In business life a distinction is pretty clearly maintained between the three kinds of income that have been described; namely, the reward of labor in all its forms, the reward of capital, going to whoever furnishes it, and the reward of a coördinating function, or the function of hiring both labor and capital and getting whatever their joint product is worth above the cost of the elements which enter into it. This essentially commercial margin of returns from production above all costs of production is profits in the strict sense and would be nonexistent in an absolutely static industry. It comes into existence in consequence of the changes with which social Economic Dynamics deals.

Three Incomes entirely Distinct.—Wages, interest, and profits, then, are the three incomes that we shall distinguish. We shall keep profits completely separated from the wages of any kind of labor and from the interest on any kind of capital. This income falls to the *entrepreneur*, otherwise called the undertaker, or the employer and coördinator of labor and capital, and it comes only when the product of the operations carried on in his establishment exceeds all wages and all interest that he has to pay.

How a Man could be an Entrepreneur Only.—If a man should hire all the capital that he needs in a business and also all the labor, including the labor of every man in the office force, and reside thereafter in a distant country, holding no consultations with his managers, whatever income he might get would be purely an *entrepreneur's* profit. It would not be interest—for that amount would have to be paid to the men who had loaned the capital—and it would not be wages—for they would have to be made over to the men actually doing the work. The absent *entrepreneur* would be, in the eye of the law, the purchaser of all the elements which go into the product, since all the purchases are made in his name. The managers are only his agents, and when they buy raw materials or supplies for the mill, they buy them for him and by his authority, and he is under the obligation to pay for them. Moreover paying wages is, in reality, buying the share which labor contributes to the product of the mill. The workmen have a natural right to the value which their work, *of itself and aside from the aid furnished by others*, imparts to the material that is put into their hands, and when they sell their labor, they are really selling their part of the product of the mill. In like manner paying interest is buying the share which capital contributes to the product. The owners of the capital have an original right to what the machines, the tools, the buildings, the land, and the raw materials, of themselves *and apart from other contributions*, put into the joint product. In reality they sell this

share for a consideration in the form of interest. In a static state labor and capital together create the whole product of the mill; wages and interest are the prices that they get for their several contributions, and the *entrepreneur* pays these purchase prices and by virtue of this becomes the owner of the whole product. Having the product, he sells it in the market for what he can get. If this were more than the cost to him of all the elements that have gone into it, he would have a net profit remaining. It would be a remainder accruing to the owner and seller of the product after the costs of getting a title to it have been defrayed. Whether the absent *entrepreneur* of our illustration gets anything from his business or not depends on the question whether such a remainder of returns above costs is afforded.

Profits Nil in a Static Society.—We shall see that if labor and capital can move about in the system of groups so freely that each agent is as productive in one place as it is in another, there will be no product anywhere in excess of wages and interest. Labor and capital then create and claim for themselves the whole output of their industries. When the *entrepreneur* has given them their shares, by paying wages and interest, and has paid for raw materials, he has nothing left. In actual business competition is often sharp enough to prevent men from getting more than interest on their capital and a fair return for the labor they spend in directing their business; and pure theory here assumes that competition is always and everywhere sharp enough to do this. It is ideally efficient. Labor and capital are ideally mobile and ready to flow at once to the points where any net profits can be made. Such a condition implies that society is in a *static* state, and we shall see what this condition is. It implies an absence of organic change in society. The great collective producer does not alter either its form or its mode of producing wealth. Industry goes on, indeed, but it goes on in a changeless way. Reserving the full description of this state for a later chapter, we note here that the adjustment which would theoretically bring a society to such a state would preclude all gains for its *entrepreneurs*.^[3]

The Merging of Functions Desirable.—The uniting in one person of the functions of capitalist, laborer, and *entrepreneur* contributed much to the productivity of the small-shop system of former days. The man who had a few thousand dollars invested in a little shop and employed a few men to assist him got three different kinds of income, and the sum of the three was larger than anything he could have secured if he had been only a laborer or only a small capitalist and *entrepreneur*. He worked harder and more intelligently than a hired superintendent would have done; he was led to be cautious because his own capital was risked in his business, and yet he was spurred to enterprise by the fact that when, by virtue of the influences which we call *dynamic*, profits were made, he got them. Even in the largest corporations the same conditions contribute to success, and it is best that managers should be owners of some part of the capital which they handle and receivers of some portion of the profits which they try to secure for their companies. Where competition is sharp, companies directed by their owners may supplant those of which the direction is given over to hired managers. The growth of corporations does, however, tend to put salaried men more and more into controlling positions and to reduce the power of the body of stockholders, who perform a joint function as capitalists and *entrepreneurs*. In itself this tends to reduce profits and detracts from the advantages which the incorporation of a business offers.

Distribution primarily Functional rather than Personal.—Where men get incomes that are composed of wages, interest, and profits, economic science should, in the first instance, tell us how the rates of wages and interest and the amount of profits are determined. A study of the static laws of distribution concerns itself with the reward of labor as such, and the reward of capital as such, while a study of dynamics takes account of pure profits. When we know what the rates of wages and interest are, we can tell what any capitalist-manager should have by knowing how much capital he furnishes and how much and how well he works as a manager. If the business is yielding a net profit, over and above the interest on its capital, we can tell what part of this net income any one stockholder will get—in the form of a rate of dividends in excess of the rate of interest—if we know how much of the common stock of the company he owns. His personal income depends on the incomes attaching to the functions he performs. The science of distribution should tell us primarily, not what any man personally gets as a total income and how well off he is as compared with other

men, but in what way the wages of his labor, the interest on his capital, and the return for the *entrepreneur's* function are fixed. In technical terms this is saying that distribution is primarily *functional* and not personal. Certain forces assign certain rewards to different functions which are involved in the creating of wealth, and the science of distribution tells us how these forces work—tells us, in short, how wages, interest, and true profits are, in and of themselves, determined. If any man works and gets wages, that part of his income will be determined by the wages law. If he furnishes capital, a second part of his income will be determined by the interest law. If he also coördinates labor and capital, whatever he may thus gain is determined by the law of profit. Economic science has to ascertain and state what these three laws are, though in its static division it has only to account for two of them.

Costs as well as Gains Apportioned.—The term *distribution*, as commonly used, denotes a division of the gains of industry; but as we have said, there are sacrifices which have to be borne in getting the gains, and these also have to be shared. Wealth benefits men in the using, but puts burdens upon them in the making; and when all society does the making, it has to apportion, in some way, not only the benefits but the burdens. We shall take account of these sacrifices because of the relation that they bear to the gains. They act as an ultimate check on production. Men would go on producing indefinitely if the operation cost them nothing, since it would always be agreeable to have a further income; but they necessarily encounter pains and sacrifices that, sooner, or later, bring the enlargement of their incomes to an end. Much that is of importance occurs at that critical point where the sacrifices of production put an end to the extension of it. It is the positive fruits of production that we have first to consider; and what in this connection we wish first to know is how wages and interest are determined when industry is carried on in a social way and under a system of competition. We shall find that these incomes are always tending toward standards which they would reach if society were in the state which we have described as static. How they are forced away from their standards by the changes and disturbances of actual life, and how the standards themselves change with social development, will be the subject of the latter part of this treatise.

FOOTNOTES

[1] It will be seen that we here assume for the process known as competition a degree of perfection which it does not attain in actual life. This process would be absolutely free if labor could and would instantly abandon one industry and enter another whenever it appeared that it could create an increased product by so doing, and if capital also moved with the same promptness on the smallest inducement. In actual life there is friction to be overcome in the making of such transfers, and this constitutes one of the subjects of the theory of Economic Dynamics and will in later chapters be fully considered.

Whenever either labor or capital thus moves to a new place in the group system, it becomes an active competitor of the labor or capital that was already there. We need a definition of the competing process. In the case of producing agents it consists in a rivalry in selling. The laborer who moves from A' of the table that, in the preceding chapter, has been used to represent organized industry to B', offers for sale, as some would say, his service, or more accurately, the product which his labor can create. The purchasers are the employers in the subgroup B', and in order to induce them to accept the new labor it is necessary to offer it at a rate of pay which will make it worth their while to take it. If the workers already in this division of the field are getting just what they are worth, a larger force cannot be employed at the same rate of wages, because, for a reason that will later appear, the new labor cannot offer for sale as large a product as an equal amount of the labor that is already there. If the transfer to B' were made, the new labor would have to accept lower pay than the old has been getting, and the old labor would be forced to accept a cut in its rate of pay or be supplanted by the new. A rate sufficiently low would insure the employment of all. If the labor formerly in this subgroup has been getting less than it is worth, there will ensue a competition among employers who desire to realize, each for himself, the margin of profit which can be made by getting additional labor, and this will either raise the pay of the men already in this subgroup or call new men into it, or do both. In any case it will, in the absence of all

trace of monopoly on the side of the employers, end by giving to the men what they are worth. It is, in fact, such a bidding for new labor by employers in any branch of business that moves labor from point to point in the industrial system. The *entrepreneur* is the agent in the case, profits are the lure, and competition—rivalry in buying—is the means; and competition is, as we use terms, absolutely free whenever it is certain that the smallest margin of net profit will set it working and draw labor or capital to the profit-yielding point.

There is competition among the *entrepreneurs* at A''' in selling this finished product to the consuming public, and among different purchasers in buying it. Whenever the price of A''' is so high that the whole output of it cannot be sold, each vender tries to supplant others and insure a sale of his own product rather than that of any one else. Competition here is overt and active. When all can be sold at the current price, finding a market for one vender's supply does not require that he win away another's customers, and although the different sellers continue to be rivals and each would welcome an increase of patronage made at others' cost, no one is forced to underbid others in order to continue to sell his accustomed output. Competition is here quiescent, since actual underbidding and the luring away of rivals' customers do not take place. When *entrepreneurs* who are not now in the subgroup A''' are ready to enter it and to become rivals of those already there whenever any profit is to be had by such a course, their competition is not actual but potential; and yet it is a real influence and serves to deter producers already in the field from establishing such a price for their product that the possible competitors will become real and active ones. These three influences may conceivably act without obstruction or may be hindered and deprived of much of their power. In actual life they are subjected to hindrances, and whether they shall hereafter insure a certain approximation to the general state which a perfectly free competition would insure or whether the economic condition of the world shall be permitted to drift far from that normal state, depends on the success which governments will have in reducing or removing the hindrances.

[2] In this treatise the term *profits* will be used to designate the net increase which may remain in employers' hands after paying the wages of labor of every kind and interest on all capital used. The term *gross profits* describes a sum made up of this net profit and interest on the capital.

[3] The preceding paragraphs may seem to show that if an *entrepreneur* ever gets an income, he does it by wresting from labor and capital a part of their products. We shall see that in *dynamic industry* there is a normal way in which he may get an income without taking anything from the incomes that labor and capital would get if he did not perform his part. His return may come from the result of an enabling act which he performs, whereby both the labor and the capital of a particular subgroup become more productive than other labor and capital are and more so than they would be if the *entrepreneur's* enabling act were not performed.

CHAPTER VI

VALUE AND ITS RELATION TO DIFFERENT INCOMES

Functional distribution controls personal incomes since each man who gets, in a normal way, any income at all performs one or more productive functions, and his total income is the sum of the returns for these several functions. Moreover under such a condition of ideally perfect competition as we have assumed each of these functions is rewarded according to the product that it creates; and each man accordingly is paid an amount that equals the total product which he personally creates. Men's products, even in the disturbed conditions of actual life, set the *standards* to which their returns tend to conform, though they vary from them in ways that we shall not fail to notice.

Group Distribution.—The grand total of the social income has to go through a preliminary division before it is shared by laborers, capitalists, and *entrepreneurs*. In each industry the pay of all these functionaries comes from the selling price of the commercial article that they coöperate in making. The price of shoes pays all shoemakers, whether what they contribute to the manufacturing is labor, capital, or mere coördination; and it also pays ranchmen and tanners for what they contribute in the shape of leather, raw and dressed. If the price of shoes should rise, there would be a larger income for the group whose activities create them. So if woolen clothing were to become dearer, there would be more money for the group that makes it, and this would include those who raise sheep and those who convert wool into cloth, as well as the garment makers themselves. The question, what members of a group would get the benefit of a rise in the price of its product, is one that must be discussed in connection with economic dynamics, and we shall find, when we reach this part of the subject, that it is *entrepreneurs'* gains which come largely from sources like this. We have already seen that, in a static condition and with prices, wages, and interest immovably held at rates to which perfectly free competition would bring them, *entrepreneurs* as such would get *nil*, and the whole price of every article would be distributed among the laborers and the capitalists who make it. The proof of this will appear when we have examined the process by which the values of goods are adjusted, and this will help to prepare the way for a study of the sources of net profits, which are an all-important feature of actual business. Society is honest or dishonest according as this *entrepreneurs'* income is gained in one way or in another; and it is not too much to say that before the court of last resort, the body of the people, no system of business will be allowed permanently to stand unless the basic principle of it tends to eliminate dishonest profits. A chief purpose of static studies is to afford a means of testing the legitimacy of the incomes that come to *entrepreneurs*.

Market Price.—The old phrase *supply and demand* describes the process by which the market price of anything is determined. The total mercantile stock of goods of a particular kind at any one time on hand is, of course, an exact quantity, and the law of "market value," when these words are used in a restricted and technical sense, determines the price at which this predetermined amount can be sold.

How a Normal Supply is Determined.—This present stock, however, was brought into existence by producers who looked forward to the time when they could probably sell it at a certain price; and the higher this anticipated return for the article, the more of it they were induced to make. The price, which to-day depends on the quantity on hand, acted in advance as a lure to bring that quantity into existence, and among the different articles which men can produce, they are forever singling out for increased production those things which offer the strongest lures—that is, the things that sell for the largest amounts as compared with the cost of making them. The ultimate tendency of all this is a certain adjustment of the relative supplies of different commodities. It is that adjustment which brings all prices to a level determined by cost.

Natural Value.—This tendency toward cost prices—those which afford to the producers wages for all their labor but no true *entrepreneurs'* profit—establishes a further law, that of "natural value,"

and this it is that fixes the standard to which, in the long run, market values, as adjusted by supply and demand, tend to conform. A market value is natural or unnatural according as it does or does not conform to a certain standard, and this ultimate standard itself is the cost of producing the several kinds of goods. What the term *cost* in this connection really means we must later see; but for the present we may take the common and practical view that it is the amount of money that an *entrepreneur* must pay out in order to bring the article into existence. If there were very little wheat in the granaries of the world, demand acting on this limited supply would determine the selling price of it, and this price would be high as compared with the cost of raising this grain. It would also be higher than the selling prices of other things which are produced by the same expenditure of labor and capital that has to be made in raising the wheat. The market price would, for the time being, be unnatural and would in due time be brought down; but this would have to be done by the raising of more wheat. In other words, though the selling price of a small supply of wheat may be *normal for that amount*, the amount supplied is itself abnormally small, and in view of that fact the resulting price is too high to be allowed to continue. As a permanent price it would not be natural. The quantity supplied tends to increase till the market price conforms to the cost of raising the wheat. We have to see, first, how demand fixes the price of a definite amount of anything which is offered for sale and, later, how the quantity offered is controlled.

How Prices are Determined.—It is certain that if, in a given market, we increase the quantity of goods that are to be sold, we lower the price,^[1] while, if we diminish the quantity, we raise the price. That is the commercial fact and it furnishes a beginning for a theory of value.

Let us suppose that we have a fixed quantity of goods on hand, that all must be sold, and that no one knows at the outset what price they will bring. There might conceivably go on an inverted kind of auctioning process, in which the sellers at the outset would ask a high rate, sell a few of their goods, and then gradually reduce the price till the last article should be sold. At each reduction of the price the "effectual demand," so-called, would increase. This means that the people who want the article are actually willing to take and pay for larger quantities the lower the price falls. Mere desire does not influence the market, but an "effectual demand" means a desire and a tender of the money that is asked for the goods. It is, in short, an actual purchase and the amount of it becomes larger as the price goes down. People who did not buy the article before now add it to the list of goods that they take for use, and the people who were already taking a certain quantity of it now take more.

Equation of Supply and Effective Demand.—If this effective demand, or amount of goods actually bought and paid for, becomes steadily larger the lower the price becomes, it is clear that, however large the total supply may be, it can all be sold by making the price low enough. It was once thought that this is all we need to know of prices current or market values. At some selling rate or other the quantity actually offered will come to equal the quantity that is actually bought. This is the equation of demand and supply. The quantity offered is here supposed to be fixed and to include all of the article that is in dealers' hands and that has to be sold; and the price, starting at a high rate, is supposed to go down till the sale of the entire quantity is effected.

Varying Demand and Price.—The facts that have just been stated account only in a partial way for the adjustment of market price. One who wishes to trace phenomena to their causes cannot help asking why demand and supply insure the selling of a given amount of goods at one rate rather than at another. If apples are offering at two dollars a barrel, why is it that, in a particular local market, one thousand barrels and no more can, at that rate, be sold? We can readily see that at one dollar a barrel more could be sold than at two, and that at three less would be sold. But why is it that, at two dollars, the definite number of one thousand barrels is the amount that is taken and paid for? Why is the equation of demand and supply established at exactly that price?

Demand and Final Utility.—We come nearer to the cause that acts in adjusting the price of apples when we say that they sell at two dollars a barrel because that sum expresses their "final utility." This means that, if such an auctioning process as we have described were resorted to, the last barrel of apples which would be sold would have to the buyer an amount of utility just equal to that

of the final unit of any other article that could have been had for the same money. The auctioning, however, would cause different barrels of apples to sell at different prices, whereas there is something in the working of competition which causes all of them to sell at the same price. It is necessary to see, first, how the price of the "final" one is adjusted and, secondly, how that fixes the price of all the others.

The Law of Diminishing Utility.—We revert here to one of those general laws of economics that we have already stated and see it acting under the conditions of distinctly social life. Goods of a given kind have less and less utility, per unit, the more the user has of them. If you offer him apples in increased quantity, he will value the first part of the supply highly, but will attach less value to the later parts. When the desire for this fruit is fairly well satisfied, he will find other articles of more importance. At the price of two dollars a barrel it is just worth his while to buy a final barrel of them. That quantity, as added to his winter's supply, will give him two dollars' worth of benefit. This means that it will do him as much good as anything else which he can get for the same amount of money.

The Equalization of Final Utilities.—Two dollars spent in adding to his previous stock of other things will do the man in the illustration the same amount of good that he can get from a final barrel of apples, and no more. In the case of goods which are all alike and of which consumers are always glad to use an additional amount, prices tend to adjust themselves in such a way that a final unit of any one which the consumer buys with a dollar is worth just as much to him as a final unit of any other article he buys with that amount. The last dollar paid for apples is as remunerative, in the way of pleasure and benefit secured, as is the last dollar used to improve his wardrobe, to add something to his stock of furniture, to buy tickets to the theater, etc. Apples have, as it were, to compete with clothing, furniture, and amusements for the consumer's favor, and if the vender charges more for them than do the venders of other things having the same power to give pleasure, some of the apples will remain unsold; for though customers will always give as much as they would have to pay for other things of equal final utility, they will not give more.

The Prices of All Increments of Supply Equal.—A consumer always gets a net surplus of benefit from the early increments of the goods he consumes. If the last barrel of apples is worth two dollars,—or, what is the same thing, if the last barrel has in it an amount of utility equal to the final utility of other things that two dollars will buy,—the first barrel has a larger utility; and yet it costs no more than the last one. The sellers of apples, if they expect to dispose of all that they have, must at the outset fix the price at such a point that the very last increment of the supply will successfully compete with other articles for the favor of purchasers. Competition forces them to sell the whole amount so cheaply that the least important part of it may be as important to the purchaser of that part as the corresponding and least important part of the supply of other things. Nothing but a monopoly of the entire available stock would enable them to carry out the auctioning plan and offer the stock piecemeal, so as to get a higher price for the parts offered early. Even then buyers who should perceive the fact that a large part of the stock remained in reserve and that it must ultimately be sold would be able, by delaying their purchases, to get the benefit of a later and lower rate, so that the monopoly itself would be only partially successful in its policy. In the absence of a monopoly venders are compelled to sell all articles of one kind and quality at one price. The man who should fix a higher price on his portion of the supply would be passed by in favor of other sellers who were disposing of their final increments, and his business would quietly drift away from him. *There cannot be two prices for one commodity in the same market* at the same time. This fact is fundamental. Even the monopoly is able to get different prices for different parts of its output only by offering them at different times; and competing producers cannot do this. They are forced to keep the price of all they offer at a level that expresses its final utility.

The Law of Value affected by the Difficulty of using Two Similar Goods at Once.—There are two imperfections in the common statement of this law of final utility which need to be removed in order that the theory of value, which is based on the law, may be true and useful. The first lies in the assumption that people buy completed articles, such as coats, tables, vehicles, watches, etc., in regular series of units, adding to their stock coat after coat, watch after watch, etc., all just alike, till the utility of the last one becomes so small that it is better to buy other things. On this supposition

the price of the whole supply of any such thing corresponds with the utility of the last one in the consumer's series. This fairly well describes the case of commodities like apples, of which men consume now more and now less per day or per week and are always glad to increase the amount they use. Of most kinds of consumers' goods a person wants at one time one unit and no more, and a second unit, if he has to use it himself within the same time in which he uses the first, would be an incumbrance. Its utility would be a negative quantity. Two quite similar coats would never be bought by the same person if he had only his own needs in view and must use both coats through the same period. The first unit of his supply is, for this period, also the last.

The Law of Value affected by the Fact that the Final Unit of a Good is usually a Complex of Unlike Utilities.—The second imperfection consists in the assumption that in measuring the utility of such a unit the consumer estimates the importance to himself of the article taken in its entirety. In the case of the apples of our illustration the difficulty is not obvious. A man, as we have just noticed, may increase or diminish his consumption of this fruit; the first few apples that he uses will give him more pleasure than a second similar quantity, and the price of apples in the market may actually depend on the utility of the final peck of apples that each of the customers consumes in a season. In other words, there is, in this instance, a probability that the goods, although supplied at once, may be appraised as if they were offered in a regular series and that the law of final utility, in its common and simple form of statement, may in this particular apply to the case. The second difficulty, however, remains, and even in the case of such goods as apples renders the common statement somewhat inaccurate, while in the case of most kinds of consumers' goods the inaccuracy is glaring. If the price of fine watches corresponded with the utility of the last one that a consumer uses, it would be many times greater than it is. Rather than go without watches altogether many a man would pay one thousand dollars for one for which he actually gives a hundred; and, moreover, this watch may be the "final" one in his case. The utility of the last overcoat that a man uses in the winter may be such that, if he could have it on no other condition, he would readily give five hundred dollars for it instead of fifty.

How Unlike Services may be rendered by One Good at the Same Time. —What people want of any useful thing is an effect in themselves,—a pleasure or a benefit which they expect to get,—and apart from this subjective result they would not want the thing at all. The power to confer a particular benefit is a utility. Men buy goods solely for their utilities, and they measure these service-rendering powers in the things offered to them and pay for them accordingly. Now, it happens that articles often combine in themselves a considerable number of different utilities, or service-rendering powers, and that in buying an article the man pays for them all. It is as though four or five different servants, each having his own specialty, were to offer themselves for hire and invite an employer to consider what each one could do for him. In buying an article which will serve him in several ways, a man appraises all the unlike services that the article will render. He secures several services at once, as he would do if he hired, in a body, several actual servants. The same thing would happen if, instead of hiring human servants with different aptitudes, one should buy different commodities each of which is, in reality, an inanimate servant, able, in its own way, to do something useful or agreeable for the purchaser. We could bunch a lot of these goods and buy them collectively. Venders of the goods could tie them together in bundles and offer them thus for sale. If the different goods were also sold separately in the market, they would command in the bundles the same prices that they would command when sold each by itself, and a bundle would bring the sum of the several prices of its component articles. *In just this way in which an aggregate of different goods would get its valuation does any one article which is made up of different utilities get its rating. The utilities are appraised separately.* In buying an article which is a composite of different utilities, we virtually employ a company of servants who have different specialties and insist on being hired all together or not at all.

How the Normal Price of a Bundle of Unlike Goods would be Fixed.—We have now to see how the action of the market analyzes an article and puts a price on the several utilities which compose it. The market does this in exactly the same way in which it would appraise a bundle of dissimilar articles which had to be sold separately, and we will therefore trace the operation by which a

package containing the commodities A, B, C, and D would get its value in an actual market.

How the Normal Price of a Single Good in a Bundle of Unlike Goods would be Fixed.—Let us see how a bundle made up of commodities A, B, C, and D would get its value in the market. We will suppose that these articles are here named in the order of their importance, and that A has the highest utility, since it renders the most important service, and that D has the least. It may be that the article A has a utility rated at one hundred dollars in a particular man's esteem. He would give one hundred dollars for it rather than do without it altogether. The service, then, that one article of this kind can render is expressed by the sum one hundred dollars. Article B taken separately may be worth fifty dollars, since it may render such services that the man would give fifty dollars rather than be without it. A third article, C, may in the same way be valued at twenty dollars and a fourth at ten. Now, if a man has to buy the whole bundle, must he pay one hundred dollars plus fifty plus twenty plus ten, or one hundred and eighty for the whole? This does not by any means follow. The first article may be sold separately at a price far below one hundred dollars. There may be so large a supply of it that, in order to find a market for it all, the makers must take ten dollars for it. This fixes the market price of that amount of this commodity at ten dollars. If we now glance beyond the question of the "market price" of the goods and consider their more permanent or "normal price," the inquiry requires us to do more than ascertain why a definite quantity of the goods offered at a certain time sells for a certain amount. An appeal to the law of final utility answers that question. To know, however, why the permanent price is what it is, we have to know what fixes the permanent supply, and we discover that the cost of making the goods is here a dominant influence. For the present we assume that this cost does not change, since such changes are a subject for the dynamic studies which will come later. The present fact is that production has been carried to such a point that no more of these goods can be sold at the cost price, and there the enlargement of the output has stopped; the supply has at some time in the past reached this normal point and now remains there. Ten dollars represents the final utility of the article, and this sum is what it costs to make it. If it could be sold for any more than that, competition would bring new producers into this business and would impel those already in it to enlarge their production till the price would stand at the normal or cost level of ten dollars.

The Consumers' Surplus.—In every such case there are men who would give much more for the article rather than be without it, and we have supposed that some one would pay a hundred dollars for this commodity if he could not otherwise obtain it. Ninety dollars, then, measures what we may call his *consumers' surplus*, or the clear benefit he gets from buying at its market price an article that is worth to him so much more. This comes about by the fact that the makers of article A, in order to sell the amount of goods that competition has impelled them to make, must accept the offers of persons who can consistently give only ten dollars for it. These are relatively poor persons, and as the sum of ten dollars expended on other articles would benefit them as much as ten dollars spent on this one, it is a "final" purchase, or a final increment of their consumers' wealth. In order to get it they sacrifice, in some other form, a benefit as great as the one they get from acquiring this commodity and receive, therefore, no consumers' surplus from it. These are the men whose demand helps to fix the price of the article A, and the willingness of other persons to give more does not make it bring any more. The rich men, who stand ready to pay a hundred dollars, if necessary, are gainers by letting poorer men fix this price. It is by catching the patronage of these poorer men that the makers can dispose of their large output, and in doing this they have to bring the price down to ten dollars.

The Function of a Special Class of Marginal Purchasers of Each Article.—In like manner there is a class of "marginal purchasers" of the article B, or the persons who pay for it so much that they get no net benefit or consumers' surplus from the purchase. If they did not buy this article, they could get something else that would do them as much good for the same outlay. It costs, let us say, only ten dollars in the making, and enough of these articles are made and offered for sale at that price to supply all customers who are attracted by the offer. The men who would pay more for it do not count. Each of the other articles in the bundle, when it is offered separately and at the cost price which competition establishes, represents a final utility to some one class of purchasers.

Competition has made the whole supply so large that, in order to dispose of it, venders must attract the particular class who will take it at the ten-dollar rate. This class is in the strategic position of market-price makers for this one thing. They are the last class to whom the producers can afford to cater. If each of the five articles in the bundle costs the makers ten dollars, and if so many of each are made that they just supply the needs of the classes that will buy them at ten dollars apiece, the price of all five, when sold separately, will be fifty dollars. Most of the purchasers of each article would give more than ten for it if they had to, but some would not do so, and the producers cater to the needs of these marginal persons.

How the Prices of the Goods are fixed when they are sold in Various Combinations. —How do these articles get their valuation when they are tied in bundles containing all five of them and the bundles are sold unbroken? In essentially the same way as when sold separately. Article A, we will suppose, is one of the necessities of life and is to be had by itself in the market. Article B represents a comfort, and C and D are luxuries. The bundles are so made that A and B are often sold together; as are also A, B, and C; and A, B, C, and D. A purchaser may have at his option the first only, the first and the second combined, the first three, or all four. Article A, when it stands alone, can be had at the natural or cost price and in quantity sufficient to supply the wants of all classes of buyers from the highest down to the class which will take it at ten dollars—the cost of making it—but at no higher price. Any one can have the A either alone or tied to other articles at this price. One who buys A and B in combination will pay for article A only the same price that it commands when sold separately; and since he buys B, the utility of which is less than that of A, at ten dollars, it is clear that he gets A for less than it is worth to him, but the ten dollars may be all he would give for the B. This man is not the marginal purchaser of A, for in buying it he realizes a consumers' surplus; but for the article B, which is tied to it, he may pay all that it is worth to him. For that he is a marginal purchaser, and as such he gets no consumers' surplus out of it. What he pays for B will just suffice to buy something else which is equally important to him. The price of this bundle of two articles is ultimately determined by the cost of the two components, which is twenty dollars, and enough of each component is made and offered in the market to supply the wants of a class of persons who will barely decide to take it at the cost rate. The class that hesitates at taking A will not consider B, but the class that hesitates at taking B gets a clear benefit from buying A at the price that expresses the utility of A to a poorer class of persons.

How Different Classes of Purchasers coöperate in this Price Making. —The rule of one price for one article of course holds, and the man who would have a clear and decisive motive for buying the A for more than ten dollars, if he had to do so, gets the benefit of two facts: first, that it costs only that amount in the producing, and secondly, that competition makes the supply of it so large that it is brought within the reach of those persons who value it at only ten dollars. It takes two different classes of purchasers to fix the price of this package of two articles, and their ratings fix it at twenty dollars. Exactly the same influences regulate the price of the bundle which includes A, B, and C. Men who buy C can afford to have a luxury, and therefore, if they had had to do so, would have given more than they do give for the articles of necessity and comfort. If the price of A and B were higher than it is, they would still buy these two things, but they would not raise their bids for C, since for this they are marginal purchasers. This commodity is therefore sold at the price that will just induce this class of persons to add it to their list of consumers' goods. There is a further class in whose list of purchases D is marginal, while A, B, and C yield a consumers' surplus in the form of an uncompensated personal benefit.

Different Utilities in an Article appraised as are Different Goods in a Package. —It is an actual fact that most commodities are like these packages of unlike articles. They are bundles of unlike utilities, and the market actually finds a way to analyze composite things and put a separate price on each utility. It may seem very theoretical to say that a concrete thing, like a watch, a coat, a dining table, or a roast fowl, is made up of such abstract things as utilities and that each of these has its separate price; yet such is actually the fact, and if goods were not valued in the market in this way, the prices of all articles of comfort and luxury would be very much higher than they are.

A man pays seventy-five dollars for an overcoat, but if he could not get the service that the coat as

a whole renders without paying five hundred dollars for it, he would pay it; for otherwise he could hardly get through a winter. No man who buys an overcoat worth seventy-five dollars would refuse to pay more if that were the necessary condition of having an overcoat at all. The garment as a whole is far from being a "marginal utility" to any one; and yet there is something in it that is so. This element is like the article D in the fourth bundle referred to in our illustration. There is a particular utility in the composite good for which the man pays all that it is worth to him; and he would go without that utility if the seller charged more than he does. The most important service that the coat renders is that of keeping the man warm; but a very cheap garment would render that service, and six dollars will buy such a garment. The man does not need to pay more than six dollars for that one service. The supply of cheap coats is such that the final one must be offered for six dollars in order to induce certain poor purchasers to buy it, and that, moreover, is all that it costs to make it. No one, therefore, is obliged to pay more than six dollars for something that will keep him warm, however much such a service may be worth to him. Coats of another grade have a second utility combined with this one, since they are made of better cloth and are more comely in appearance. Utilities of an æsthetic kind are combined with the crude qualities represented by the cheapest coats. The supply of coats of this grade is such that they must be offered for twenty dollars in order to induce some one to take the final or marginal one. What does this mean? It means that this purchaser will pay fourteen dollars and no more in order to have the second utility, consisting in comeliness, added to the first utility, capacity to keep him warm. This man would give more than twenty dollars rather than go uncloaked; for it is plain that, if he will pay fourteen dollars for comeliness, he will give more than six for warmth. Probably he would pay one hundred dollars for the article if he had to, and in getting it for twenty he gets a large consumers' surplus. This is because he secures the first utility (1) for less than it is worth to him, (2) for just what it costs in the making, and (3) for just what it is worth to the poorer purchasers. He is willing to pay only fourteen dollars for the comeliness, which is the second utility that the garment contains, and he is therefore a marginal purchaser of this second utility. It costs only the sum of fourteen dollars to add the second utility to the first, and enough coats of the second grade are made to catch the patronage of the class of buyers who will give so much and no more for it. They are the persons whose demand figures in adjusting the market price of this second utility. Competing producers of coats cause the supply of those of the second grade to be so large that they could not all be sold unless the second utility were offered for fourteen dollars. This makes the price of the entire coat twenty dollars as the result of catering in a detailed way to the demand of two different classes of buyers.

In exactly the same way the price of the third grade is fixed at forty dollars and that of the still higher grade at seventy-five. In the third grade there is a utility which it costs twenty dollars to add to those possessed by garments of the second grade, and this is added to enough of them to supply all persons who will pay twenty dollars or more for it. These coats are made of more highly finished goods and have better linings, and this gives them the third utility which the market appraises at its cost, which is twenty dollars. The men who buy the forty dollar coats get a surplus of benefit in securing the first two of the utilities that are embodied in them, since for these they pay less than they would pay if they had to; but they get no surplus over the cost of the third utility. It is to secure their custom that the vender must sell it for twenty dollars. In a like manner a coat of the next grade, which is a more fashionable garment, sells for seventy-five dollars because it has a fourth utility which costs another sum of thirty-five dollars and, to the marginal buyers, is worth that amount. These men get a surplus from buying the first three utilities at what they cost their producers and what they are worth to poorer purchasers. It appears, then, that a seventy-five dollar coat is a bundle of distinct elements, or utilities, each of which has its separate cost and is sold at that cost price to a particular marginal class of purchasers. Each element is valued exactly as if it were in itself a complete article tied in this case to others, but also offered separately in the market. Persons of one class are final purchasers of the first utility when it is offered at its cost, six dollars. Another class, in a like manner, helps to set the price of the second utility at fourteen, and still other classes figure in the adjustment of the prices of the third and fourth utilities. These cost the manufacturers twenty dollars and thirty-five dollars respectively, and competition insures the making of enough of them to catch the patronage of those who will pay just these amounts. Members of one class act as marginal purchasers in price making in the case of one utility only.

The concurrent action of all of them results in setting the price of the best coat at eighty dollars. It is a very practical fact that the rates at which all fine articles sell in the market are fixed in this way. Such articles contain utilities unlike each other. They have power to render services of varying degrees of importance, and each of the several services gets its normal valuation when producers make enough to supply the want of a particular group of persons to whom it is a marginal service and who are willing to pay only what it costs. They would go without that one service if they had to pay more for it.

This Method of Valuation Applicable to All Commodities of High Grade.—Illustrations of this principle might be multiplied indefinitely. A fine watch tells the time of day, but something that would do that could be had for a dollar, and that is all that this fundamental element in the fine watch sells for. It takes a series of purchasers bidding on the higher utilities of the fine watch to make it sell for five hundred dollars. The man who buys such a watch would give, perhaps, ten thousand for it rather than be without a watch altogether, but he is saved from the necessity of doing so by the fact that poorer customers have done the appraising in the case of all the more fundamental qualities which the watch possesses. So long as an Ingersoll "dollar watch" will tell the time of day, no one will pay more than a dollar for exactly that same service rendered by any watch whatever; and the same thing is true of other services. Social in a very concrete and literal sense is the operation of fixing prices. Only the simplest and cheapest things that are sold in the market at all bring just what they are worth to the buyers, and all articles of higher grade offer to all who buy them a surplus of service not offset by what is paid for them. If we rule out the cheapest and poorest grades of articles, we find all others affording a "consumers' surplus."^[2]

FOOTNOTES

[1] The term *market*, as used in this discussion, means a local area within which goods of given kinds are bought and sold; and for different purposes we may make the area small or large. For some purposes it is necessary to take a "world market" into consideration, while for others it is desirable to include only that part of the world within which competition is very active and within which also goods and persons move freely and cheaply from place to place. A single country like the United States affords a market large enough to illustrate the laws of value, though one must always keep in view the relation of this circumscribed area to its environment. How local areas may, in a scientific way, be delimited and isolated for purposes of study will appear in a later chapter.

[2] It will be seen that to a man who buys the seventy-five dollar coat that article in its entirety is the final one of its kind which he will buy. He does not want a second coat exactly like the first. The same thing is true of the man who buys the five hundred dollar watch, since he does not think of buying more than one. In each case the first unit of the article bought is the last one, and it contains utilities which are worth more than they cost. It contains one utility only which is marginal in the true sense of affording no surplus of gain above cost. This utility stands on the boundary line where consumers' surpluses stop.

CHAPTER VII

NORMAL VALUE

Natural Supply.—We have attained a law of market value, which determines the price at which a given amount of any commodity will sell, and have taken a quick glance at the influence which fixes the amount that is offered and thus furnishes a natural standard to which the market value tends to conform. At any one moment the amount which is supplied is an exact quantity, and if it all has to be sold, it will bring a price which is fixed by the final utility of that amount of the commodity. If the quantity offered for sale should become greater or less, the final utility and the price would change. Final utility controls the immediate selling price, and if that is above the cost of production, a margin of gain is afforded which appeals to producers, sets competition working, and brings the quantity made up to the full amount which can be sold at cost. The amount of the supply itself is therefore not a matter of chance or caprice. It is natural that a certain quantity of each article should be supplied, and that the price should hover about the level which the final utility of that quantity of the good fixes. "Natural" or "normal" price is, in this view, the market price of a natural quantity.

Cost as a Standard of Normal Price.—It is commonly and correctly stated that the normal price of anything is that which just covers the cost of producing it. Cost in this case is the total amount of money that the *entrepreneur* pays out in order to bring the commodity into existence. He buys raw materials and pays for all the labor and capital that transform them into a new and saleable shape. If he can make a net profit, he does so; but competition tends to adjust the quantity produced and the consequent price in such a way that he can make no net profit. What he gets for the article will then reimburse him for his total outlay, but it will do no more. Since the quantity produced is normal when it brings the market price to this level of cost, it appears that the cost is the ultimate standard in the case. The quantity supplied varies till it causes the market price just to cover the cost; and so long as the quantity supplied is thus natural, other influences remaining the same, the price is so. This states the cost of production in terms of money paid by an *entrepreneur* and the returns from the operation as money received by him; but there is a more philosophical way of conceiving the law of cost, and to this we shall soon recur.

Elements of Cost.—Whatever the *entrepreneur* has to pay for in the production of an article is of course an element in its monetary cost to him. If he does not begin the making of it by drawing his raw materials from what nature freely furnishes, he must pay some one for the raw material. He must also pay for the labor, and this is equivalent to buying the fraction of the article that is produced by labor; for the laborer, as we have seen, is the producer of a certain fractional share of the article and the natural owner of that share, and when he agrees to let his labor for hire, what he really does is to sell out his individual interest in the forthcoming product of the industry in which he is about to engage. When a workman in a shoe factory agrees to work for two dollars and a half a day, he really contracts to sell every day for that amount a certain quantity of shoes. The leather is one element which enters into the finished shoes, and therefore the entire shoe is not really made in the factory; but of the part which is there made, namely, the utility that results from transforming the leather into shoes, one part is made by labor and another by capital. The *entrepreneur* has to buy both of these if he is to acquire a valid title to the product and have a right to sell it. These costs are therefore "purchase money" paid for undivided shares of goods.

Labor of Management.—It usually happens that an *entrepreneur*, or employer of labor and capital, performs some labor himself; and we have already noted the reason for this in the fact that the kind of labor that he performs is so important that the fate of the business often depends on it. He may manage the business so well as to make it succeed or so ill as to make it fail. He pays himself for this labor when he draws a salary for his services. As an *entrepreneur* he treats his own labor as he does that of any one else and buys the fraction of the product of his business that his own labor of management has created. In this he illustrates the general law that all payments of wages are

payments of the purchase of a certain quantity of product. Though the owner's own contribution to the product is not always mentioned in terms in the accounting, that is what his salary is paid for, though it is spoken of as a payment for his "time," or his labor.

The Capitalist as the Vender of a Share in a Product.—Capital, as we have seen, also contributes a definite share toward the total amount of every product in the making of which it coöperates. Labor does not do all the transforming of leather into shoes which is done in the factory, since machines, fuel, etc., help; and we shall later find that there is a way of determining how much of the product the help so given creates. It adds a certain amount to what labor can claim as its own special product, and the man who owns the capital becomes the lawful claimant for this additional share. When he agrees to let his capital work for an employer, he virtually sells to the employer the undivided share of the product—shoes or what not—that the capital really creates. The furnisher of productive instruments, like the furnisher of labor, is a vender, and the *entrepreneur* is a buyer.

Entrepreneur and Capitalist.—As was stated in an earlier chapter, an actual employer nearly always furnishes some of the capital that he uses. If he did not do so, he would have difficulty in borrowing more, since banks or other lenders do not loan to empty-handed men. It is clear that what the employer gets in return for such capital as he may put into the business is in reality a payment for a contribution which that particular part of the capital makes to the product. Since each bit of capital in an establishment contributes something toward the creating of the product, the employer's own capital has the same right to the value of its contributory share as has the capital of any one else. What the employer-capitalist gets for capital the employer, pure and simple, pays. As the furnisher of instruments the man is a vender of the product of these instruments, while as an *entrepreneur* proper he is the buyer. He must purchase the product of his own capital just as he purchased the product of his own labor. In paying, therefore, wages for all labor, including what he performs himself, interest on all capital, including his own, and the price of raw materials, he gets something which, if competition does a perfect work, he has to sell for what he gives for it. The shoes, when he sells them, tend, under active competition, to yield only what has been paid for them in the making and, in a perfectly static state, would actually yield no net profit. All the *entrepreneur's* costs, therefore, resolve themselves into purchase money paid, his receipts are money accruing from sales; and under ideally free competition the two sums total are equal.

The Entrepreneur's Proper Function not Labor of Management.—In some theoretical discussions the management of a business figures as the principal function of the *entrepreneur*, and all or nearly all of the reward that comes to him is represented as coming in the shape of a reward for a responsible kind of labor that calls great abilities into requisition. But it is very clear that, whether he personally performs any labor or not, the employer has a distinctly mercantile function to perform; and this in itself is totally unlike the work of overseeing the mill, the shop, or the salesroom. He acquires a title to the whole product by paying for the contributions which labor and producers of raw material separately make toward it, and then parts with the product; and if he gets any more than he has paid out, he makes a profit. When industry is in what we have termed a dynamic state, such a difference between the value of the product and the cost of the elements that go into it is continually appearing, and that, too, largely in consequence of causes over which, as a mere manager, the employer has no control. A profit so gained cannot be wages of management. It is a purely commercial gain, or a difference between what is paid for something and what is received for it.

Mercantile Profit.—It is best, therefore, to distinguish in some perfectly clear way between that function of the *entrepreneur*, which consists in buying and selling, and any work that he may find it best to do in the way of superintending the business. At the cost of using the term *entrepreneur* in a stricter sense than the one customarily attached to it, we will make this word describe the purely mercantile functionary who pays for the elements of a product and then sells the product. The reason for the very division between gains from this source and gains from management we shall soon appreciate, for we shall see that competition tends to reduce one of these incomes to nothing, but tends to perpetuate the other and to make the amount of it conform to a positive standard. The *entrepreneur*, as we shall use the term, is neither the manager nor the capitalist, and when we

have occasion to speak of either of these functionaries, we shall call him by his own distinctive name; though we know perfectly well that, in actual business, it is desirable and often quite essential that the same one who acts as an *entrepreneur* should also put into the business some labor as well as some capital. A man who performs two unlike functions, buying and selling, on the one hand, and managing the business, on the other, serves in two capacities that are clearly distinguished from each other; while if he furnishes any of the capital, he adds to these a third capacity entitling him to the value of the product of his capital. As a manager he directly aids in producing goods, and he gets pay for so doing from his other self, the *entrepreneur*, who acquires the title to the goods; as a capitalist he has another legitimate claim upon himself as *entrepreneur*.

These Distinctions recognized in Practical Accounting.—That this is no bit of mere theoretical subtlety is proved by the fact that the bookkeeping of nearly all establishments distinguishes between these two incomes by actually putting an appraisal on the work the employer does and paying a salary for it. A man may be a large owner of stock in a corporation and yet receive a salary that is fixed by an estimate of what an equally useful man could be hired for. If personal influence secures more for him than this, the excess is taken from the pockets of the stockholders, and the amount of it is accounted for in a way that does not fall within the scope of pure economic law.

How "Natural" Prices exclude Entrepreneur's Profits.—The old and correct view is that the tendency of competition is to make things sell for enough to cover all costs, as we have defined them, and no more. Under a different phraseology this is what Ricardo and others have rightly claimed. They were unconsciously explaining what would happen in a static state, for if society were actually in this state, the goods that come out of the factory would be worth just enough to reimburse the owner for all the outlays that can be called costs. If they sell for more than this, there is to be had from the business an income that costs nothing. It is a net profit above all claims based on personal labor or on the aid furnished by capital, and it furnishes an incentive for enlarging the business, and labor and capital are therefore drawn into it. *Entrepreneurs* bring them and for a time make a profit by this means; but as their presence increases the output of goods that are here made, it brings down the price till there is no inducement to move any more labor and capital in this direction.

The Significance of a Natural Adjustment of Different Industries.—The "natural" state of general industry is that in which each particular branch of it is in the no-profit state. It is as though laborers and capitalists in a shoe factory took all the shoes that it turns out, sold them in a market, paid for the raw material out of the proceeds, and kept the remainder, dividing it between themselves in proportions which corresponded with the amounts they had severally contributed toward the making of this product; and as though the laborers in cotton mills and iron foundries received the goods there made and dealt with them in a like manner. It is as though in every branch of business the whole product were turned over in kind to the furnishers of labor and capital.

The Entrepreneur a Passive Functionary under Static Conditions.—Purely passive is the function of the *entrepreneur* under static conditions. In so far as any effect on his income is concerned he might as well reside in a foreign land as in the one where his business is located, provided always that the management were unaffected. When the same man is both *entrepreneur* and manager, the absence of the first of these functionaries would mean the absence also of the second, and that would cause trouble; but the purely mercantile operation of getting a title to a product and then surrendering it can be carried on as well in one place as in another. The *entrepreneur* in his capacity of buyer and seller does not even do the work which purchases and sales involve. That is commonly done by agents. Some of it, of course, may be done by the responsible manager himself, and if that person is also the *entrepreneur*, it follows that he does a part of the commercial labor of his business. In this, however, he goes beyond his function as *entrepreneur*. In that capacity he does, as we have said, no labor of any kind. Sales and purchases are made in his name, but he does none of the work that leads up to them.^[1]

How the Entrepreneur contributes to Production under Dynamic Conditions.—In a dynamic state

the *entrepreneur* emerges from this passive position. He makes the supreme decisions which now and again lead to changes in the business. "Shall we adopt this new machine?" "Shall we make this new product?" "Shall we enter this new market?" are questions which are referred to him, and on the decisions he reaches depends the prospects of profit for the business. This activity is not ordinary labor, but in a true sense it is a productive activity, since it results in placing labor and capital where they can produce more than they have done and more than they could do were it not for the enabling act of the *entrepreneur* which places them on a vantage ground of superiority. This subject will be discussed in a later chapter and in connection with other phases of economic dynamics.

Values at a Static Level only when Entrepreneurs' Gains are Nil.—Any net profit on an *entrepreneur's* part means that his product is selling for more than the elements of it have cost him. But this is a condition which, if labor and capital are as mobile as the static hypothesis requires that they should be, will cause this *entrepreneur* and others to move labor and capital into his industry, thus increasing its output and lowering the selling price of its product. If there is no such action going on, it shows that the *entrepreneurs* have no incentive for taking it.

Values at a Static Level only when the Gains of Labor in the Different Industries are Equalized. —If labor is creating more in one subgroup than in others, as it often is in a dynamic condition, that fact means that some *entrepreneurs* are making a profit, and, according to the principle stated in the preceding paragraph, this means that values are not at their static or "natural" level. If, owing to new methods or to some other cause, a given amount of labor^[2] in the subgroup that produced the A''' of our table creates an amount of that product which sells for more than the B''' or the C''' which labor of like quantity makes, then the manufacturers of A''' would obviously get a margin of profit. They would not be obliged to pay for labor any more than the market rate, and that, as we shall see, cannot exceed what labor produces in the groups B''' and C'''. In A''' the labor creates more and the employer pockets the difference. In saying this we assume one fact which we undertake later to prove; namely, that there is a definite amount of each product which can be attributed to labor alone as its producer. Capital and labor work together, but each is, in effect, the creator of a certain fraction of their joint product.

Values Static only when the Gains of Capital in Different Industries are Equalized.—If capital is creating more in one industry than in another, there is a margin of profit for the *entrepreneurs* in the exceptionally productive industry. They pay as interest on the capital they use only the market rate, which is what equal amounts of capital can produce and get elsewhere. If they produce more in the one group, the *entrepreneurs* there can pocket the excess as they did in the case of the product of labor. We assume that there is everywhere a definite product that can be attributed to capital alone.

Values Normal when Moneys paid out by Entrepreneurs equal Moneys Received.—In the preceding paragraphs we have spoken of exchange values as being static under certain conditions, but we might have expressed the essential fact by saying that prices are static under these conditions since the money a product brings is a true expression of its value. If A''' sells for as many dollars as does B''', the two things exchange for each other. In like manner the product of labor and that of capital may be expressed in terms of money, since the quantities of goods which they respectively make sell for certain sums. Wages and interest are nearly always conceived in terms of money. The commercial mode of computing costs of production and returns from production is to translate them into moneys paid by *entrepreneurs* and moneys received.

Costs of Production as related to Static Incomes.—What to an *entrepreneur* are costs are to workmen and capitalists incomes. The one pays out wages and interest, and the others get them; and these two sums are normal when together they equal the prices received for goods produced. The *entrepreneur* is the universal paymaster, and in a static condition all incomes come from his hand.

FOOTNOTES

[1] The holders of common stock in a corporation are always *entrepreneurs*, and they are also capitalists if the stock represents any real capital actually paid in. If the bonds and the preferred stock represent all the real capital that there is, any dividends that may be paid on the common stock are a pure *entrepreneur's* profit. If, on the other hand, the stock all represents money actually put into the business, the dividends on it contain an element of net profit if they exceed simple interest on the capital and insurance against the risks that are not guarded against by actual insurance policies. If the rate of simple interest is four per cent, and the value of the unavoidable risk is one per cent, then a dividend of six per cent contains a pure *entrepreneur's* profit of one per cent. In dynamic conditions such a return is often to be expected, and we shall soon study the conditions that afford it.

In the present study we do not need to consider risks, inasmuch as the greater part of them arise from dynamic causes; that is, from the changes and disturbances to which the business world is subject. An invention promises greatly to cheapen the production of some article and, for a time, to insure large returns for the men who first utilize it. A capitalist may be willing to take a risk for the sake of sharing this gain; but in time both the risk and the gain will vanish. The capacity of the new appliances will have to be tested, a market for their output found, etc. A small remainder of risk is still entailed upon the capitalist if he leaves his money in this business. The death of the managing partner, the defaulting of payments for goods sold, the chances of unwise or dishonest conduct on the part of clerks or overseers, always impend over a business, but these dangers are at a minimum when the man who is at the head of the force of managers has capital of his own in the business. Risks are at a static level only when they are thus reduced; and for our present purpose it is best to consider that competition has eliminated the establishments where any recklessness has been shown in the management, and that the unavoidable remainder of risk resolves itself, nearly enough for practical purposes, into a *deduction from the product* which the surviving establishments turn out in a long period of time. A small percentage of their annual gains, set aside for meeting unavoidable losses, will make good these losses as they occur and leave the businesses in a condition in which they can yield as a steady return to owners of stock, to lenders of further capital, and to laborers all of their real product.

[2] In measuring labor we, of course, take account of the quality of the men who perform it, and the work of a skillful man is counted as more units of labor than that of an unskillful one.

CHAPTER VIII

WAGES

The Equilibrium of Industrial Groups.—The different industrial groups are in equilibrium when they attract labor and capital equally, and that occurs when these agents produce as much per unit employed in one group as in another. Such equalized productivity is the bottom fact of a static condition, and equalized pay follows from it. Wages and interest tend to be uniform in all the groups. Efficient labor, of course, gets in any employment more than inefficient; but labor of a given grade gets in all the groups that make up industrial society a uniform rate of pay, and nothing is to be gained by any capitalist or by any laborer by moving from one employment to another. They all therefore stay where they are, not because they cannot move freely if they wish to do so, but because no inducement to move is offered to them. This is a condition of perfect mobility without motion—of atoms ready to move at a touch without the touch that would move them. The paradox indeed holds that it is the ideally perfect mobility which has existed in the past which positively excludes motion in the present. At some time in the past labor and capital have gone from group to group till they have brought about an adjustment in which they have no incentive for moving farther. The surface of a pool of water is kept tranquil, not because the water is not perfectly fluid, but because, in spite of the fact that it can flow with entire freedom in any direction if it is impelled more in that direction than in any other, each particle of it is impelled equally in all directions. It is the perfect equilibrium that keeps the particles from changing their places, and fluidity has caused the equilibrium. In like manner when labor and capital can create and get just as much in one place as in another, they are attracted as strongly in one direction as in another and therefore do not move. A young man of average capacity, who is deliberating upon the choice of an occupation, will find that he can do as well in a cotton mill as he can in a shoe factory, a machine shop, a lumber mill, a flouring mill, or any other industrial establishment requiring his particular grade of capacity. This is the picture of a perfectly static industrial condition. Economic science has to account for values, wages, and interest as they would be in such a condition, however impossible it is that society should ever reach exactly such a state. The values, wages, and interest in a real market are forever tending toward the rates that would be established if the static condition were realized.

The Sign of a Static State.—The sign of the existence of a static condition is, therefore, that labor and capital, though they are perfectly free to move from one employment to another and would actually do so on the slightest inducement, still do not move. They stay where they are because they cannot find places where they can produce the slightest amount in excess of what they now produce, and no employer will anywhere offer any excess above the prevailing rate of pay.

Profits and the Movements they induce the Sign of a Dynamic State.—*Entrepreneur's* profits, when they exist, mean that this equilibrium is disturbed, and when it is so, mobility of labor and capital affords the guaranty that a new equilibrium will be established if no further disturbances follow. As we have said, profits attract labor and capital, increase the output of those goods which yield the profit, and reduce the prices of them to the no-profit level. Workmen and capitalists then get from the *entrepreneur* as wages and interest all that he gets from the public as the price of his goods, except what he pays for raw materials.^[1] In other words, the employer sells his goods at cost.

How Costs are Determined.—The early studies of "natural" values, or values which conform to costs of production, were unconscious and imperfect attempts to attain the laws of value in a static state. In such a state costs resolve themselves into wages and interest, and the conception of such a static state is therefore not complete unless we know how wages and interest themselves are determined. What we have already said implies that they fluctuate about certain standards, just as do the prices of goods, and that they would remain at these standards if society were reduced to a static condition.

Significance of Static Law in a Dynamic State.—An actual society is undergoing constant

disturbances. It is very far from being static; and yet values of goods, on the one hand, and the earnings of labor and capital, on the other, hover within a certain distance of the standards which would be realized if the society became static. In spite of active dynamic movements the general returns of labor and capital can never range so far from these theoretical amounts that the distance from them cannot in some way be measured and accounted for. The sea, when gales are blowing and tides are rising and falling, is anything but a static object, and yet it keeps a general level in spite of storms and tides, and the surface of it as a whole is surprisingly near to the ideal mathematical surface that would be presented if all disturbances were to cease. In like manner there are certain influences that are disturbing the economic equilibrium just as storms and tidal waves disturb the equilibrium of the sea. We cannot actually stop these influences any more than we can stay the winds and the lunar attraction; but we can create an imaginary static state for scientific purposes, just as a physicist by a process of calculation can create a hypothetical static condition of the sea and discover the level from which heights and depths should be measured. No more than the economist can he actually bring the subject he is dealing with to a motionless condition. The economic ocean will defy any modern Canute who may try to stop its movements; but it is necessary to know what shape and level it would take if this were done.

Influences that disturb the Static Equilibrium.—The influences that disturb the economic equilibrium are, in general, five. The population of the world increases, and this is one influence which prevents values, wages, and interest from subsiding to perfectly "natural" standards. Capital is increasing, and this influence also acts as a disturbing factor. The methods of producing things change, and the changes have a very powerful effect in preventing the attainment of a static equilibrium. New modes of organizing different industries are coming into vogue, and this causes a further disturbance of the economic adjustment. The wants of men are by no means fixed; they change, multiply, and act on the economic condition of society in a way that affects the static adjustment. Even physical nature undergoes change, and the perishable part of the earth does so in a disquieting way. We are using up much of our natural inheritance. As the effect of this appears chiefly in forcing us to change our processes of production, we shall, for convenience, limit our study to the five changes here enumerated.

Movement Inevitable in the Dynamic State.—These influences reveal their presence by making labor and capital more productive in some places than they are in others, and by causing them ever and anon to move from places of less productiveness to places where gains are greater. As we have said, this moving of labor and capital to and fro is, like currents in the sea, a sign of a dynamic condition. As in the static state these agents would not thus move, however fluid and mobile they might be, so in a dynamic state they are bound to move, because their earning powers do not remain long exactly equal in any two employments, and they go now hither and now yon, as, in the changeful system, openings for increased gains present themselves. If commodities were everywhere selling at cost prices and if wages and interest were everywhere normal and uniform, labor and capital would not move to and fro, and this would be a proof that dynamic influences were absent.

How an Imaginary Static Society is Created.—If we wish to discover to what standard the values of goods, on the one hand, and the rewards of labor and capital, on the other, continually tend to conform, we must create an imaginary society in which population neither increases nor diminishes, in which capital is fixed in amount, in which the method of making goods does not change, in which the mode of organizing industry continues without alteration, and in which the wants of consumers never vary in number, in kind, or in intensity.

Costs of Production in a Static State.—We have said that in such a static state the prices of different products are just high enough to cover the wages and interest which are generally paid. There are uniform or all-around rates of pay for labor and for capital, and every man who hires workmen or gets loans from a bank has to pay them. In the real world, full as it is of disturbances, and given over as it is to forces of change and progress, we find that values, wages, and interest are in general surprisingly near to these standards. In a particular business products may for a time sell for enough to afford a large surplus above prevailing wages and interest, and business as a

whole may, for a time, yield some such surplus; but in the absence of monopolistic privileges no one business yields a large surplus for a long time, and still less does business as a whole do so, though profits may always be found somewhere within the system.

The Final Productivity of Labor.—If we assume that the capital of society is a fixed amount, we may perform an imaginary experiment which will show how much labor really produces. We may set men at work, a few at a time, until they are all employed, and we may measure the product of each of the detachments. We should make the different sections of the working force as similar to each other as it is possible to make them and call each section a unit of labor. If there were ten such divisions and if the quantity of capital were sufficient to equip them all on the scale on which laborers are at present actually equipped, it is clear that this amount of capital, when it was lavished on one single section, must have supplied it with instruments of production in nearly inconceivable profusion. What we should to-day regard as a fair complement of capital for a thousand men would nearly glut the wants of a hundred, and yet it is thinkable that it should take such forms that they would be able to use it.

Productivity of the First Unit of Labor.—We will set at work one section which we have called one unit of labor and will put into the hands of its members the whole capital which is designed ultimately to equip the ten sections. It is very clear that the forms that this capital will take cannot be the same that it will have to take when the entire working force is using it. Indeed, we shall have to tax our ingenuity to devise ways in which one unit of labor can utilize the capital that will ultimately be used by ten. The tools and machines will have to be few in number but very costly and perfect. We shall have to resort to every device that will make a machine nearly automatic and cause it to exact very little attention from the person who tends it. The buildings will have to be of the most substantial and durable kind. We shall have to spend money without stint wherever the spending of it will make labor more productive than it would otherwise be. If we do this, however, the product of the labor and its equipment will be a very large one. The industry will succeed in turning out indefinitely more goods than a modern industry actually does, and the reason for it will be that the workmen have capital placed in their hands in unparalleled profusion.

The Product of the Second Unit of Labor.—We will now introduce a second unit of labor, by doubling the number of workers, without changing the amount of the capital. We must, of course, change the forms of the capital, or it cannot be advantageously used by the larger working force. The buildings will have to be larger, and if they are to be erected with about the same amount of capital as was formerly used, they must be built in a cheaper way. Tools of every sort must be more numerous, and this larger number of tools, if it is to represent the same investment of capital that the former number embodied, must also be simpler and cheaper. The whole equipment of *capital goods* will have to undergo a complete transmutation; but the essential thing is that the amount of the capital should not be changed.

A Provisional Mode of Measuring Capital.—In measuring the amount of the capital we are obliged to use a unit of cost, and in the illustration we have assumed that the cost can be measured in dollars. The productive fund consisted at the outset of a certain number of dollars invested in productive operations. This is only a provisional mode of measuring it. The money spent really represents sacrifice incurred, and we shall find that the only kind of sacrifice that is available for measuring the cost of goods of any kind is that which is incurred by labor. Ultimate measurements of wealth in all its forms have to be made in terms of labor. Such measurements have presented difficulties, and the attempt to make them has led to serious fallacies. We shall see, in due time, how these fallacies can be avoided.

The Law of Diminishing Productivity.—Under these conditions the second unit of labor will add something to the amount that was produced by the first unit, but it will not cause the product to become double what it was. It could not do that unless the capital also were doubled. Each unit of labor is now coöperating with one half of the original capital, and the total product is less than it would have been if the new labor, on entering the field, had brought with it as full an equipment of productive instruments as was possessed by the labor that preceded it. Adding to the industry a

second unit of labor without adding anything to the capital makes the total product somewhat larger, but falls short of doubling it. If we credit to this second unit of labor what it adds to the product that was created before it came into the field, we shall find that it is a certain positive amount, but obviously less than the total product which was realized by the first unit *and all the capital*. It is even less than a half of the product of the two units using all the capital. Perhaps the first unit of labor, when it used all the capital, created ten units of product; while the two units of labor, using this same original amount of capital, produce sixteen units of product. The clear addition to the original product which is caused by the added labor of the second squad of workmen is only six units, while a half of the total product after the addition to the labor has been made is eight. This figure represents the amount we may attribute to one unit of labor and a half of the total capital, while six represent what is *causally* due to one unit of bare labor only. With all the capital and one unit of labor we get ten units of product, while the addition of one unit of bare labor brings the total amount up to sixteen. Six units find the cause of their existence in the presence of the second unit of labor, and the second unit therefore shows, as compared with the first, a diminished productivity.

Product of the Third Unit of Labor.—We will now introduce a third unit of labor, leaving the amount of capital still unchanged, but again altering the forms of it so as to adapt them to the needs of a still larger working force. We will make the buildings larger and therefore, of necessity, cheaper in their forms and materials. We will make the tools and machines more numerous and simple, and will do everything that is necessary in order to make the fixed amount of capital—the fund amounting to a given number of "dollars"—embody itself in the number and the kinds of capital goods that are requisite in order to supply three times the original number of workmen. The third unit of labor now adds something to the product realized by the first two, but the addition is smaller than it was in the case of the second unit.

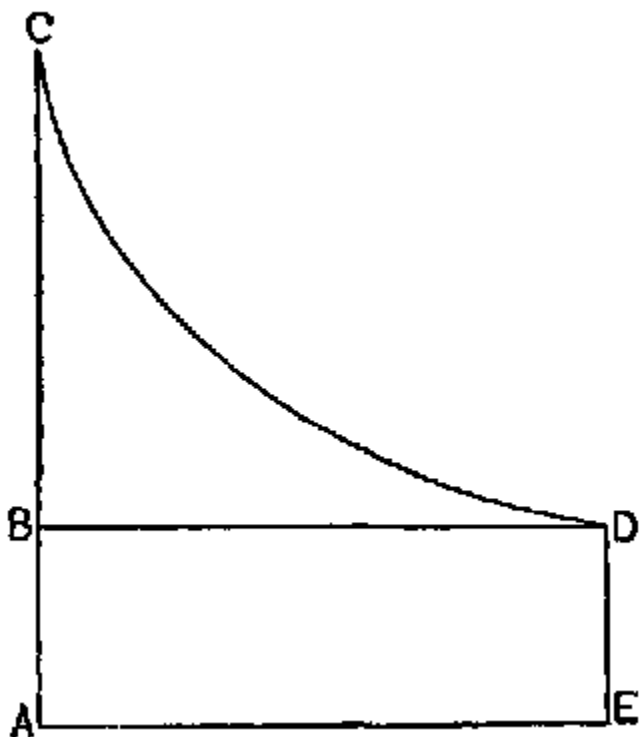
Products of a Series of Units of Labor.—If we continue this process till we have ten units of labor, employing the same amount of capital as was formerly used by one, we shall find that each unit as it begins to work adds less to the previous product than did the unit which preceded it, and that the tenth unit adds the least of all.

Care must be taken not to confound the addition that is made to the product in consequence of the additional working force with the amount which, after the enlargement of the force, is created by the last unit of labor *and its pro rata share of the capital*. When the tenth unit of labor is working, it is using a tenth of the capital and the two together create a tenth of the product. This is more than the amount which is *added* to the product by the advent of the tenth unit of labor. That addition is merely the difference between the product of all the capital and nine units of labor and that of all the capital and ten units of labor. This extra product can be attributed entirely to the increment of labor.

It is also carefully to be noted that when the units are all working together, their products are equal and the particular one which happened to arrive last is not less productive than the others. Each one of them is *now* less productive than each one of the force of nine *was under the earlier conditions*. In like manner each unit of the nine is less productive than was, in the still earlier period, each unit of the force of eight. At any one period, all units produce the same amount. At any one period, then, what any one unit of labor produces by the aid of its *pro rata* share of the capital is a larger amount than what each can be regarded as producing by itself. Though one of ten units creates, with the aid of a tenth of the capital, a tenth of the product, of itself it creates less; for we can only regard as its own product what it adds to the product that was creating before it arrived on the scene. It is the bare product of a unit of labor alone that we are seeking to distinguish from other elements in the general output of the industry, and that consists in the difference between what nine units of labor and all the capital can produce, and what ten units of labor and all the capital can produce.

We will consider the amount of capital fixed and let the amount of labor increase along the line *AE*, and we will let the product of successive units of labor be measured by the vertical distance from

the points on the line AE to the descending curve CD . AC is the product of the first unit of labor. The product of later units is measured by lines to the right of AC and parallel with it, which grow shorter as the number of units increases. ED is the product of the last unit. In each case we impute to an increment of labor whatever amount of product its presence adds to that which was created before.



Summary of Essential Facts.—The facts that are to be remembered then are: first, that the capital remains fixed in amount, though the forms of it change as the number of units of labor increases; secondly, that that which we call the product of a unit of labor is what that unit, coming into the field without any capital, can add to the product of the labor and capital that were there before; and thirdly, that this specific product of labor grows smaller as the amount of labor grows larger, rendering the product of the last unit the smallest of all. When the tenth and last unit is working, each one of the nine earlier units is, of itself, producing no more than does the final one, though it formerly produced more because of the larger quota of capital with which it was formerly supplied.

The Test of Final Productivity.—There are now at work ten units of capital and ten of labor, and we cannot go through the process of building up the working force from the beginning. How, then, do we measure the true product of a single unit of labor? By withdrawing that unit, letting the industry go on by the aid of all the capital and one unit of labor the less. Whatever one of the ten units of labor we take away we leave only nine working. If the forms of the capital change so as to allow the nine units to use it advantageously, the product will not be reduced to nine tenths of its former size, but it will still be reduced; and the amount of the diminution measures the amount of product that can be attributed to one unit of bare labor. Or we may add a certain number of workmen to a social force already at work, making no change in the amount of the capital,—though changing its forms,—and see how much additional product we get. That also is a test of final productivity. It gives the same measurement as does the experiment of taking away the little detachment of men and seeing how much the product shrinks. By either process we measure an amount that is attributable altogether to bare labor and not to capital.

The whole area BCD in the diagram is an amount of product that is attributable to capital and not to labor. It represents the total surplus produced by labor and capital over the amount that can be traced to the labor alone. The product of all the capital and all the labor minus ten times the product of a single unit of labor is the amount that is attributable to the productive fund only.

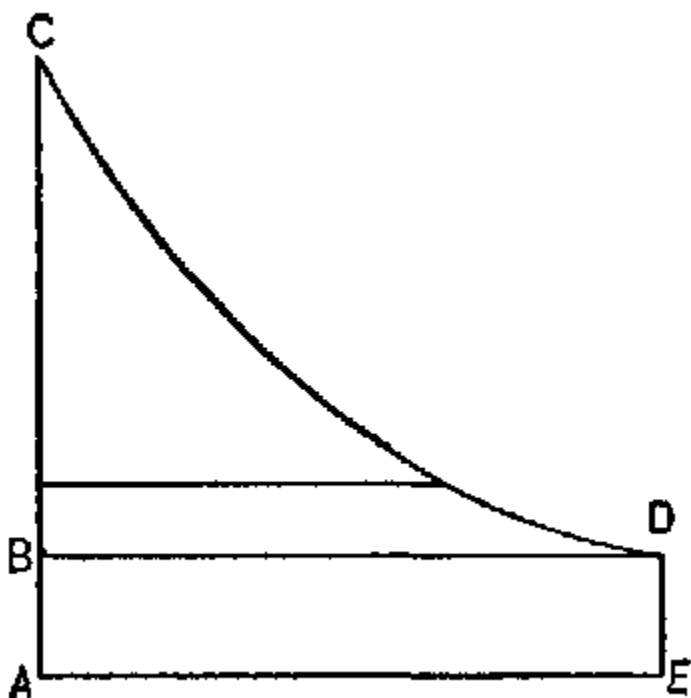
The area *ABDE* represents this amount. The last unit of labor creates the amount *DE* and the number of units is represented by the amount *AE*. All of them are now equally productive and what all create, as apart from what capital creates, is the amount *ABDE*.

Only the Final Part of this Mode of gathering a Working Force practically resorted To.—The process of building up the working force from a single unit is imaginary. In practical life we see the process only in its final stage. *Entrepreneurs* do continually have to test the effect of making their working forces a little larger or a little smaller, and in so doing they test the final productivity of labor; and this is all that is necessary. Tracing the process of building up the force of labor unit by unit reveals a law which is important, namely, that of the diminishing productivity of single units of labor as the number of units increases. If we crowd the world full of people but do not proportionately multiply working appliances of every kind, we shall make labor poorer.

Why a Detachment of Laborers rather than One Man is treated as a Unit of Labor.—In making up the force of workers we might have treated each individual as a unit; but we have preferred to call a detachment a unit in order that the symmetry of the force might be preserved. Even though we were studying only a single mill it would have its departments, and it would be desirable that, when we enlarge the force of men, we should be able without difficulty to give to each part of the mill its fair share of the new laborers. If it were a shoe factory, we should need to add lasters, welters, sewers of uppers, etc., in a certain proportionate way, in order that one part of the mill might not get ahead of another and pile up unfinished products faster than they could be taken and completed.

In the last analysis the law applies to the industry of all society. The final unit in the case consists of shoemakers, cotton spinners, builders, foundrymen, miners, cultivators, etc., and of men of all subtrades included in the general callings. As the composite detachments come into the field, they apportion themselves among all the occupations that are represented, and that too in nicely adjusted proportions. We shall see in due time how this adjustment of the several shares of the social force of laborers is practically made.

The Law of Final Productivity Applicable to the Labor of Society.—The law of final productivity applies to every mill, shop, or mine separately considered. If its capital remains fixed in amount, units of labor produce less and less as they become more numerous. The product of any unit at any one time may be measured by taking it away and seeing how much the output of the establishment is reduced. The law, however, applies to all the mills, shops, mines, etc., considered as a social complex of working establishments. As the working society grows larger without growing richer in the aggregate, the power of labor to produce goods of all kinds grows less. At any one time this producing power is measured by taking away from every working establishment a number of its operatives and ascertaining how much less is produced after the withdrawal. Such a test on the social scale is never made consciously. Each employer can test in an approximate way the effect of reducing his own force, and the effect of gradually enlarging it, and there are influences at work which result in enlarging one industry when others are enlarged and in causing the final productivity of labor to be uniform in all. A shoe manufacturer can tell, in a general way, how much an extra man or two will be worth to him. It is possible to ascertain by experience about what number of shoes that additional labor will, in a year, add to the output of the shoe factory or the number of tons of steel it will add to the present annual output of a furnace. When these products vary in the case of different shops, the men are called to the points where the apparent additions are largest, and the constant tendency is toward a level of productive power. The building up of an imaginary force from the beginning presents, in a clear and emphatic way, the fact that the specific productivity of labor grows less as, other things remaining the same, workers become more numerous. We should know on *a priori* grounds that this must be the fact; but we can verify it by observation and statistical inquiry. Where men are numerous and land and tools are scarce, labor is comparatively unproductive; and it is highly productive where land and tools are plentiful. There is no doubt that crowding the world full of people, without providing the world with capital in a proportionate way, would impoverish everybody whose income depends on labor.



The Law of Wages.—Even though labor creates the amount $ABDE$, it is not yet perfectly clear that it will be able to get that amount. For aught we now know the *entrepreneur* may keep some of it, and for aught we know he may keep some of the quantity BCD which is distinctly the product of capital. Let us see whether he can in reality withhold any part of $ABDE$, which is the product of labor.

Wages under Perfect Competition.—In the static state that we have assumed, competition works without let or hindrance. It does not work thus in the actual world, and we shall in due time take account of the obstacles it encounters; but what we are now studying is the standards to which such competition as there is—and it is in reality very active—is tending to make wages conform. We want to know what would happen in case this competition encountered no hindrance at all. This would require that a workman should be able to set employers bidding against each other for his services just as actively as an employer can make laborers bid against each other in selling their services. If this were the case, every unit of labor could get what it produces, no more and no less. Even a single man, offering himself to one employer after another, would virtually carry in his hands a potential product for sale. His coming to any man's mill would mean more goods turned out in a year by the mill; and if one employer would not pay him for them at their market value, another one would. The final unit of social labor can get, under perfectly free competition, the value of whatever things that labor, considered apart from capital, brings into existence. Moreover, each unit of labor by itself alone now produces, as we have seen, the same amount of commodity as the final unit, and can get the price of it. Now that they are all working together each one of them can place itself in the position of the final unit by leaving its present employment and offering its services elsewhere.

Wages regarded as Prices of Fractional Products adjusted by Perfect Competition.—Under the hypothesis of perfect competition, as the term has been used in our discussion, the venders of goods can get their market values. These values are fixed by the final utility law. Free competition means, then, not only that any average laborer who offers himself for hire virtually carries in his hands a potential but definite product for sale, but that he may confidently offer it at the price that is fixed by its final utility. Like other venders, the laborer can get the true value of his product and he can get no more. In an ideally perfect society organized on the competitive plan a man would be as dependent on his own productive power as he would be if he were alone in a wilderness. His pay would be his product; but that would be indefinitely larger than it could be in a wilderness or in any

primitive state. The capital of other men and the organization that they maintain enable a worker to create and get far more than he could if he lived alone, even though, like Crusoe, he were monarch of his whole environment. It would be a losing bargain for the worker to surrender the product of mere labor in a state of civilization in exchange for what both labor and capital create in a state of savagery.

FOOTNOTES

[1] The *entrepreneur* of A' of our table must buy the A in order to impart to it that utility which is his own particular contribution. He pays as wages and interest all that he gets for this contribution. The true product of the *entrepreneur* is not the entire price of the A', but is the difference between that and the price of the A. The entire amount received for the A' resolves itself into wages, interest, and cost of A; but as a rule the price of A resolves itself practically into wages and interest only, and when it does so, all that is paid for the A' ultimately takes these forms. The same is then true of the finished product A''. The entire price of it is ultimately resolvable into wages and interest; and in speaking of the product of an entire group we do not need to make any reservation for raw materials.

The case in which this statement requires qualification is that in which the material in its rawest state still has value, as is the case with ore and mineral oil contained in the earth but not a true part of land in the economic sense, since they are exhausted in the using. The price of a product into which these elements enter includes something that represents the value which they have *in situ* and before any labor has been expended on them. It is true even in these cases that the value of the product is measured in terms of wages and interest, provided that the exhaustible elements such as ore, oil, etc., are capable of being replenished, or provided that an effective substitute for them is in process of production by means of labor and capital. The natural raw material is then worth what the artificial substitute costs in terms of capital and labor, and the finished product which contains some of the natural material sells for the amount which the finished product costs, which is made altogether by labor and capital applied to valueless elements in nature.

CHAPTER IX

THE LAW OF INTEREST

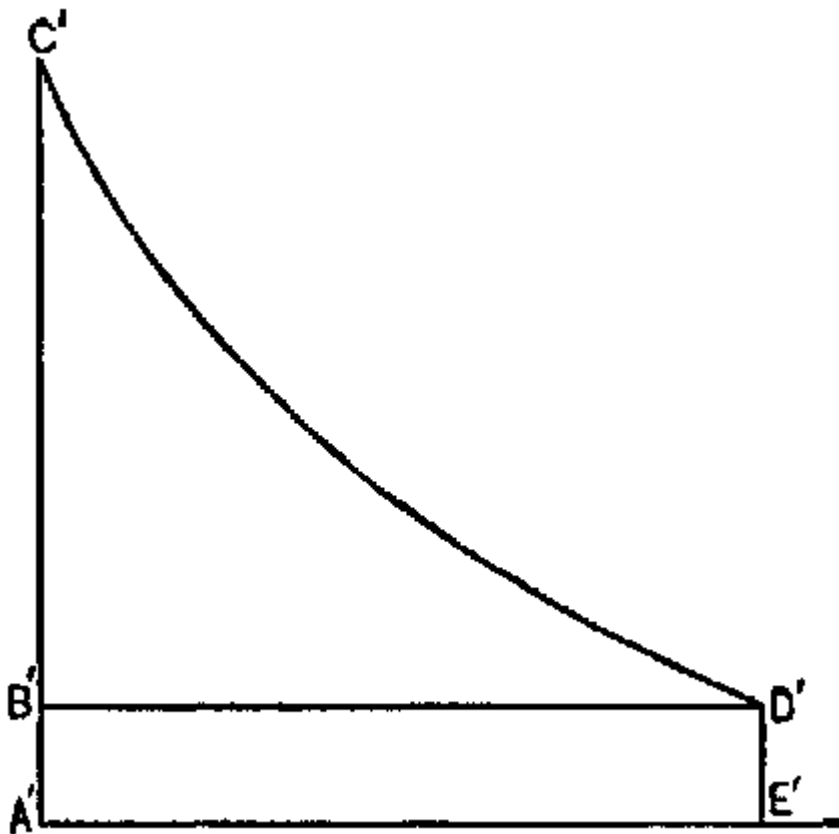
The product of the final unit of labor—an amount which in practice is measured without any tracing of the previous growth of the working force—sets the standard of the rate of wages. We have now to see that the rate of interest has a similar basis; and yet it is worth while to build up, wholly in imagination, a fund of capital, just as we have made up the force of laborers, increment by increment. This will have the incidental effect of illustrating another way in which wages may be determined.

Interest as a Residual Amount.—The area BCD in our former figure represents the difference between the total product of an industry and the wages paid to laborers. If there is no net profit accruing to the *entrepreneur*, this area must represent interest. It is what is left for the capitalist on the supposition that he and the laborer together get all that there is. If the goods sell for what they cost, this must be the fact, and the amount represented by BCD has thus to go to capital, since, by a rule of exclusion, it cannot go to the *entrepreneur* nor to the laborer. The mill and its contents earn for their operator nothing but simple interest on the money they have cost. Paying the laborers discharges the first claim on the product, and there then remains only enough of the product to pay the remaining claim, that of capital.

The question still remains to be answered, how the capitalist, if he is a different person from the *entrepreneur*, or operator of the mill, can make this functionary pay over to him all that he has in his hands after paying the wages of labor.

The Importance of the Residuum.—The above reasoning does not satisfactorily show what influence the capitalist can use to make the *entrepreneur* pay over to him the entire amount of the residuum. It shows that after paying wages the *entrepreneur* will have a certain amount left, but it is not thus far clear how the capitalist can get it from him. The fact that the laborers get only the amount represented by $ABDE$ and that the whole amount is $ACDE$ does, however, at least show that the *entrepreneur* has the amount BCD left in his hands, and that he is *able* to pay this amount to the capitalist if by any appeal to competition the capitalist is able to make him do it.

Interest not determined Residually.—The fact is that the interest on capital is fixed exactly as are the wages of labor.



We will let another figure represent the entire product of the same amount of labor and the same amount of capital that were represented in the former case. We will assume that there is at the outset a complete force of laborers, and that no men are added to it or taken from it; but we will gradually introduce units of capital instead of units of labor as in the former case. The amount of capital is now represented by the line $A'E'$ and the product of the first unit of it by the line $A'C'$. The product of the successive units declines along the curve $C'D'$. The final unit of capital then brings into existence the amount of wealth represented by $E'D'$. As every other unit now produces the same amount, the capital as a whole creates the quantity represented by $A'B'D'E'$ and every unit of it makes its own separate contribution to that amount. In this we have simply applied to capital and its earnings the principle we formerly applied to labor and its earnings.

General Form of the Law of Final Productivity. —This principle is the law of final productivity, one of those universal principles which govern economic life in all its stages of evolution. Either one of the two agents of industry, used in increasing quantities in connection with a fixed amount of the other agent, is subject to a law of diminishing returns. The final unit of the increasing agent produces less than did the earlier units in the series. This does not mean that at any one time one unit produces less than another, for at any one time all are equally productive. It means that the tenth unit produces less than the ninth did *when there were only nine in use*, and that the ninth unit formerly produced less than the eighth did in that still earlier stage of the process *in which there were only eight in use, etc.* If the productive wealth of the United States were only five hundred dollars per capita instead of more than twice that amount, interest would be higher than it is, because the productive power of every dollar's worth of capital would be more than the productive power of each dollar's worth is now; and, on the other hand, if we continue to pile up fortunes, great and small, till there are in the country two thousand dollars for every man, woman, and child of the population, interest will fall, because the productive power of a dollar's worth will become less than it now is.

How Competition fixes Interest.—We can now see how it is that the capitalist can make the *entrepreneur* pay over to him the amount left in his hands after paying wages. Every unit of capital that any one offers for hire has a productive power. It can call into existence a certain amount of

goods. The offer of it to any *entrepreneur* is virtually an offer of a fresh supply of the kinds of goods which he is making for sale. Loaning ten thousand dollars to a woolen manufacturer is really selling him the amount of cloth that ten thousand dollars put into his equipment will bring into existence. Loaning a hundred thousand dollars to the manufacturer of steel, so as to enable him in some way to perfect his equipment, is virtually selling him the number of additional tons of steel, ingots, or rails that he can make by virtue of this accession to his plant.

The Significance of Free Competition.—Now, the tender of capital may be made to any *entrepreneur* in a particular industry, and the existence of free competition between these *entrepreneurs* implies that a lender of capital can get from one or another of them the whole value of the product that this capital is able to create. A unit of capital in the steel business can produce n tons of steel in a year, and if one employer will not pay the price of n tons for the loan of it, another will. This, indeed, implies an absolutely free competition; but that is the condition of the problem we have first to solve. When we know what ideally active competition will do, we can measure the effects of the obstructions that, in practice, competition actually encounters.

Competition for Capital among Different Industries.—The capitalist can invoke the aid of competition outside of the limits of one particular business. He may offer his loan to steel makers, to woolen manufacturers, cotton spinners, silk weavers, shoemakers, etc. Within each one of these industries perfect competition between the different employers will give him the value of the product which, in that business, his capital is able to create. If, however, what in this way he offers to men in one occupation is worth more than what he offers to men in another line,—if capital is worth more to steel makers than it is to cotton spinners,—he will find a market for his capital in the former industry; and this process of seeking out the employment in which capital is the more productive and there bestowing the loans of capital, will go on until every such local excess of productive power is removed and capital can produce as much wealth in one business as it can in another. Everywhere capital will then be both producing and receiving the same amount, and general interest will everywhere be determined by the final productivity principle acting all through the business world.

When Interest as Directly Determined equals Interest as Residually Measured.—The area BCD of the first figure measures what the *entrepreneur* has left after paying wages. This amount and no more he can pay as interest, and he will pay it if he has to. The area $A'B'D'E'$ of the second figure represents what he must pay as interest; and we can now see that, if competition is perfectly free, this amount equals the amount BCD of the first figure. If, after paying wages, there is any more left in the *entrepreneur's* hands than competition compels him to pay out as interest, he is realizing a net profit; he is selling his goods for more than they cost him, and this, as we saw at the outset, is a condition that under perfect competition cannot continue. The natural price of goods is the cost price. If the market price of anything is in excess of cost, *entrepreneurs* receive a profit, and in order to do more business and make a larger aggregate of such profit they bring new labor and capital into their industry. The increased output lowers prices, and the excess of gain is thus taken from the *entrepreneur*. If BCD is smaller than $A'B'D'E'$, the *entrepreneur* incurs a loss and will curtail his business and let some labor and capital go where they can produce more.

Taking this remainder of income from the *entrepreneur* by means of an addition to the output of goods and a reduction of the price of them does not annihilate the income, but bestows it on other recipients; for the reduction in price which destroys an employer's profit can come only in a way that benefits consumers. It means that enlarged production of which we have just spoken, which scatters more goods throughout the community and insures an addition to the real incomes of both laborers and permanent investors.

Effect of Perfect Mobility of Labor and Capital.—Perfect mobility of labor and capital insures that the residuum in the *entrepreneur's* hands after wages are paid shall all be made over to the capitalist. We encounter here again the static law that, with competition working without let or hindrance, the *entrepreneur* as such can keep nothing for himself; though if he is also a worker he will get wages, and if he is also a capitalist he will get interest. His business will pay wages on all

kinds of labor, including that of management, and interest on all capital, including his own. A net gain above all this it will not afford, and whatever the *entrepreneur* has left after paying wages he will have to use in paying interest, and *vice versa*. Laborers and owners of capital have, as it were, to take each others' leavings. Such is the situation in an ideally static condition, though we shall see how it is changed in actual and progressive society.

The area BCD of the first figure is, under static conditions, exactly equal to the area $A'B'D'E'$ of the second figure, because $ACDE$ represents the whole product, BCD in the first figure represents all that is left of it after wages, measured by $ABDE$, are paid; and we know by evidence both theoretical and practical that the capitalist, whose share is directly expressed by $A'B'D'E'$ of the second figure, can claim and get the whole of this amount.

Wages as a Residuum.—It is clear that the same reasoning applies to wages. In the second figure they are represented as a residuum. The area $B'C'D'$ represents what the *entrepreneur* has left after paying interest, and nobody can get this amount but the wage earner. The reason, however, why the wage earner can get it is that free competition will give him the amount $ABDE$ of the first figure, and this, under perfectly static conditions, must equal $B'C'D'$ of the second. Under perfect competition the *entrepreneur* cannot have any of the amount $B'C'D'$ left in his hands after meeting the claims that the wage earner makes on him. On the other hand, he must have enough left to pay interest, since otherwise he would be incurring a loss, and that could not fail to force him and others who are in the same situation to contract their operations or go out of business. If the output of goods is reduced, either by the retirement of some employers or the curtailment of product by all, the price of what continues to be sold will be raised to the point at which wages and interest can be paid.

Wages and Interest both adjusted at Social Margins of Production.—It is to be noted that wages and interest are fixed at the social margin of production, which means that they equal what labor and capital respectively can produce by adding themselves to the forces already at work in the general field of employment. In making the supposition that, owing to some disturbing fact, a particular *entrepreneur* has not enough after paying wages to pay interest, we assume that the rate of interest is fixed, in this way, in the general field and not merely in his establishment.

If $B'C'D'$ were larger than $ABDE$, the *entrepreneur* would be selling goods for more than cost and realizing a net profit, which he cannot do in a static state; but a pure profit is not only possible but actual in a dynamic state.

In actual business total returns represented by $ACDE$ amount to more than the sum represented by $ABDE$ (wages) plus $A'B'D'E'$ (interest). There are conditions that in practical life are continually bringing this to pass in different lines of business, though not in all of them at once. The real world is dynamic and therefore the true net profit, or the share of the *entrepreneur* in the strict sense of the term, is a positive quantity. This income is always determined residually. It is a remainder and nothing else. It is what is left when wages and interest are paid out of the general product. To the *entrepreneur* comes the price of the products that an industry creates. Out of this he pays wages and interest, and very often he has something remaining. There is no way of determining this profit except as a remainder. The return from the sale of the product is a positive amount fixed by the final utility principle. Wages and interest are positive amounts, and each of them is fixed by the final productivity principle. The difference between the first amount and the sum of the two others is profit, and it is never determined in any other way than by subtracting outgoes from a gross income. It is the only share in distribution that is so determined. *Entrepreneur's* profits and residual income are synonymous terms. In the static state no such residual income exists, but from a dynamic society it is never absent. Every *entrepreneur* makes some profits or losses, and in society as a whole the profits greatly predominate.

Summary of Facts concerning a Static Adjustment of Wages.—We know then that in any industry wages and interest absorb the whole product, because any deviation from that rule in a particular group is corrected in the way above mentioned. Moreover, general wages and interest, as

determined by the law of final productivity, must equal those incomes when they are determined residually. The area of the rectangular portion of one of the foregoing figures must equal the area of the three-sided part of the other. The question arises why all *entrepreneurs* might not get a uniform profit at once. This would not lure any labor or capital from one group or subgroup to another. If, after paying wages and interest at market rates, the *entrepreneurs* in each industry have anything left, the entire labor and capital are producing more than they get and there is an inducement to managers and capitalists to withdraw from their present employers and become *entrepreneurs* on their own account. Such an *entrepreneur* entering the field, drawing marginal labor and capital away from the *entrepreneurs* who are already there and combining them in a new establishment, can make them produce more than he will have to pay them and pocket the difference. If such a condition were realized, there would be a gain in starting new enterprises, since luring away marginal agents and combining them in new establishments would always be profitable. When we introduce into the problem dynamic elements we shall see that centralization, which makes shops larger instead of smaller, makes industries more productive, and that what happens when net profits appear is more often the enlarging of one establishment than the creation of new ones. *Entrepreneurs* in the large establishments can afford to resist the effort made by others to lure away any of the labor or capital which they are employing, and they will do this for the sake of retaining their profits. They can do it by bidding against each other, in case any of them are making additions to their mills or shops, and also by bidding against any new employers who may appear. Perfect competition requires that this bidding for labor and capital shall continue up to the profit-annihilating point. Here, as elsewhere in the purely static part of the discussion, we have to make assumptions that are rigorously theoretical and put out of view in a remorseless way disturbing elements which appear in real life. The static state requires that all *entrepreneurs* who survive the sharp tests of competition should have equally productive establishments, which means that they should all be able to get the same amount of product from a given amount of labor and capital. The actual fact is that differences of productive power still survive. There are some small establishments which, within the little spheres in which they act, are as productive as large ones; but there are also some which are struggling hopelessly against large rivals in the general market and are destined ere long to give up the contest. In other words, the centralizing and leveling effects of competition are approximated but never completely realized in actual life.

A fact that it is well to note is that the test of final productivity is inaccurately made when unduly large amounts of labor and capital are made the basis of the measurement. Take away, for instance, a quarter of the working force, estimate the reduction of the product which this withdrawal occasions, and attribute this loss entirely to the labor which has been taken away, and you estimate it too highly. With so large a section of the labor withdrawn the capital would work at a disadvantage, and a part of the reduction of the product would be due to this fact. If we should take away all the labor, the capital would be completely paralyzed, and the product would become *nil*. It would obviously be inaccurate to say that the whole product is attributable to the labor, on the ground that withdrawing the labor annihilates it all. With any large part of the labor treated as a single unit, the loss of product occasioned by a withdrawal of such a unit is more than can be accurately imputed to it as its specific product. The smaller the increments or units are made, the less important is this element of inaccuracy, and it becomes a wholly negligible quantity when they become very small. A study of the forms of the productivity curves will show that if we take as the increment of labor used in making the test only a tenth of the whole force, we exaggerate the product imputable to it by a very minute fraction, say by less than a one-hundredth part; and if we take a hundredth of the labor as a final unit, we exaggerate the product that is solely attributable to it by an amount so minute that it is of no consequence in practice or in any theory that tries to be applicable to practice.

A question may be raised as to whether we are correct in saying that the *entrepreneur's* profit is residual, in view of the fact that the entire product of a business is at the mercy of the management, so that a bad manager may reduce it or a good one may increase it. It may be further claimed that that part of the management of a business which consists in making the most far-reaching decisions cannot safely be intrusted to a salaried superintendent or other paid official

and must get its returns, if at all, in the form of profits. Even in this case the gains are secured by making the gross return, which is the minuend in the case, large, leaving the two subtrahends, wages and interest, unchanged, and thus creating a remainder or residuum. We shall later see to what extent *entrepreneurs* do in fact create the profits that come to them.

The complete static conception of society requires that no *entrepreneur* should be left in the field who cannot continue indefinitely to hold his own against the competition of his rivals, and this requires essential equality of productive power on the part of all of them. It is not necessary, however, that all should operate upon an equal scale of magnitude, for an interesting feature of modern life is the need of many small productive establishments that cater to local demands and to wants which, without being local, call for only a few articles of a kind. Repairs, small orders, and peculiar orders are executed more cheaply in small establishments, and they survive under the very rule of essential equality of productive power which static conditions require. For catering to the general market and producing staple goods the large establishment has a decisive advantage, and this insures the centralization which is the marked feature of recent industrial life.

CHAPTER X

RENT

The Term "Rent" as Historically Used.—The word *rent* has a striking history. The science of political economy first took shape in a country in which direct employers of labor were not, as a rule, the owners of much land. Farmers, merchants, and many manufacturers hired land and furnished only the auxiliary capital which was necessary in order to utilize it. In a practical way the earnings of land were thus separated from those of capital in other forms, since they went to a different class of persons; and in the thought of the people the charges made for the use of mere ground came to constitute a unique kind of income. If, during the last century, the land in England had been a highly mercantile commodity, and if it had been the common practice of *entrepreneurs* not to hire it but to buy and own it, as they bought and owned all other industrial instruments, there is little probability that land would have been considered, either in practical thought or in science, as a thing to be as broadly distinguished as it has been from all other capital goods. A business man would have measured his permanent fund of capital in pounds sterling and would have included in the amount whatever he had invested in land. As in America any representation of the capital of a corporation includes the sums invested in every productive way, and this includes the value of all land that the company holds, so in England, under a similar system of conducting business, any statement of the amount of a particular business capital would have included the whole of the productive wealth embarked in the enterprise; and in any statement of the forms of it there would have appeared, besides a list of all tools, buildings, unfinished goods, and the like, a schedule of the prices of land that the company owned and used. In "putting capital into his business" a man might buy land, in "withdrawing his capital" he might sell it; and the land in the interim would be the obvious embodiment of this part of his fund. The fact, then, that land was owned by one class of persons and let to another for hire, and that the lessees were the *entrepreneurs* or users of it, caused practical thought and speech to put land in a class by itself.

The Origin of the Theory of Rent.—Scientific thought powerfully strengthened this tendency. At a very early date a formula was attained for measuring the rent of land, while no satisfactory formula was, then or for a long time afterward, discovered for measuring the amount of interest. Men contented themselves with saying that the rate of interest depends on demand and supply. In the case of the rent of land the same thing might have been said, but here such a statement was not mentally satisfying, and investigators tried to ascertain why demand and supply so act as to fix the income that land yields at a certain definable amount.

The Traditional Formula for Rent.—The formula which has long been accepted as measuring the rent of a piece of land, though it bears the name of Ricardo, grew into shape under the hands of several earlier writers. In its best form of statement this principle asserts that "the rent of a piece of land is the product that can be realized by applying labor and capital to it, minus the product that can be realized by applying the same amount of labor and capital to land of the poorest grade that is in cultivation at all." The quantity of the poorest land must be left indefinite, and all that the given amount of labor and capital can economically utilize must be left at their disposal. It would not do to say that the rent of *an acre* of good land equals its product less that of *an acre* of the poorest land in cultivation tilled with the same expenditure of labor and capital. If we should select a bit of wheat land in England tilled at a large outlay in the way of work, fertilizers, drains, etc., and try the experiment of putting the same amount of labor and capital on a piece of equal size in the remotest part of Canada, we should find that, so far from securing wheat enough to pay the bills that we should incur in the way of wages and interest, we should not have enough to help us greatly in the defraying of these costs, and the cultivation of this piece of land would be a losing venture. Instead of being no-rent land, yielding merely wages and interest for the labor and capital used in connection with it, it would be minus-rent land, deducting something from the earnings which the agents combined with it might elsewhere secure. In order to utilize such land at all, one must till it

in what is termed an extensive rather than an intensive way, putting a small amount rather than a large amount of work and expenditure on it. By tilling ten acres of a remote and sterile farm with as much labor and other outlay as a very good acre of land in England receives, one can perhaps get enough to pay the required wages and interest. In general no-rent land is commonly utilized in an extensive way and very good land in an intensive way; and in stating the old formula for rent we need to be careful to make it mean that the rent of the good piece is its total product less the product that can be had by taking from the good piece the labor and capital it now absorbs and setting them at work on a piece of the poorest land which is enough larger than the good one to enable us to secure a crop which will be worth just the amount of wages and interest we must pay. The larger size of the poor piece of land is an essential condition.

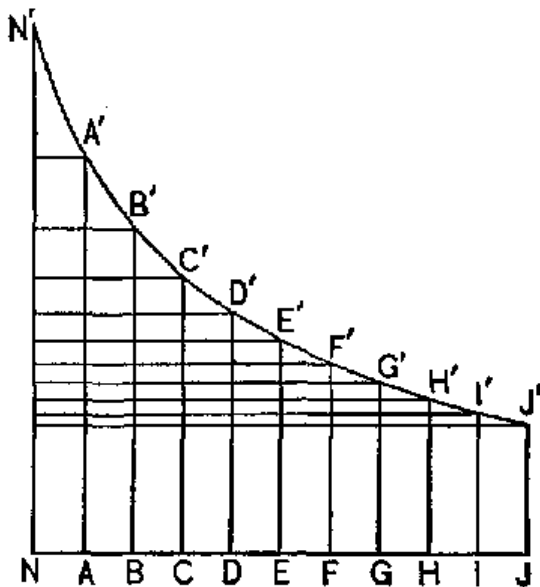
Real Significance of Rent Formula.—It will be seen that this formula amounts to saying that the rent of land is what the land itself adds to the marginal product of labor and capital. Put a certain amount of labor and capital on a piece of land of good quality, and you get a certain amount of product. Withdraw the land from the combination, and you force the labor and capital to become marginal increments of these agents. They must go elsewhere and get what they can. One alternative that is open to them is that of seeking out land of a grade so poor that it has not been previously utilized and doing what they can to get a product out of it. Whatever they can make such land yield is, in an economic sense, wholly their own product. There is an indefinite quantity of this kind of land to be had, and wherever labor and capital utilize any part of it, they can have all that they produce. Now if we subtract what they there create from what was created when they were working on the good land, we have the rent of that land.

Rent as a Product Imputable to Land.—The difference between what the labor and capital produce at the margin of cultivation of land and what they can produce on good land, or land that lies within the margin, is clearly attributable to the qualities of the land itself. Given X units of labor and Y units of capital, combine with them no land except such as is too poor to have been previously utilized, and you get a certain product. It is the product of the labor and capital using something which is free to any one. Now put a piece of good land into the combination; to the X units of labor and Y units of capital add a piece of productive land and see what you can create. We do this by taking these units of labor and capital away from the worthless marginal land and setting them to tilling that which is of the better quality. The product is of course larger than they got before, and the difference measures what the land itself adds to the output of the other agents in the combination. The true conception of rent is that of the specific addition which land makes to the product of other agents used in connection with it. There are various ways of measuring this addition, but the method just used will at least show that the presence of the good land is the cause of the excess of product which given amounts of labor and capital secure over what they could create on land of the poorest quality.

Rent as a Differential Product.—In the early statements of the rent law it was not said that the rent of a piece of land is the product specifically attributable to it. If it had been, the chances are large that a much broader and more scientific use of the rent formula would have resulted. The law of rent, as it was actually stated, made it consist of a differential amount. It was what a given amount of labor and capital would produce under one set of conditions minus what they would produce under another. Since it is the presence or the absence of the productive land which makes the only difference between the two conditions, rent, even as it is thus defined, is really the amount of product specifically attributable to the land. It is what is created when the land is used in excess of what would be created if it were not used and if the coöperating agents did the best they could without it. We may use, as the most general formula for the rent of land, the contribution which land itself makes to the product of social industry.

If we use the same method in measuring the rent of land which we used in measuring the wages of labor and the returns of capital, we shall represent the rent of a given piece of land as the sum of a series of differential amounts. In the accompanying figure the vertical belts bounded by lines rising from the letters A, B, C , etc., represent the products realized by applying successive increments of labor and capital to a given piece of land; and the horizontal lines running toward the left from A', B'

, C', etc., separate the wages and interest from the amounts that are successively added to rent. When one composite unit of labor and capital is working, its product and its pay is measured by the belt between the line AA' and the line NN'. A second composite unit produces the amount represented by the area between AA' and BB', and that is the amount which each unit separately considered will produce and get as its pay. This leaves the area between the horizontal line running from B' and the section of the descending curve as the rent of the land. A third unit of labor and capital produces what is represented by the area between BB' and CC', and this becomes the standard of pay for all units, leaving the enlarged area above the horizontal line at C' as rent. In the end there are ten units of labor and capital. Their total earnings are expressed by the area of the rectangle below the horizontal line running from J', and the sum of all the areas above that line is rent.



The Intensive Margin of Cultivation.—The extensive margin of cultivation is the land that is adjacent to an imaginary boundary line separating the grades of land that are good enough to be used from those that are too poor to be used. There is, however, what may be called the intensive margin of cultivation. A given bit of land is said to be cultivated more and more intensively when more and more labor and capital are used on it. Land is subject to what is called the law of diminishing returns.

Law of Diminishing Returns.—The more labor and capital you employ on a given piece of land, the less you will get as a product for each unit of these agents. What the last unit of labor adds to the antecedent output is less than was added by any of the other units, and the same is true of the last unit of capital. As we continue the process of enlarging the working force and adding to the working appliances, we reach a point at which it is better to cease putting new men with their equipment at work on this piece of land and to set them working on a bit of land so poor that it was not formerly utilized at all. We may assume here that what a man needs, in the way of auxiliary capital, goes with him, whether he joins a force that is working on good land or migrates to a less productive region. He will go if it will pay him to do it. In this way we make a sort of dual unit of labor and capital and apply a series of such units to land.

Ground Capital and Auxiliary Capital Distinguished.—Land itself is a component part of the permanent fund of productive wealth to which we have given the generic name *capital*. It differs from other capital goods in that it does not wear out and require renewing. Working appliances, however, as they wear out and are replaced, constitute a permanent fund of auxiliary capital, and we shall apply this term to the abiding stock of such instruments except in connections in which the adjective is not needed, because it is clear that the land, or ground capital, cannot be referred to. In dynamic studies the distinction between land and auxiliary capital becomes very important.

How the Intensive Margin locates the Extensive One.—The labor and the auxiliary capital that

betake themselves to new land of the inferior quality represent an overflow from the better land. As long as men can do as well by staying where they are as they can by migrating to new regions, where inferior lands are to be had, they will stay; but when they incur a loss by staying, they move. What a laborer can create by securing the use of an equipment and adding himself to the force that is at work on some good farm, can be approximately estimated; and if there is somewhere a piece of land not thus far used to which he can remove, and if, by going to work upon it, he can create any more than he created while working on the older farm and taking his products as his pay, he will till that poor piece. But neither he nor any one else will till a piece that is still less productive. If any one were to set himself working on land of still poorer quality, he would lose and not gain by the change, since there he would produce even less than he can when he is the last man set working on the good piece.

To what Extent the Movement of Labor and that of Capital are Interdependent.—The early statements of the law of rent did not usually define the intensive margin of cultivation in connection with labor and capital separately, but spoke of these two agents as employed together upon land in quantities increasing up to a limit beyond which both labor and capital would best be employed elsewhere. The supposition that labor and capital go thus together from one grade of land to another is only approximately accurate. If we consider one man and five hundred dollars' worth of productive wealth as a dual unit of labor and capital, and add such units, one after another, to the forces at work on a tract of good land, we shall reach a point at which it will not be profitable to increase the amount of one of the agents, while it will still be profitable to increase the amount of the other. It will perhaps not pay to use any more capital, but it may still pay to add to the number of workers. On land that is tilled more and more intensively, labor and capital are not tied together in fixed proportions in such a way that, when there is more of one of them used, there is *proportionately* more of the other. Moreover, when a unit of one of them abandons a piece of land and goes elsewhere, there is no probability that exactly one unit of the other will do the same. There is, indeed, no such thing as a dual unit of labor and capital that can be thought of as moving to and fro among different employments till it finds the point at which, as a dual unit, it can create its largest product. These two agents so locate themselves that a final unit of each one, separately considered, produces as much where it is as it can produce anywhere else.

It is, however, to be noted that the amount of labor that can profitably be employed on a piece of land grows larger the more capital there is employed in connection with it. An acre of land and a thousand dollars' worth of auxiliary funds can enable more men to get good returns than can an acre combined with a fund of five hundred dollars. Conversely, the more men there are working on the area, the more auxiliary capital it pays to use there. If there are five men working on a small field it may be that a thousand dollars may be well invested in aiding them, while with only one man it would not pay to use so large an amount. The capital and the labor, as it were, attract each other. Additional capital attracts further labor, and *vice versa*, till a condition is reached in which neither of them can so well be used on that particular piece of land as it can elsewhere. Each one has then been used on this area up to its own intensive-marginal limit. So also when one of these agents betakes itself to marginal land, it attracts the other agent thither. When there are ten men on the poorest piece of land in a locality, it is possible to make a considerable amount of capital at that point pay the return generally prevailing, whereas only a small amount would pay it if there were only five men working. With a thousand dollars invested on that land more laborers will be lured thither by the prospect of fair returns than would be lured thither if there were only half as much capital. The general apportionment of both agents tends to be such that a unit of either is as well off on one piece of land as on another, and each is as well off at the extensive margin of cultivation of land as it is on the intensive margin.

Labor and Capital combined in Varying Amounts.—The amount of capital that is combined with a unit of labor is not often the same on good land as it is on poor. The proportions in which labor and capital will be combined on the marginal field will be almost certain to vary from those in which they were combined in the better field from which they came. It may be that they leave industries in which an average man uses an equipment worth a thousand dollars. When they reach the margin

of cultivation, capital may be so scarce that the thousand dollars will not stay in the hands of the one man but will divide itself among several.

The General Law of the Extension of the Margin of Cultivation.—Sometimes, when labor moves to new land that is now at the margin, it takes its new equipment with it; but such land is not always tilled by independent settlers. Employing farmers may set men working on it and pay them all that they produce; and the farmers may furnish the men with capital of their own or borrow capital for them to use. In either case a static condition requires the equalizing of the productivity of labor at the intensive margin with that of labor at the extensive margin; and it requires a similar leveling of the productivity of capital at the two margins. When this leveling has taken place in both cases, the all-around marginal product of labor fixes the rate of wages, and that of capital fixes the rate of interest. What a man creates on the good land and with the adequate capital, or on poor land with proportionate capital,—in any occupation on land of either grade,—determines the pay that he and other men can get. It constitutes in itself the wages of labor. In so far as the overflow of labor and capital into any one limited region of marginal land is concerned, the full statement is this: that the margin of utilization of land will be extended to the point at which a unit of labor, *using as much of the marginal land as it is economical to use, and such amount of auxiliary capital as is economical to combine with this unit of labor and the land it occupies, will create a product equal to the wages of the unit of labor as they are determined by the product it created when it was employed on the good land and in connection with the full equipment of auxiliary capital.*

The Rent of a Fund of Capital.—We saw that one unit of labor employed in connection with a given amount of capital produces more than does a second; that the second produces more than the third; and that, if we continue to supply units one at a time, the last unit in the series produces the least of all. Wages are fixed by the amount that one unit of labor produces when the working force is complete, and that is what is contributed to the general product by the unit of labor which comes last in the imaginary series by which the force is built up. Owing to the more favorable conditions under which, in their time, the earlier units worked, they were able to produce surpluses above the amount produced by the last one. When they entered the field they were supplied with excessive amounts of capital. The first one had the whole fund coöperating with it, till it had to share it with the second; and after that each had a half of it till they had to share evenly with a third, etc. We have seen that all the surpluses appearing in connection with the earlier units are attributable in reality to capital. The area *BCD* (page 139) represents the amount by which the presence of an excess of capital increases the products attributable to the earlier units of labor. It represents the sum of all the differences between the products of the earlier units and the product of that final one which in the end sets the standard of productivity of labor. It might be called the rent of the fund of capital. It is composed of a sum of differences exactly like those which constitute the rent of a piece of land.

The Rent of a Permanent Force of Labor.—In the figure on page 148, the working force was supposed to be fixed in amount, the capital increasing by increments, or as some earlier economists would have said, by "doses" along the line *A'E'*. The last unit of capital produces the amount *D'E'*, and all the capital produces *A'B'D'E'*, while products of the earlier units of capital, as they come successively into the field and are used by an excessively large labor force, are represented by the area *B'C'D'*. Here this area represents what may be called the rent of the force of labor, since it is a sum of surpluses that, again, are entirely akin to those that constitute the rent of a piece of land.

A Question of Nomenclature.—It may be an open question, as a matter of mere nomenclature, whether these surpluses which are thus traceable to a permanent fund of capital, on the one hand, and to a permanent force of labor, on the other, can with advantage be called rents. In this treatise we do not think it best to employ that nomenclature. What is not uncertain is that these gains are measurable by the same formula that measures the rent of a piece of land. If the essential thing about rent were that it is a material product and consists of a sum of differential quantities, these incomes certainly would be rents. Popular thought, however, attaches another meaning to this term, and we therefore limit ourselves to saying that these differential incomes or surpluses may be

determined in amount by the principle of rent. They can be described and measured exactly as the Ricardians described the income of landlords.^[1]

FOOTNOTES

[1] The term *rent* has even been applied to surpluses of a psychological kind. Certain gains that men get consist purely in pleasures or in reduced pains or sacrifices, and a few writers have applied to such subjective gains the term *rent*. If a man buys a barrel of flour for five dollars and gets out of it a service that is a hundred times as great as he could get from some other article which he buys for the same amount, this surplus of pleasure may be called, by a figure of speech, "consumers' rent"; and if the essence of rent were the fact that it can be made to take the form of a surplus or difference, the name would be well chosen, though there is danger that by this use of the term science may divorce itself from practical thought and life. If we take all the barrels of flour that a man uses in ten years, there is one which is marginal, because it is worth to the man only enough to offset the sacrifice he incurs in getting it. All the others are worth more. We can arrange them in a scale in the order of their importance, the most necessary one coming first and the least important one last; and we can compare the service which each one renders with that rendered by the last, and measure the surplus of good which each one does to the user. There is here in operation a law of diminishing subjective returns. Early units consumed afford more pleasure than do later ones. There results a series of surplus gains, and the sum of all these surpluses makes a total of net benefit,—is a gain that is not offset by a compensatory sacrifice. The last barrel of flour on the list is worth just what it costs, and all the others are worth more. They give the consumer a surplus of satisfaction for which he pays nothing. The sum of the excesses of service rendered by all the earlier barrels constitutes what has been called the consumers' rent, realized in this case from the entire supply of flour used by the man. In the manner in which it is conceived and measured this gain has a kinship to genuine rent.

This surplus is an effect on a man himself. It is not anything outward or tangible. It exists only in the man's sensations, and is as far as possible from being a concrete income in material form traceable to some particular agent. It can be measured and described in ways that are quite akin to the manner in which the product of land is measured and described. Each consists of the sum of a series of surpluses or differential amounts, and each, moreover, represents a gain which is not offset by any corresponding subjective cost. The rent of land must be paid by an *entrepreneur* and is a cost in the same sense in which wages and interest are so; but the owner of the land did not create it by personal effort or sacrifice.

Analogies between the product of land, or rent, and the special gains of consumers from the more important parts of their consumption do exist, but they are overbalanced by essential differences; and it is better to use the term *rent* only in describing the specific contribution to the material product of industry which a concrete and material agent makes.

CHAPTER XI

LAND AND ARTIFICIAL INSTRUMENTS

One may hire many things besides land and pay what is commonly called rent for them. No one would think of calling by any other term the amount paid for the use of a building, a room in a building, or the furniture in the room. All these things yield rent to their owners; and if the intuitions which govern the common use of terms are to be trusted, the income derived from such things and that derived from land have some essential qualities in common. Every such income is paid for the use of some concrete instrument, and is measured, not by a percentage on the value of the instrument, but by a lump sum—a certain number of dollars per month or per year.

The Mode of Calculating the Rent of Concrete Instruments.—Now the rent of such instruments of production, whether artificial or not, can be measured in exactly the same way in which the rent of land is measured. We saw that there are two margins of utilization of land, an extensive and an intensive one, and that the product of labor and capital at either of these margins may be used as a basis for computing the surpluses which constitute the rent of the land. The landlord gets from a good field what it produces minus what the labor and capital that are used on this field would produce if they were used on the poorest land in cultivation; or, what is the same thing, he gets from the field what it produces minus what this labor and capital would produce if they were set working somewhere on the intensive margin of cultivation. Take the men out of this field, add them in small detachments to the men who are already cultivating other fields, in order that such fields may be tilled a little more intensively, and measure the product which the laborers create when they are so placed. Withdraw also the capital from the field, add it, in small amounts, to the capital that is working elsewhere, and measure its specific product. The sum of these two specific products is the same amount that is arrived at by using the former standard. This labor and capital, formerly used on the good field, scattered as they now are among the users of other good land, will create the same amount that they would have created if they had been employed on the poorest land in cultivation. This amount is, as it were, what they produce by their own unaided power; and whatever is produced in excess of this amount when a good field comes to their assistance is the rent of that field, for it is the contribution which the field makes to the joint production. Total product of land, labor and auxiliary capital minus the product created by the labor and auxiliary capital when these agents are put in marginal positions equals the rent of the land.

The Rent of an Instrument measured from the Intensive Margin.—We can measure the product of any instrument in this way. If it is a ship, it takes labor to sail it and requires a considerable amount of auxiliary capital. We must fill the bunkers with coal, stock the steward's department with provisions, furnish and light the staterooms and the saloons, and provide cordage and a wide variety of other ship stores. All this labor and all this capital we could take out of the ship and use elsewhere. We could convert them into marginal labor and capital. We could divide them among the owners of other ships where they would be used in a way that would make these other ships somewhat more efficient and cause each of them to earn a little more than it now earns. Whatever the labor and capital could, in this way, produce furnishes the basis for computing the rent of the ship. Subtract it from the total joint product of labor, capital, and ship, and you have what the vessel separately earns.

The Mode of Testing the Productive Power of a Ship.—Put the labor and capital into the ship and set it doing its proper work of carrying freight and passengers, and you cause a certain product to be created. The steamship company gets an aggregate amount for the service it renders by means of the labor, the auxiliary capital, and the ship. A certain smaller amount would be realized if the labor and the auxiliary capital were taken out of the ship, distributed, and used in the way we have just described. The difference between the two amounts is the rent of the ship, or its particular contribution to the general product. This gives us a formula for computing the rent, not only of land,

but of buildings, tools, machines, vehicles, and every other concrete instrument of production. The formula, indeed, is so general that it enables us to compute the earnings of any agent whatsoever. *The rent of any such agent is what it adds to the marginal product of labor and capital used in connection with it.*

No-rent Instruments.—The majority of instruments that are in use add something to the marginal product of the labor and capital used in connection with them. Some add more and some add less, according to their several qualities. As a rule, any tool of trade produces most when it is new and less and less as it grows older. In the end it is discarded because it has so deteriorated that it no longer adds anything to the marginal product of the labor and capital that are used in connection with it. A wagon has become so rickety that it no longer pays to furnish a horse, a harness, and a driver for it. The capital and labor that these represent would earn as much if they were detached from the old vehicle and added to the equipment of some person who has a stock of good ones. The rent of this old wagon is nothing. As in the case of the poorest land in cultivation, it is a matter of indifference whether certain amounts of labor and capital are used in connection with it, or whether they are withdrawn and employed elsewhere. This poor vehicle, like the poor land, may be used without positive loss; but if it is so used, nobody gets any income from it. It has no power to enter in a really productive way into combination with labor and capital, for it cannot so combine with them as to add anything to those marginal products which the labor and capital could create if they remained detached from it.

The Universality of the Test of Rent.—This test, whether an instrument can or cannot add something to the marginal product of labor and capital, may be universally used. It may be applied to everything that is made as an aid to labor. There are no-rent buildings, locomotives, cars, tracks, ships, wagons, furnaces, engines, boilers, and, in short, instruments of every description that figure in production. Combine any one of them with labor and capital and see what you get out of the combination; then take the labor and capital away and see what they will produce as marginal labor and capital; and the difference between the two amounts, whatever it is, is the rent of the instrument. If the difference is *nil*, the instrument is at the point of being abandoned. ^[1]

True Capital rather than Capital Goods moved in Making such Tests of Productivity.—In applying these tests with scientific accuracy we should take away the true *capital* used in connection with a rent-paying instrument and use it as marginal capital elsewhere, rather than take away the particular concrete thing in which that capital is now embodied. In the case of the ship the accurate test is made, not by taking stores, etc., bodily out of it and putting them into other ships, but by letting the stores first earn what they can where they are, converting the earnings into money, and, when the stores are completely used up, spending the money to procure marginal additions to the outfit provided for the other ships.

One Difference between Land and Artificial Capital Goods.—In the case of land a particular area is marginal or no-rent land, and, in a static state, it remains so. Any particular ship, wagon, engine, or other made tool begins its career as a rent payer and ends it as a no-rent instrument. If we watch the whole social stock of instruments of production, we shall see the no-rent points not fixed in location, but shifting from place to place. Now this machine, now another, and now still another reaches the unproductive state and is supplanted by instruments of similar kind that are new and efficient.

Original Elements in the Soil.—The real difference between the rent of a piece of land and that of a building, machine, vehicle, or any similar instrument arises from the fact that the land is not going to destruction and the artificial instrument is. There are elements in what is commonly called land that wear out as do the tools that are used in tilling it, but these elements are not land in the economic sense. Land, as Ricardo long ago said, consists in the "original and indestructible powers of the soil." He singles out certain constituent elements of every farm, forest, building site, or other piece of what is called land in ordinary usage, and gives to this new concept the name *land* in an economic sense. These so-called "powers" are original elements because man does not make them; they are provided altogether by nature, and the only way in which man may be said to

impart any productive power to them is by putting them into combinations in which they can produce. When men settle upon what has been vacant land, they bring the land into combination with labor, and when they break up the land for tillage and put buildings on it, they combine it with artificial capital. By means of these combinations land acquires productive power; but physically considered, it is altogether a natural product.

Indestructible Elements in the Soil.—Land in the economic sense is indestructible because the natural effect of use is not to destroy it. This does not mean that it is not physically possible to destroy land to the extent of making it forever impracticable to use it in the ways in which land is commonly utilized. Nature may do this by sinking it beneath the ocean, and man can, if he will, do something akin to this; but he does not naturally destroy what is truly land in the using. It is impossible to use a plow, a spade, or a reaping machine without injuring it and, in the end, wearing it out. It is also impossible to draw the nutritive constituents out of the superficial loam and convert them into crops without exhausting the supply of these sources of fertility and so spoiling that which is commonly called the land, though it is not so in the economic sense. What is really land in this sense is not affected. Nitrates and phosphoric acid that lie in the topmost stratum of the soil are among the destructible instruments of agriculture. The supply of them has to be renewed, if cultivation is continued, and they are therefore in the class with the plows, spades, and reaping machines which also wear out. But whatever there is in the soil that suffers no deterioration from any amount of use is the land with which political economy has to deal.

The Gross and the Net Rent of Land Identical.—As land does not wear out and require renewal, all that it adds to the products of the labor and capital that are used in connection with it may be taken by the landlord as an income without reducing the amount of his property. Whatever land produces at all is a net addition to the general income of society.

Net Rent of Artificial Instruments Smaller than Gross Rent.—It is not safe, on the other hand, for the owner of buildings, tools, or live stock to take for his own consumption all that these produce. If he were to use up their gross produce as he gets it, he would find, in due time, that a considerable part of his property had vanished. Such instruments wear out and become worthless, and if no part of what they produce is set aside as a sinking fund with which to purchase other instruments to take their places, one whole genus of capital must go altogether out of existence.

Artificial Instruments Self-replacing.—What actually happens is that these instruments create enough wealth to pay for their own successors, and that, too, besides paying a net return, which, regarded in one way, is interest. If you compute the whole product of one of these instruments by the Ricardian formula which we have examined, the amount of it will be whatever the instrument, during its entire career, adds to the product of the labor and of the capital that are used in connection with it; and that includes the fund for renewal that has just been described, the amount, namely, which the owners must set aside for repairing the instrument and finally purchasing another. As the instrument itself provides this sinking fund, it may be said to create, in an indirect way, its own successor. The ship earns, over and above the net income which is interest on its cost, enough to keep itself seaworthy so long as it sails and, in the end, to build another ship. The locomotive, the furnace, the loom, the sewing machine, the printing press, etc., all pay for and thus indirectly produce their own successors.

The Net Rent of a Permanent Series of Similar Instruments.—The first charge on the product of any instrument of this kind is the amount necessary for replenishing the waste of it and for providing a successor when this original instrument shall have been wholly worn out. In like manner, the first charge on the successor is providing a similar fund, and so on indefinitely. A part of the productive power of every one in an endless series of similar instruments is devoted to this type of reproduction. The series maintains itself and yields an income besides; and that remainder of its gross rent which is left after waste of tissue is repaired is available as a net income for the owner. This net remainder constitutes an interest on the owner's capital. He possesses a permanent fund of productive wealth embodied in the endless series of these perishable instruments, and *the series taken as a self-perpetuating whole* yields nothing but this interest.

Each instrument, separately considered, yields interest and a sinking fund; but the sinking fund is not available as an income, since it must take shape as another instrument which serves to keep the series intact. What the first instrument creates in addition to the sinking fund is its contribution to interest, and what each instrument creates above what is required for virtual self-perpetuation is also interest.

Interest and Net Rent Identical.—We may therefore reduce interest to the form of a net rent by calculating the gross rent afforded by each instrument in such a series and by ascertaining how much of this merely repairs waste and how much is true income. As interest is usually expressed in the form of a percentage, we may reduce the net rent to this form by comparing it with the cost of the first instrument, which is the amount originally invested. The series of instruments will yield a net return every year. We can compute the gross return of each instrument according to the Ricardian formula for measuring the product of the land. It will diminish from year to year and will ultimately vanish. We can add the several annual gross earnings of the instrument during its economic lifetime in the form of an absolute sum, which is the total rent of the instrument. From this we can deduct the cost of replacing this worn-out capital good, and the remainder will be the net rent of the instrument. We can, in a like way, get the net rent of all the following instruments in the series for a long period, add these net rents together, and get the true net earnings of the series for the time covered by the calculation. If this chances to be ten years we may compare a tenth of this total, or the earnings of the series for one average year, with the cost of the first instrument,—which is the capitalist's original investment,—and we shall thus get the fraction which represents the annual rate of interest on that investment. Perhaps in an average year the series has earned, above what is required to repair waste, five hundredths of what the first instrument cost. That is, then, the rate of interest that the series as a whole, or the permanent capital, is yielding. The whole procession of instruments in which permanent capital is invested creates every year this fraction of its own value, over and above the sum that is needed to offset the wear and tear of an average year's use.^[2]

General Interest as Rent.—If you compute the net income of all tools, machines, and other like things in the world, add the amounts, and get the grand total of them all, you have the entire income from this part of the capital of the world in the form of net rent. If then you compute the value of all this class of instruments and see how large a part of this value the net rent is, you translate this total rent into the form of interest, and therefore net rent and interest are the same income regarded in two different ways.^[3]

Stocks of Made Instruments graded in Quality as is Land.—It is necessary to notice the fact that the permanent series of tools, buildings, and other active capital goods shows forever the same gradations of quality that are found in the case of land. There are always to be found some instruments which are producing a large amount—that is, they are adding a large amount to the product of the labor and the further capital that are combined with them in production. A given amount of labor and capital creates much more wealth when working with a machine of the highest class than it would if distributed in marginal positions; and this is equivalent to saying that such an instrument is itself highly productive. Other instruments are to be found which are creating less, and there is never wanting a grade of no-rent instruments which are adding nothing to the marginal product of the other agents. It would be as well for the labor that used them if it should drop them and add itself to the force which is working with good instruments. Any one manufactured instrument begins its career as a maximum-rent instrument and ends it as a no-rent one. The ship is at its best when it starts on its first voyage, and the mill is at its best in the first year of its running. Each instrument goes gradually downward in the scale till it reaches a stage in which it really produces nothing, since it adds nothing to what would be produced without it. The *permanent series* of instruments never thus deteriorates. All the depreciation of particular things is made good by the repairing and the replenishing which go on. In the series as a whole there are forever present grade number one, grade number two, grade number three, etc., exactly as in the case of land. If we wish, we can reckon the income that is to be gotten from each part of the series according to the old-time formula that is familiarly used in the case of land, "What labor and capital

create by the use of this piece of ground in excess of what they would create if they were applied to the poorest land in use." For a grade of land read a grade of the self-perpetuating series of artificial instruments, and it will appear that each grade above the poorest yields, with the labor and capital that are combined with it, a surplus above what this labor and this capital could create if they were combined with the poorest grade in the permanent series.

Different Modes of Destroying and Replenishing Stocks of Capital Goods of the Two General Classes.—The process of keeping up a stock of tools of trade is unlike the process of keeping intact a stock of materials and unfinished goods, because the modes in which the two kinds of capital goods deteriorate and perish are unlike.

In the case of the raw materials that gradually ripen into articles for consumption and which we have called passive capital goods, the waste of tissues that takes place is quite unlike that which takes place in the case of active capital goods, the tools and implements that are used in the process. The raw material acquires value through the whole process, and in the end it gives itself, with all its acquired value, into the hands of the consumer. In a static state such goods embody the whole income of society, including the products of all labor and of all capital.

A'''
A''
A'
A

The series of A's represents the process of creating consumers' goods from the rawest material. The A''' as taken away for consumption represents, as it were, the wasting tissue of passive capital goods; and it contains in itself the wages of all the labor in this series of subgroups, the interest on all the capital there used, and, in addition to these, the sinking fund that is necessary in order to keep the active capital intact. Some of the articles of the kind A''' will have to be given over to the men who keep the tools, buildings, etc., in repair and replace them when they are worn out. The whole force of the industry of this group expends itself simply in making good the loss that the withdrawal of the A''' for use occasions. It does, in short, nothing but replace the perpetually wasting tissue of the A's. All industry, except that of the makers of active instruments, may be considered in the light of an operation, the aim of which is to keep the stock of passive capital goods intact, or, what is the same thing, to keep the fund of circulating capital undiminished. Whoever puts anything into this fund enables it to overflow and to furnish an income without suffering any diminution. The sole purpose of such capital is to overflow, that is, to suffer, at one and the same time, a loss and a replenishment which neutralizes the loss. It exists for nothing else except to ripen into consumers' wealth. Nevertheless, though the ripened A's are perpetually consumed, the *series* of A's is abiding capital, is entitled to its share of interest, and is certain to get it. A part of the perpetual flow of A'''s is this interest. As the whole income of the society consists in A'''s, a certain number of the A'''s that are withdrawn for consumption go to capitalists as interest on the permanent fund which is kept in existence in the form of A, A', A'', and A'''. A certain other part of the outflow of A'''s goes also to capitalists as interest on that other permanent fund which is maintained in the form of tools, machines, and buildings, such as must everywhere be used in the series. A third part of the flow of A'''s is wages of labor in this group; and a final portion is what we have called the sinking fund, the amount that is given over as an income to the producers in another group, not here represented, who keep the stock of buildings, tools, etc., intact. These four withdrawals of income constitute the process by which the stock of passive goods is depleted, and the grand resultant of all industry is to atone for that depletion.

Labor and the Obtaining of its Product, in Static Industry, Synchronous.—One function of the permanent series of A's is to enable labor everywhere to get its virtual product without waiting, and that too in the form in which it needs it for use. The labor that converts A'' into A''' supplies the waste of tissue that takes place at that end of the line by withdrawal of an A'''. The labor that turns A' into A'' replaces the waste that takes place at that point when an earlier A'' becomes an A'''.

The labor at A' replaces the waste at that point, and that at A replaces the waste at still another point. They are all at work keeping the stock of A 's unimpaired, and one of them does as much toward keeping up the perpetual flow of A'' 's as any other.

If we pump water in at one end of a full reservoir, we instantly cause it to overflow at the other end; and every worker in such a series as we have described may be thought of as putting something into the permanent reservoir of capital and so causing a corresponding overflow. He gets his reward day by day as the work proceeds. Wherever a laborer may be in such a series, his work creates a ripened product as it goes on. He has not to wait for it. His work and its fruit are synchronous.

Differences between Land and Made Instruments Apparent in Dynamic Conditions.—A point that has great theoretical interest is the nature of the difference between land and other productive instruments. In a static society the difference would be comparatively unimportant, but it is brought into prominence by the changes which constitute a dynamic state. The static hypothesis requires that capital should not increase or diminish in quantity, and that it should not change its forms. The equipment of every mill and of every ship is kept unimpaired but not enlarged or improved. There is a fixed number of spindles in the cotton mill, of lathes in the machine shop, of sewing machines in the shoe factory, etc., and this fact removes the most striking difference which, in a dynamic society, actually distinguishes land from other things.

Land, in the economic sense, does not increase in quantity, however changeful and progressive a society may be. The chief distinguishing mark of land—that of being fixed in amount—separates it from other things only in a dynamic state and because of the action of the forces which produce organic changes. These are subjects to be studied in the dynamic division of economic theory.

A Distinguishing Mark of Land which appears in a Static State of Industry.—In a static state there remains this difference between a piece of ground and a building, a tool, or any other instrument: the ground is not artificially made and does not perish in the using; while the building or the tool or other appliance is so made and does so perish. It must in wearing itself out create in the indirect way which we have described its own successor. The engine must, by a part of its product, pay the men who will make another engine and so perpetuate the series of engines. This makes it necessary for the owner of the engine to save some of its gross rent to pay for depreciation and renewal, while he can safely use the whole rent of land.

This Mark of Distinction not Applicable when Land is contrasted with a Permanent Stock of Capital Goods.—If we look, not at one particular instrument, but at an entire series of them,—if we take into view, not only the engine which is now driving the mill, but also the one that will succeed it, and again the one which will succeed that second engine, and so on forever,—this difference between land and the artificial instrumentality vanishes. *The series of engines, like land itself, yields only a net rent.* The remainder of its gross product is not a true rent at all, since any one of the engines creating it has to consume it on itself and cannot give it to the owner as an income. This remainder pays certain men for keeping the series of engines intact, and what is given to them as pay for their services cannot accrue to any one as an income from the series of instruments so maintained. It is the earnings of the corps of maintenance created by their own labor and capital. What the series of engines yields over and above what it expends in maintaining itself it gives to its owners as an income. This is their net return and they can use it without trenching on their property. The analogy between the returns from land and those from a self-perpetuating series of made capital goods is in this particular complete.

The Source of the Fund for Repairs and Renewals.—The fund for repairs and renewals must, of course, like the net income itself, be furnished by instruments that are above the no-rent grade. A machine will naturally be used as long as it pays anything whatever, and during the latter part of its career it usually produces less than mere interest on its cost. So long as the labor and the auxiliary capital that are combined with the instrument produce by its aid any more than they would produce if they were withdrawn from it and added, as marginal increments, to the labor and capital that are

working in connection with good instruments, they will continue to use the machine and they will abandon it only when it ceases to pay anything whatever. Out of the total amount it produces before reaching this point of abandonment comes the amount that is needed as an offset for the cost of providing a new machine.

Incorrectness of a Common Statement concerning Rent and Price.—This brings into view a striking fallacy of what has been current economic theory. It has been customary to claim that the rent of land "is not an element in price," although the interest on capital is such an element. The rent of land is the net product of land; and if interest be kept distinct from it, this income is the net product of a permanent stock of capital goods. The relations of these two component parts of the constant output of goods to the prices of the goods are identical.

Proof of the Incorrectness of the Current Statement concerning Rent and Price.—The vague form of the current statement concerning rent and price is responsible for much confusion of thought on that subject. What the statement would mean is that the price of wheat is not affected by the great contributions to the supply of it which good lands are making. These contributions are the rent in its original form. The rent of wheat land is wheat, that of cotton land is cotton, that of mill sites is manufactured goods, etc. That money is used in payments made to landlords changes nothing that is essential. To say that such contributions to the supply of particular commodities are not an element in determining the prices of them, would be as unreasonable as to make the same assertion concerning other parts of the supply. Quite as logically might it be asserted that other components in the supply do not affect prices—that the amount of wheat which is attributable to harvesting machinery or the amount of calico which is imputable to looms has no influence in the market values of these articles.

Why the Produce due to Good Land prevents Prices from greatly Rising. —If the use of good wheat land were merely discontinued, the supply of wheat would of course be not only lessened, but reduced almost to nothing, and a famine price would at once result. If, now, an attempt were made to make good the shortage of the supply of this cereal by tilling lands which are now at the margin of cultivation, it would at once appear that not enough of such land exists to enable us to accomplish the purpose, and it would be necessary to push the margin outward and till poorer and poorer soils, at a greatly enlarging cost. We should grub out worse thickets, drain worse swamps, terrace more discouraging hillsides, irrigate more remote and barren deserts, etc. All this would mean a greater cost of production of wheat and a higher price for it in the market.

It would also mean another thing. The extending of the margin of cultivation which makes it include poorer grades of land causes that part of the area now tilled which does not command any rent to yield one. After the margin should have been greatly extended and finally located in a region where getting anything out of the soil would require a struggle, it would appear that all of the lands newly annexed to the cultivated area except the last and poorest would command a rent. All but those on the new margin would add a definite quota to the supply of wheat, and this contribution would be their rent. Entering into the supply, it would of course count in the adjustment of price.

What can reasonably be conceded concerning Rent and Price.—There is another possible meaning of the phrase "Rent is not an element in price"; and, whether it was clearly in the minds of those early economists who made the assertion or not, it is what their argument proves. The *payment* of rent by tenants to landlords has no effect on the market value of the produce. "Food would not become cheaper," says Professor Fawcett, "even if land were made rent free." There would be the same need of food stuffs as before, and the tillage of lands would be pushed to the present margin, where the yield is smallest. The cost, in labor and capital, of that marginal part of the supply of food which has come from these poorest lands would continue to be what it has been heretofore. The farmers would, of course, get from the good lands the same surplus that they get at present; but the fact that land had been made rent free would enable them to keep it. This surplus is, of course, rent, and transferring it from landlords to tenants does not affect prices. So much of the doctrine formerly current is true; and it would have forestalled much confused thought as well as much controversy if the statement concerning rent and price had made it clear that any rent in

its original form is an element in the supply of produce, and the existence of it helps to determine prices, while the payments made by tenants to landlords do not affect them. If these payments should cease and the tenants should retain the rent, prices would continue to be what they now are.^[4]

FOOTNOTES

[1] Whether such an instrument should or should not be called a capital good is a question of mere nomenclature; but in this treatise we consider that every part of what we term capital produces an income, and therefore a no-rent instrument is not a capital-constituting good—otherwise termed a capital good.

[2] If the fund for replacing a costly capital good, such as a ship or a building, were allowed to accumulate for a term of years before being spent, the parts of it remaining on hand for some time would earn interest for their owner, and in his bookkeeping this would figure as reducing the amount he must save from the product of the ship or the building in order to replace it. This does not affect the general law of self-replacement, for the ship or building really produces what results from this compounding.

[3] In computing both of these values for comparison one should use a labor-cost standard, and we shall later see under what limitations such a standard may legitimately be used.

[4] The claim that rent is not an element in price making might be made in the case of artificial instruments of production as reasonably as it can be made in the case of land. If it means that the *existence* of the rent has no effect on price, it is wholly incorrect in both cases. The statement may be so changed as to tell what is true concerning the rent of land, and it will then also tell the truth about the product of the artificial instruments, which is interest in its original form. These statements may be made in parallel columns, and one will be as true as the other and no truer.

A needed part of the supply of wheat is grown on marginal land.

The price of the wheat must pay for the labor and capital used on this land.

The price of wheat raised on good land is the same as that of wheat raised on the marginal zone, and it affords a surplus above wages and interest paid by farmers for labor and capital used in the tilling of the good land.

The existence of this surplus in its original form, that of wheat, affects the supply and the price of that product.

The fact that farmers pay landlords for this surplus has no effect on the price of wheat.

A needed part of the supply of woolen cloth is woven on marginal looms.

The price of the cloth must pay for the labor and capital that, in the woolen manufacture, are combined with these looms.

The price of cloth woven on good looms is the same as that of equally good cloth woven on marginal ones, and it affords a net surplus above the cost of maintaining the stock of looms and the wages and interest paid by manufacturers for further capital used in connection with the good looms.

The existence of this surplus in its original form, that of cloth, affects the supply and the price of this product.

The fact that *entrepreneurs* pay capitalists for this surplus has no effect on the price of cloth.

The more important facts concerning rent have reference to the original form of it, namely, a product in kind. Whatever constitutes a part of the supply of anything affects the price of it. The surplus afforded by good looms is an element in the supply of cloth, and that afforded by good land is an element in the supply of wheat. They make these two supplies larger than they would otherwise be, and of course they are of cardinal importance in determining price. The rent of anything is an element in the supply of some kind of goods, and the annihilation of it would reduce the supply and raise the

price of product in which, in its first estate, it consists.

CHAPTER XII

ECONOMIC DYNAMICS

The Efficiency of Static Forces in Dynamic Societies.—The static state which has thus far been kept in view is a hypothetical one, for there is no actual society which is not changing its form and the character of its activities. Five organic changes, which we shall soon study, are going on in every economic society; and yet the striking fact is that, in spite of this, a civilized society usually has, at each particular date, a shape that conforms in some degree to the one which, under the conditions existing at that date, the static forces acting alone would give to it. It is even true that, as long as competition is free, the most active societies conform most closely to their static models. If we could check the five radical changes that are going on in a society that is very full of energy,—if, as it were, we could stop such an organism midway in its career of rapid growth and let it lapse into a stationary condition,—the shape that it would take would be not radically unlike the one which it had when we interposed the check on its progress. Taking on the theoretically static form would not strikingly alter its actual shape. The actual form of a highly dynamic society hovers relatively near to its static model though it never conforms to it. In the case of sluggish societies this would not be true; for if in one of them we stopped the forces of growth and waited long enough to let the static influences produce their full effects, the shape to which they would bring the organism would be very different from the one which it actually had when its slow progress was brought to a stop. Most efficient in the most changeful societies are forces which, if they were acting by themselves alone, would produce a changeless state. The reasons for this will later appear.

Differences between Static Forms of Society at Different Dates. —A highly dynamic condition, then, is one in which the economic organism changes rapidly and yet, at any time in the course of its changes, is relatively near to a certain static model. It is clear, therefore, that it cannot, at different periods, conform even approximately to one single model. If the forces of change which in 1800 were impelling the industrial society of America to a forward movement had been suppressed, and if competition had been ideally free and active, that society would before long have settled into the shape then required by the forces which, in the preceding chapters, we have described. Some labor would have moved from certain occupations to others and gained by the change; and this movement of labor would have ended by making the productive power and the pay of a unit of this agent uniform in all the different subgroups of the system. Capital would have so apportioned itself as to level out inequalities in its earning power. The profits of *entrepreneurs* would have been equalized by becoming in all cases *nil*, and the best available methods of production would everywhere be found surviving and bestowing their entire fruits on laborers and capitalists. All this is involved in saying that the static model, the form of which was determined by the conditions of 1800, would have been realized. This would have been brought about by suppressing at that date the forces which cause organic change and by giving to competition a perfectly unobstructed field. If we had done this in 1900, instead of at the earlier date, economic society would, in a like way, have conformed to the shape required by the conditions of 1900; and this would have been very different from the shape which the static forces would have given to society a century earlier. There is an ideal static shape for every period, and no two of these static shapes are alike.

Differences between the Actual Shape of Society and the Static One at Any One Time.—The actual shape of society at any one time is not the static model of that time; but it tends to conform to it, and in a very dynamic society is more nearly like it than it would be in one in which the forces of change are less active. With all the transforming influences to which American industrial society is subject, it to-day conforms more closely to a normal form than do the more conservative societies of Europe and far more closely than do the sluggish societies of Asia. A viscous liquid in a vessel may show a surface that is far from level; but a highly fluid substance will come nearly to a level, even though we shake the vessel containing it vigorously enough to create waves on the surface and currents throughout the whole mass. This is a fair representation of a society in a

highly dynamic condition. Its very activities tend to bring it nearer to its static model than it would be if its constituent materials were not fluid and if it were never agitated. The static shape itself, though it is never completely copied in the actual shape of society, is for scientific purposes a reality. There are powerful influences tending to force the industrial organization at every point to conform to it. The level of the sea is a reality, though the motion of the waters never subsides sufficiently to make their surface accurately conform to it. As vigorously agitated, the water shows a surface that is nearer to the ideal level than would an ocean of mud, tar, or other sluggishly flowing stuff. The winds throw up waves a few feet high, but the fluidity keeps the general surface surprisingly level; and so civilized society, made as it is of fluid material kept in vigorous agitation, finds, as it were, its level easily. If in any year we could and should stop the dynamic disturbances, the economic society would assume the static shape which the conditions of that year called for as readily as the sea would find its normal level if winds and tides should completely cease. Static influences that draw society forever toward its natural form are always fundamental, and progress has no tendency to suppress them.

Competition a Cause of Rapid Changes in the Standard Shape of Society and of a Quick Conformity of the Actual Shape to the Standard One.—The competition which is active enough to change the standard shape of society rapidly—that, for example, which spurs on mechanical invention and causes a large profit to be realized in a particular subgroup—has also the effect of calling labor and capital quickly to the point at which the profit appears, and, in the absence of any monopoly, reduces this profit to *nil* and restores, in so far as this cause of disturbance goes, the equilibrium of the groups. Under the influence of active competition a particular group frequently undergoes quick changes which call for more labor and capital, but it gets them quickly; and, as has just been said, the standard shape of a society which is in this highly fluid condition does not differ so much from the actual shape as does that of a society the movements of which are sluggish. The standard shape is like the hare that moves quickly and irregularly; while the actual shape is like the pursuing hound, which moves equally quickly, follows closely all turns of the course, and, if the game were to stop moving, would in short order close on it.

The Equalization of the Productive Power of Labor and of Capital in the Different Subgroups.—We have seen that in a static state labor and capital do not move from subgroup to subgroup in the system, and that this absence of flow in a fluid body is not brought about by monopoly or by any approach to it. That, indeed, would obstruct transfers of the producing agents from point to point; but monopoly is a thing most rigorously excluded by the static hypothesis. At every point we have assumed that the power to move is absolute, while only the motive is lacking. The equalization of the productive power of labor in the various subgroups precludes the migration of labor, and a like equalization precludes a migration of capital.

Equalization of Productive Powers within the Subgroups.—Not merely must each unit of labor or of capital be able to create as much wealth in one subgroup as in another, but within the subgroup—the specific industry—each unit must be able to create as much under one employer within the industry as under another. The different *entrepreneurs* must compete with each other on terms of equality, and no one of them must be able to wrest from a rival any part of the rival's patronage. So long as one competitor has an advantage over another in his mode of creating a product, there is no equilibrium within the subgroup. The more efficient user of labor and capital is able to draw away labor and capital from the less efficient one, and the self-seeking impulse which is at the basis of competition impels him to do it. The producer who works at the greater advantage is foreordained to underbid and supplant the one who works under more unfavorable conditions. That a static state may exist and that the movements of labor and capital from point to point may be precluded, every competitor within a subgroup must be able to keep his business intact, hold his customers, and retain in his employment all the labor and the capital that he has.

Equality of Size of Productive Establishments not Necessary.—Size is, as we shall see, an element of efficiency, and the great establishment often sells goods for less than it would cost a small one to make them. The small manufacturer often finds that he would best become a mere merchant, buying some of the products of the great mill and selling them to his customers, rather

than continue making similar goods. In the general market an approach to equality of size is usually necessary in order that competitors may be on even terms. This does not preclude the survival of many small establishments. The local retailers have an advantage over great department stores in the filling of small orders. When one has to buy what costs a dollar it does not pay to spend a dime in car-fares, and waste a dollar's worth of time in order to secure the thing for ninety cents. Weariness to customers is here the element that gives to the small producer his advantage and enables him to keep that part of the business which comes in the form of many small orders; but small producers often have other advantages than those which depend on location. In a shop which is more like that of a craftsman of three centuries ago than it is like the great furniture factory, a cabinetmaker can make a single chair of a special pattern more cheaply than the great manufacturer can afford to do it. The great shop requires that there should be many articles of a kind turned out by its elaborate machines in order that the owner should get the benefit of their rapid and unerring action. There will long be at work hand presses much like those used by Benjamin Franklin, besides the complicated automata which do the bulk of our printing, because for printing a dozen copies of anything the lever press is the cheaper. There will be shoemakers who not only mend shoes but occasionally make them for customers who want other than standard kinds; and local tailors are sure to survive. Only in the general market and in the making of standard goods is size essential to success.

A Considerable Number of Competitors Assumed.—The most striking phenomenon of our time is the consolidation of independent establishments by the forming of what are usually called trusts; and this and all the approaches to it are precluded by the static hypothesis. There is a question whether, after competition has reduced the establishments in one subgroup to a half dozen or less, they would not, even without forming a trust, act as a quasi-monopoly. This question we have at the proper point fully to discuss, but here it is necessary to assume that nothing which creates even a quasi-monopoly exists. We shall find that competition usually would, in fact, survive and be extremely effective among as few as five or six competitors, till they formed some sort of union with each other. To avoid all uncertainty we assume that in the static state in which values, wages, and interest are natural and in which each subgroup has its perfectly normal share of labor and capital, there are competitors enough in each occupation to preclude all question as to the continuance of an active rivalry.

Static Values and Prices.—The equilibrium referred to requires that all values should stand at their static levels, which means that the prices of goods should be the "cost prices" of the older economists. The *entrepreneur* should make no net profit on the goods he is producing. The wages of labor must be productivity wages, since each man must get the amount of wealth that he brings into existence. Interest on capital needs, in like manner, to be productivity interest, and each unit of capital must get the amount it creates. Moreover, the prices of goods, as expressed in money, must be accurate representations of the comparative values of goods. All these features mark the static state; but the most obvious mark of distinction is the absence of movement from group to group. We shall see that values are ultimately measured in marginal labor, and as the value of money is measured in the same way, it follows that the price of each article, as expressed in money, is in a static state a correct expression of the comparative amount of labor that will make it. And the entire relation of commodities to each other and to labor can be expressed by the medium of currency. If a unit of labor produces gold enough to make an eagle, and if any commodity sells for ten dollars, it will be safe to infer that it is also produced by one unit of labor. If one commodity sells for ten dollars and another for five dollars, the former is the product of twice as many units of marginal labor as is the latter. This remains true only while currency continues to be in its normal state and all other static adjustments continue complete.

Influences that disturb the Static Equilibrium.—It might seem that the influences that disturb such a static equilibrium are too numerous to be described; and yet these changes may be classed under five general types:—

1. *Growth of Population.*—The supply of labor is increasing, and this fact of itself calls for continual readjustment of the group system.

2. *Increase of Capital.*—The amount of capital is increasing, and this change also disturbs the static equilibrium and calls for a rearrangement. As far as wages and interest are concerned, the effect of this latter change is the opposite of that which follows an increase in the amount of labor. When people become more numerous, other things remaining equal, their individual earning capacity becomes smaller. The increase of capital reduces the earning power of each unit of the supply of it and depresses the rate of interest; but it raises the rate of wages, for it causes labor itself to act more efficiently.

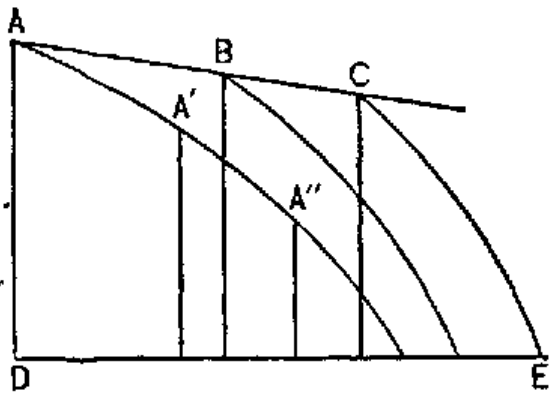
It is to be noted, indeed, that when new laborers enter society they become consumers as well as producers, and this affects the utility and the value of goods. When more people use a given amount of consumers' wealth, values, measured in ultimate units of utility or disutility, rise. An increase of capital does not directly neutralize this effect, since it does not change the number of consumers; but it multiplies commodities and brings down their utilities and their values. The rise of "subjective" values which follows an influx of laborers is an indication of diminished wealth per capita, and the reduction of values which follows an influx of capital is a sign of increased wealth per capita.

3. *Changes of Method.*—Changes take place in the methods of production. New processes are devised, improved machines are invented, cheap motive powers are utilized, and cheap and available raw materials are discovered, and these changes continually disturb the static state. There are certain to be improvements on the older methods of production, for a law of the survival of the fittest insures this.

Under competition the process that, with a given amount of labor and capital, turns out a larger product inevitably displaces one that turns out less. The employer who is using the better method undersells those who use inferior ones, and forces them either to improve their own methods or to go out of business. Working humanity as a whole is therefore making a constant gain in producing power, as man's appliances equip him more and more effectively for his conflict with nature and enable him to subjugate it more rapidly and thoroughly. It would seem that they ought to have only good effects on wages, and in the long run they invariably do have such effects. In the absence of improvements there would be little hope for the future of wage earners. The immediate effects of improvements upon individual workers, as we shall see, are not always unqualifiedly good, but the essential effect is the general and permanent one, and the character of this has been attested by past experience too fully to be in doubt. In improvements in production lies the hope of laboring humanity. Nearly the whole earning power of the labor of the present day is the result of improvements that have taken place in the past, though these gains have not been secured without causing local and temporary hardships. If in the future the wages of labor are doubled or quadrupled, as the result of a series of improvements beginning now and extending to a remote period, this progress cannot be secured for nothing. The costs will be less than those attending improvements of the past, but they will be real. The most important fact is that they tend to become fewer and smaller and that the gains immeasurably exceed them.

4. *Changes in Organization.*—There are changes in the mode of organizing the establishments in which commodities are produced, and so far as these occur under a régime of active competition, they also are improvements and give added power of production. The mills and shops become larger and relatively fewer. There is a great centralizing movement going on, since the large shop undersells and suppresses the smaller one, and combinations unite many great shops under one management. The effect of this, when it takes place in a perfectly normal way, is akin to that of improvements of method. It benefits society as a whole somewhat at the cost of individual members of the body, and it causes wages to rise by adding continually to the wealth-creating power of the men who earn them. We shall see that when consolidations repress competition their effect is far from being thus wholly beneficial, and that not only are particular persons injured by them, but the community as a whole has a serious bill of charges to bring against them. The securing of the gains that come by consolidation without such evils is an end the realization of which will tax the statesmanship of the future.

5. *Changes in Consumers' Wants.*—The wants of consumers are changing. They are growing more numerous as well as more refined and intellectual. This expansion of desires follows the general increase of productive power, since every one already wants some things that he cannot procure, and all society has a fringe of ungratified wants just beyond the limit of actual gratification. Even if all these wants that are now near the point of actual satisfaction were to be satisfied, the desires would at once project themselves farther. The mere increase in earning power without any special education enlarges the want scale, but intellectual and moral growth coöperates with it in that direction and calls latent wants into an active state. More and more eagerly do men seek things for which the desire was formerly dormant. Changes of this kind affect values, cause labor and capital to move from group to group, and thus cause society as a whole to produce less of some things and more of others. They sometimes cause wholly new groups to appear, and draw workers and equipment from the old ones.



Advantage of Diversity of Wants.—One very marked effect of the diversification of wants is to increase the aggregate utility of a mass of commodity produced with a given expenditure of labor. Measure the whole wealth available for consumption on the basis of the labor that it takes to create it, and it will appear that it has more utility and is worth more to society in consequence of this evolution that is going on in the nature of the individual consumer. A given amount of labor benefits most the men whose wants are of the most varied character. If A, B, and C are three commodities, and if their several utilities decline, as successive units of them are given to a consumer, along the curves descending from the letters A, B, and C of the diagram, it is clear that the man whose consumption is confined to the commodity A gets less benefit from three units of wealth than does the man who consumes A, B, and C. The utility of the first unit of A is measured by the vertical line from A to the line DE, that of the second by the line from A' to DE, and that of the third by the line from A'' to DE. The utility of the first unit of B is measured by the distance from B to the line DE and exceeds that of the second unit of A by the difference between the lengths of those lines. In like manner the utility of C exceeds that of the third unit of A by the difference between the length of the line descending from C and that of the one descending from A''. The declining utility of the income of the man who satisfies three wants is represented by the slowly descending curve ABC, while the diminishing utility of the income of the man who satisfies only one want declines along the sharply descending curve A, A', A''.^[1]

Changes in Static Standards.—The grand resultant of all the changes that are going on in the more highly civilized countries is a continual rise, not only in actual wages but in the theoretical standard of wages. The static or "natural" rate of pay for labor to-day is higher than it was fifty years ago and lower than it will naturally be fifty years hence. Removing all disturbing influences and letting society settle to-day into a perfectly static condition would reveal the theoretical standard of present wages. Doing the same thing after a lapse of fifty years would show what would then be the natural or standard rate; and this would be higher than the present one. Not only would the actual pay of labor have risen, but the standard to which it tends to conform would have become higher after every interval. The actual rate of wages at any one time varies from the standard; but as both rise from decade to decade, the actual rate hovers all the while within a certain distance of the standard one.

Effects on Values.—In the same way the values of goods measured in labor will in general be declining values. At no one time will actual market prices accurately express the amounts of marginal labor that are required for producing different articles, but they will approximately express this. Articles will sell in the market for about enough to pay for the labor that, when used as marginal labor, suffices to produce them; and as this amount of labor put into a given article grows less and less, the prices of the goods will actually pay for fewer and fewer days' labor. The standard price of anything will be the amount of money that is needed to pay for the labor of making it, provided always that we are careful to use only empty-handed labor in applying the test and that we put that labor in the marginal position, as described in Chapters IV and V, and so disentangle the product that is attributable to it from that which is imputable to capital. If wages, as paid in money, remain stationary, normal prices will decline and actual prices will hover about them in their downward course, so that goods will actually buy smaller and smaller amounts of labor, or,

what is the same thing, labor will secure as its pay more and more goods.^[2]

FOOTNOTES

[1] For studies of the effect of diversified wants, see S. N. Patten, "Consumption of Wealth." It will be seen that account must be taken first of the natural expansion of the want which comes from an increase of productive power, and second of the changes in the quality of the wants to be gratified, which sometimes go ahead of any change in the productive system and call for new kinds of commodities.

[2] In measuring the cost of goods in labor, in Chapters IV and V, we disentangled from the amount of goods which is the joint product of labor and capital, the part which is attributable to labor only. The mode of doing this is there more fully stated. The old and crude method of using a labor standard of value—which assumes that the product of a unit of labor *aided by capital* will always buy the product of another unit of labor *aided by capital*—we must take *all pains* to avoid.

In connection with the cost in labor of different articles it is to be remembered that in agriculture the effect of improvements of method may not always suffice to counteract the working of the so-called law of diminishing returns, which insures, with agricultural science in a given state of advancement, smaller products per capita when there are more men on a given area. That this influence should preponderate over that of improved processes requires that population should increase with a degree of rapidity which may or may not be maintained.

CHAPTER XIII

THE LIMITS OF AN ECONOMIC SOCIETY

When we try to establish a standard to which wages generally tend to conform, the question arises how much of the earth we have in view. Is there a rate at which the pay of labor in Europe, Asia, Africa, Australia, and America tends to settle and remain? Is there a common rate of interest that is normal in all these grand divisions, and are there also general standards of value for goods which govern their prices in all the markets of the world? If there are no such standards having universal validity, are there any that are valid within single geographical divisions? On what principle can we divide the earth into sections for economic purposes? These are some of the questions which must be answered if a theory of distribution is to have any definiteness of meaning, and they arise whenever we try to establish a static standard of any kind. If we talk about natural wages, we must know in how much of the world they are natural. The questions become even more urgent when we try to solve dynamic problems. We shall have to determine the effects of an influx of labor into the economic society we are studying; but does this mean an increase of population in the world as a whole? Does an influx of capital have a similar comprehensive meaning, and does an improvement in the method of producing some commodity mean a change in the mode of making it in every part of the world where it is produced at all? We need to know how extensive the society is whose activities we are examining.

Characteristics of an Economic Society.—We have said that there are natural rates of wages, etc., within some area, which we have regarded as containing an economic society, and we have treated this social organism much as though it were as isolated and self-contained as would be an inaccessible island with its population. It has one general market where values are fixed. A farmer within the area covered by our studies produces wheat for the whole society, and in one way or another, every person within the area is a bidder for it. A shoemaker makes shoes and a weaver makes cloth to offer to everybody. Each part of the organism ministers to the whole and is ministered to by the whole. Competition is ideally free and in a sense is universal. The general system of groups made up of the A's, the B's, the C's, and the H's of our table illustrates the manner in which this complete and self-contained society is organized. In the static state there is one standard of wages for all these groups and their subdivisions and one equally general standard of interest. The price of a commodity, barring some allowance for cost of carrying it, is uniform everywhere. A reduced price for $A'''M$ in any part of the area where this society dwells would set men bidding for it from every quarter of that area and would thus bring the local prices to uniformity. So a high rate of pay for labor in one part would at once lure men from every other part and reduce the high pay to the standard generally prevailing. The picture is that of a social body having a large geographical extension and yet intensely sensitive at every point to economic influences. Prices, wages, and interest everywhere respond at once to an influence that originates in any part of the extended area. In technical terms this means that there is perfect mobility of labor and capital within the group system represented by the table, and that this involves equally perfect mobility as between parts of the area that the groups inhabit. Men move from one section of the country to another in response to an economic inducement as readily as they do from the group *A* to the group *B*.

Barriers which divide the World into Economic Sections.—Now it is clear that in the actual world changing one's place of abode is difficult, and even sending capital from place to place is somewhat so. Inequalities of earning power are not leveled out by a quick migration of laborers from China to Europe or to America. In their methods of production the different regions are not brought to a uniformity, for there is machine labor here and hand labor there; and it is vain to expect that machines will quickly become universal and that the practical arts in America, Africa, and Asia will be rendered uniform by such a quick adoption of the most efficient processes as economic law, in the absence of friction, requires.

Boundaries of the Society which is here Studied.—If we take the world as a whole into the circle covered by our studies, we find that labor, compared with other economic elements, decidedly lacks fluidity and does not easily move. So far from being like water, which flows readily and finds its level quickly, it is more like tar or other viscous stuff, which flows slowly and is long in leveling out local irregularities in its surface. In the world as a whole there are regions crowded with people and other regions nearly unpeopled, and long will it be before some of these differences will be much reduced. Many centuries, indeed, must pass before they are entirely removed. If, however, we take the most active part of the world,—western Europe, most of North America, Japan, and the more fully settled parts of Australia,—labor will show a degree of mobility that makes it more like the water of the illustration, and capital within this active center of industrial operations will be more fluid still. Prices here tend toward certain general standards, and processes of production and methods of organizing the forces which do the producing work tend strongly toward uniformity. The best processes and the best forms of organization tend generally to survive. There are imperative reasons for studying the economy of this highly civilized region, the center of the economic activities of the world, apart from that of the more undeveloped regions.^[1]

The Need of a Rule by which a Part of the World may be Treated as an Economic Society.—This involves finding a way by which we can treat a limited part of the world much as though it were, for our purposes, the whole of it. In essential ways the economic center that we have described does act somewhat as if it were an organism complete in itself. We must draw a boundary line about the area of active movement, of lively interchanges, and of general sensitiveness to economic influences, thus separating it from the broader zone of sluggish movement of capital and population, of slow response to economic stimuli, and of generally backward conditions.

Freedom of Movement as a Test.—In Europe, America, and the other advanced regions goods are carried from place to place so easily and quickly that there is a tendency toward uniform prices; and such local differences of price as exist in the case of any commodity do not much exceed the cost of getting it carried from one place to another, though in the cost of moving it there must often be reckoned the toll which a government takes at the customhouse. Capital moves freely, and there is a certain approach to a general level of interest, though here also local differences of course survive. The obstacle to the moving of capital from one place to another, if the owner does not go with it, is occasioned mainly by the risk it encounters and by a virtual bill for insurance. With allowance for this cost, rates of interest in the region we have described tend toward a general level. Though labor migrates more slowly than capital, it moves far more rapidly within the economic center than in the outer zones. Processes of production are not brought to a complete uniformity within the center, but they tend powerfully toward it; for while obstructions exist, they surely and not always slowly yield. With due regard for such differences of method as those existing between the European ways of making products and the American ways, we may say that the tendency toward the general survival of the best methods is too strong to allow any important differences to be permanent. Everywhere, in short, within the central area there is a strong tendency to conform to economic standards in the matter of prices, wages, interest, industrial processes, and forms of economic organization. The standards are what we have defined as the static ones. If we should stop progress and all disturbing influences and wait long enough, we should see values, wages, interest, etc., take a static level throughout the vast area. This, however, would require that migrations should go on till all inducement to move from place to place should have ceased to exist. Population would then have distributed itself over the land in the most advantageous way, and no body of people would be better off than any other by reason of the location of their abode. A long period would be needed to bring about this adjustment even within the circumscribed area where influences that make for change are very active and where obstacles are far smaller than they are in the uncivilized regions.

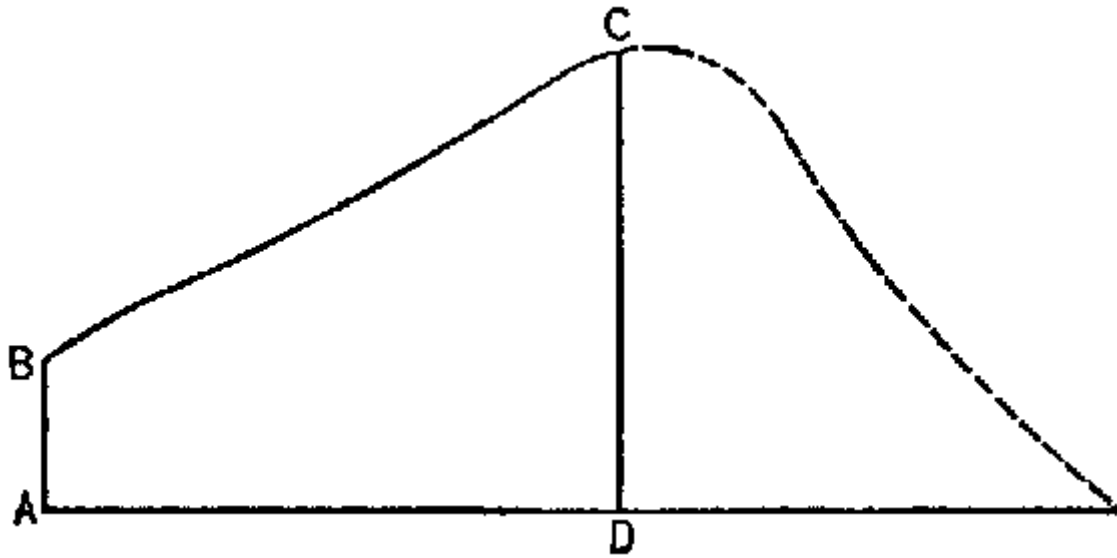
Essential Density of Population.—A perfectly static state requires, not a perfectly equal distribution of population, but such a distribution that there is no reason for further migrating. The power of the soil to feed its inhabitants varies with its fertility. Where the land is highly productive a dense population may live easily; whereas on a sterile soil even a sparse population may find natural

resources too meager, and men may move to places which are more thickly peopled and yet may gain by the change. Moreover, such occupations as manufacturing and commerce require, of course, a far larger population on a given area than does any form of agriculture. Some regions are so undesirable as dwelling places that it takes an exceptional economic reward to induce men to live there. The static state is one in which, all these things being considered, there is no reason for changing the place of one's abode. This implies more nearly equal density per unit of natural resources than equal density per unit of mere area. Inequality of advantage due to location is what is leveled out, and doing this does not require nor permit that population should everywhere be equally dense per square mile or per acre.

Effect of Differences of Occupation.—Regions given over to agriculture naturally sustain more people than those devoted to grazing, and those which are devoted to manufacturing sustain more than either. In countries in which, as in Great Britain, manufacturing is so disproportionately developed that products must be largely exported, while food must be largely imported, given areas sustain more inhabitants than they do in any agricultural or grazing region and more than they do in any region where grazing and tillage, on the one hand, and manufacturing, on the other, are well balanced. In mills and shops auxiliary capital so abounds as to take the place of the abundant land that is available in the other cases for making labor fruitful, and in villages and cities labor does not overtax the resources of the soil any more than it does on farms. It has area enough to live and to work on and tools and materials enough to work with. In a generally crowded country, the resort to commerce and manufacturing relieves the pressure on the land, cities abound, and an abundance of capital averts the danger of a disastrous overcrowding.

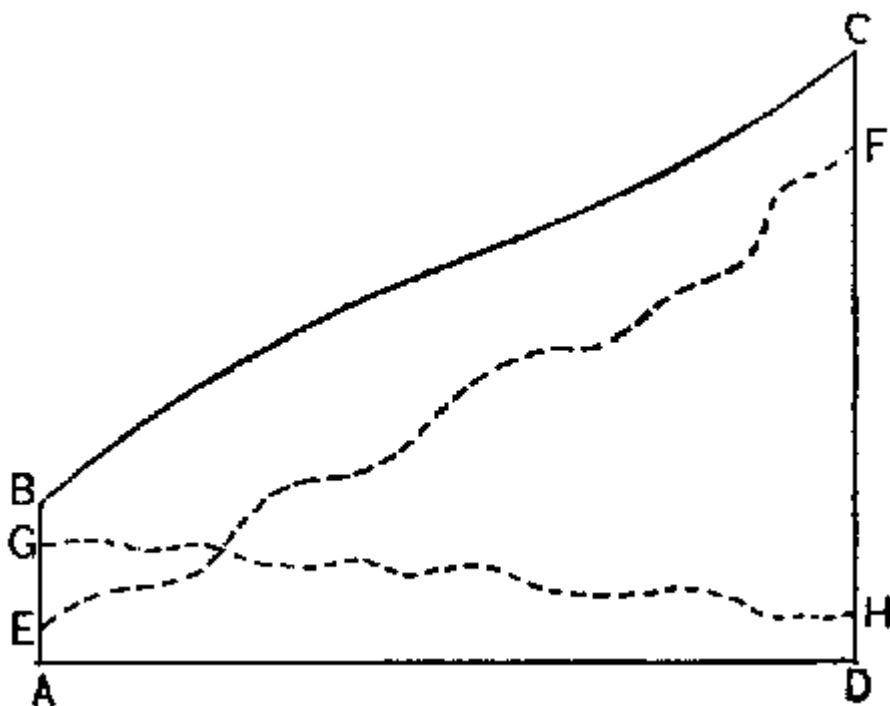
An approximately Static Distribution of Population.—The apportionment of population among the different sections of a country may be nearly normal, while migration may still go on from that country as a whole to remote parts of the general area which we include in our present study. There may be small reason for moving from one part of Germany to another and large reason for going from Germany to America. This larger movement occupies a long time, while certain other adjustments may be made more quickly. Within Germany and within the United States labor may be well apportioned among the different occupations. There may be in each country about the right comparative numbers of cotton spinners, iron workers, gardeners, wheat raisers, etc.; or in other words, the distribution of labor among the industrial groups may be approximately normal both within the one country and within the other. It may further be true that the division of occupations between the two countries in their entirety is about what, in the conditions now prevailing, economic law calls for. There are certain industries which now have their habitats in Germany and certain others that have their habitats in the United States, and this arrangement is partly due to the comparative density of the two populations. Because there are so many persons per square mile of land in Germany there is there a certain preponderance of manufacturing, and there are in America less manufacturing and relatively more agriculture. In that remote time when the relative density of the two populations shall become static, America will have reason to increase the comparative amount of the manufacturing and thus put herself in this particular more nearly on a plane with Germany. This occupation has its normal abode in regions of comparatively dense population, and a gain in comparative density means an increase in the amount of productive energy devoted to it. The place for the mill is where the land is crowded, and the better place for the work of tillage is where it is not so.^[2]

How an Unnatural Distribution of Population may be Treated.—So long as the slow movement of population from country to country remains incomplete, the ultimate division of occupations between the countries can never be completely static. It is therefore with a division that is only approximately static that we have first to deal, and this is realized *when in view of the comparative density of population in the different regions which now exists* occupations are naturally apportioned.



The base line *AD* of this figure stands for the part of the world in which economic law works rapidly and encounters comparatively few obstructions; and the extension of the line represents the lands outside of this region in which the laws are sluggish in their action. It is as though this base line were a section of a vast surface including both civilized and primitive states. *AB* represents the smallest population per unit of land of a given quality within the central area, and *DC* represents the largest, while the ascending line *BC* shows the gradations of essential density in the peopling of different parts of it. At the point *A* the pressure of the population on the resources of the soil is least, while at the point *D* it is at its greatest. At the point *A* a man can get much out of the soil as the return for his own bare labor, while at *D* he can get comparatively little; and at intervening points on the base a man gets more than he does at *D* and less than he does at *A*. His gains measured in bushels of wheat, etc., vary inversely as the density of the population and so decrease from the left of the figure toward the right till the point *D* is reached. The occupations of the different localities are determined by these facts.

How Occupations vary with Differences of Land Crowding. —Crowding the arable land causes labor to flow naturally to manufacturing occupations, since in these it is not so greatly handicapped in comparison with the labor of more sparsely peopled regions. In a cotton mill in Manchester a man may contribute as many yards per day toward the product of the mill as he would in a mill in Fall River; but on an English farm one man's labor does not create as much produce as it does on an American farm. The large amount of available land per man in America has a great effect on the amount that a man can produce by tilling it, but it has very little effect on the amount of the cotton goods that his presence and labor in the mill insure. In raising crops, therefore, the Englishman is at a more serious disadvantage in comparison with the American. The fact is expressed in a practical way by saying that the English labor is cheaper and is therefore more available for making things that are exported to the distant markets of the world than is labor of the same kind in America; but the reason for this cheapness is primarily the land crowding, which reduces the productive power of a final unit of labor in the former country. Because the man cannot get for himself many bushels of wheat per annum by working on land he can afford to work in a mill at a rate corresponding with the value of the produce he could secure as a cultivator. ^[3]



General Differences between the Condition of Densely Peopled Regions and that of Sparsely Peopled Ones.—In a very general way it may be said that the comparative amount of manufacturing should naturally vary directly with density of population, and that the comparative amount of agriculture should vary inversely to it. In computing density due regard must, as has been indicated, be paid to the quality of the land as well as the area, since a number of inhabitants which would unduly congest a sterile agricultural region can be well maintained on a fertile one. In the accompanying figure the line *AD* inclosed by the vertical lines represents the part of the earth which we have called central, and the left side of it is the part of this area which has the sparsest population, while the right side is that which has the densest. The rising line *BC* represents the varying density of the population in different parts of the broad area we regard as general economic society, the dotted line *EF* may be taken as expressing the increase in the part of the labor and capital of the country devoted to manufacturing as population becomes denser, *AE* measures the proportionate number of persons engaged in manufacturing in the region of sparsest population, and *DF* measures the comparative number in the region most densely peopled.

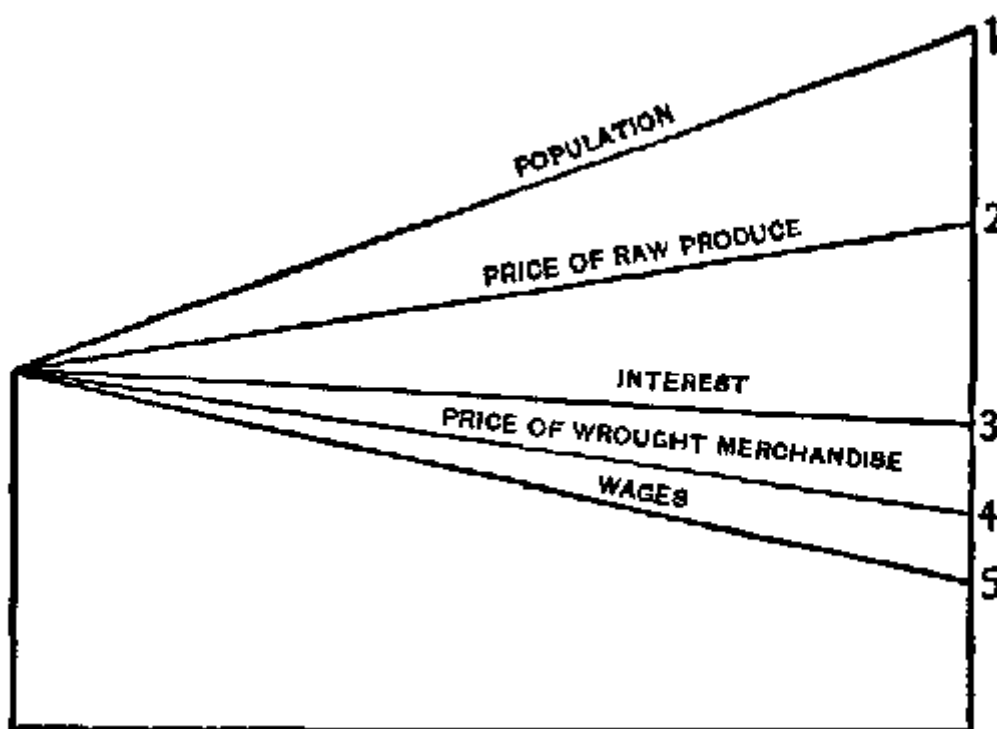
AG and *DH* represent the numbers engaged in agriculture in the two regions, and the descent of the line *GH* represents the predominance of agriculture in the sparsely populated part and the subordination of it in the part that is densely populated. If we assume that capital in the different types of employment varies as does labor, the descent of this line toward the right means a decline in the fraction of the whole force of labor and of the whole fund of capital devoted to cultivating the soil; while the upward trend of *EF* means the enlarging proportion of labor and capital devoted to manufacturing as we pass from a region of sparse population to regions more and more crowded. The wavy character of the two dotted lines is designed to express the fact that local conditions other than mere density of population favor the one type of occupation rather than the other; and moreover, nothing in the figure is intended to mean that the increase in manufacturing and the comparative decrease in tillage from the left of the diagram to the right are in any exact numerical proportion to the increase in the density of population. The figure as a whole rudely represents the fact that an approximation to the static distribution of population insures an approximation to a static apportionment of occupations within the described area and indicates the general nature of that apportionment.

How Cost of Production and Cost of Acquisition are Equalized.—The costs of moving goods from place to place—including in these costs commercial charges and duties imposed by governments—are the cause of most of the manufacturing that is done in the region represented by the left side of the diagram, except the production of such articles for immediate or local consumption as are

necessarily made at or near the places where they are used.^[4] Tailoring, blacksmithing, carpentering, general repairing, etc., would always be done in that region, but many kinds of staple goods capable of being transported would, in the absence of duties on imports, be made chiefly in the region of dense population and cheap labor.

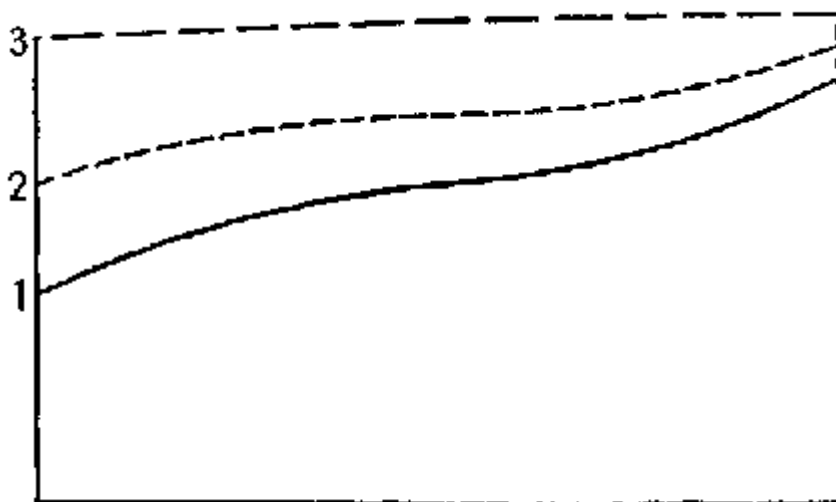
The general rule for determining whether a branch of manufacturing can survive in the area of abundant land and well-paid labor is as follows: it can do so if the cost of making the article which this branch of business is devoted to producing is as low as the cost of acquiring it by exchange. The cost may in both cases be reduced to bare labor and the rule will then stand thus: if ten days' labor will make the article and if nine will make something that can be exchanged for it—*i.e.* if all the costs of the exchange can be covered and the thing can be brought from abroad for a total expenditure of nine days' labor instead of ten—the manufacturing of that article will not survive. In a region of abundant land and well-paid labor it is chiefly the tolls which governments exact which make it as costly an operation to get the manufactured products by producing other things to barter for them as it is to make them directly. Density of population, overworking of land, meagerness of returns to agricultural labor—these are the conditions that primarily fix the habitat of most kinds of manufacturing. In the case of particular products these influences may be overcome by the presence in limited parts of the sparsely settled area of exceptional natural advantages for production. Natural gas, special ores, particular kinds of lumber, etc., may draw some branches of manufacturing to the region of fertile land and high wages; but as the comparison which we are making is the most general one which it is possible to make we are safe in our assertion that, in the main, manufacturing processes tend, in the absence of exceptional influences, to concentrate themselves in the region of dense population and of meager earning power of labor.

The Approximate Static Adjustment of Prices.—In the main, and with tariffs as they are, the price of raw products is somewhat lower at the left of the figure, while that of highly wrought merchandise is markedly lower at the right of it; and with the comparative density of population as it is and with no change of commercial policy on the part of governments, this condition may be expected to continue. It is an approximately static adjustment of prices. Purchasing manufactured goods in Europe will long be profitable if they can be passed duty free through the customhouse, while food will be somewhat cheaper in America.



Static Wages and Interest.—As has been said, the wages of labor are comparatively low at the

right and high at the left of the figure, while interest varies in the two regions in the same way. It is lower in the crowded area. This is not because of the presence of many men, for this influence alone would tend to sustain the productive power of capital and the consequent rate of interest, and in fact the interest on capital in Europe would be lower than it is if the population there were sparser. The rate which prevails is fixed by the productive power of a very large fund of artificial capital utilized by a large population meagerly supplied with land. This last item is decisive in the case and is a primary cause of low interest. The full statement of these facts, made in graphic form, shows an ascending line of density of population, as we proceed from left to right, an ascending line of price for raw produce, a descending line of price for highly wrought merchandise, and descending lines for wages and interest. All these lines represent the facts in a broadly general way. They deal with averages and not with particular rates. The labor whose earning power descends along the line numbered 5 is of many kinds, and the produce of which the average values vary along the lines numbered 2 and 4 is of many varieties. The rate of ascent or descent of the lines has no especial quantitative significance, and it is therefore not implied in the figure that wages decline more rapidly than the other factors. Moreover, it is such large areas as those of England, Germany, France, or the Mississippi Valley, including both cities and rural lands, that we have in mind when we speak of the density of population as ascending along the line numbered 1. Anywhere we expect to find cities containing more persons to the acre than rural districts. The purpose of the figure is to enable us to take in at a glance five different adjustments that in the main are to be regarded as approximately static within the great region described as the economic center of the world.^[5]



Slow Change of the Foregoing Adjustments.—The line which represents the comparative density of population is of course slowly changing position as migration goes on from the older centers of population to more newly occupied regions. If the present distribution of population be represented by the line numbered 1, the distribution a hundred years hence may be represented by the dotted line numbered 2, and that which will exist after five hundred years shall have passed may be represented by the dotted line numbered 3. Even within the economic center the comparative density of population in different divisions is therefore not to be treated as strictly permanent, and it is not to be treated as in any sense permanent when we are forecasting effects that will be realized several centuries hence. For a problem involving a score or two of years the general conditions we have described may be treated as, in the main, abiding.^[6]

FOOTNOTES

^[1] This is far from implying that economic laws do not work in the excluded outer area or that no effects are produced within the central area by causes that originate in the

outer zone. How these things take place we shall later see.

[2] It will appear that manufacturing reacts on the density of population, first, by retarding emigration from the thickly populated country as a whole; and secondly, by causing local movements within the country, whereby cities and villages grow, and relieve what would otherwise be an excess of labor in agricultural regions.

[3] In this connection see the discussion of the principles of international trade in J. S. Mill's "Principles of Political Economy," Book III, Chapter XVI.

[4] There can be no large area from which manufacturing is excluded. The rural hamlet has its blacksmith, wheelwright, and carpenter, its sawmills and gristmills; and manufacturers of sashes, doors, furniture, and many implements abound where agriculture is the general industry. Special advantages for production insure the introduction of other industries, and the advantages of being near to customers is enough to maintain many of them. Repairing must, of course, be done everywhere, and in making some articles for local use it is best that the artisan should be where the customer can always reach him. A large cost of transportation favors local industries, a high degree of productivity in agriculture has an unfavorable influence, and a protective tariff on manufactures reduces the returns from agriculture and favors manufacturing industry.

[5] The law of the distribution of occupations over the area represented by the diagram would, if it were more fully developed, present an amplification of the law of International Trade stated in Mill's "Political Economy," according to which countries naturally produce, not only the things for the making of which they have the greatest absolute advantage, but those for which they have the greatest relative advantage.

[6] The reason for confining attention to the central zone is partly, as we have stated, because here only do we get a quick response to an economic influence. Overproduction of any article quickly lowers the value of it throughout the area, and a mass of unemployed laborers affects wages throughout the area more speedily than it does in the great environing zone.

This, however, is only one reason for this limitation of the scope of our immediate study. A serious fact is that, if we include the entire world, we cannot establish, in the way we have proposed, the natural standards toward which values, wages, and interest are tending. It will be recalled that in the static division of this treatise we have attained a "natural" standard of wages by assuming that all dynamic changes were to cease and that labor and capital were to move to and fro in the system of industrial groups till each of these agents produced as much in one subgroup as in another. A computation of this kind might, within a limited area, be made periodically, say once in ten years, and if this were done it would give a series of static standards of wages. Now these standards become higher as time advances. The static rate of pay for labor is, as a rule, higher at any one date than was the standard for a date ten years earlier, and lower than will be that for a date ten years later. The normal rate of pay about which actual wages fluctuate is a rising one.

Now, if we introduce in imagination an absolutely static state for the world at large, we shall have to assume that growth of the general population and increase of the aggregate capital both cease, and that inventions and new coördinations are no longer made. We must then wait long enough to allow static distribution of industries to be made over the whole world and to let each industry find its absolute habitat. This would involve causing methods of producing any commodity to be unified the world over. Hand labor in the Orient would have to give way to machine production, as it has done in Western lands. For a strictly static adjustment indeed even the density of population in the different sections would have to be brought to a virtual equality. While this nearly interminable process was going on, it would be needful that such dynamic changes as inventions and discoveries bring in their train should be absolutely precluded. Stop making new kinds of machinery and wait for centuries to allow a static adjustment to be made over the whole earth—such would be the order.

Now, such a test as this would show falling wages in the more favored parts of the earth, whereas the facts show rising wages. The influx of population from the East, unrelieved by a corresponding influx of new capital and by more fruitful methods of

production, would cause the earnings of an American laborer to fall, and we should, on the basis of such a test, conclude that his wages in the long run are destined to become lower in consequence of the movement of the vast populations that now congest great Asiatic countries. We should have vitiated the problem by holding the growth of capital and the progress of invention in abeyance. This may be done within a limited area without giving a false result, because there adjustments are more rapid, and waiting for them does not involve the long-continued paralysis of the powers that make for greater wealth for laboring humanity. Apply the test of the static state to the economic center, and it will give a generally true result; but it will give a false one if it be applied to the world as a whole. The merely static adjustment of the world would take more centuries than we care to reckon, and no truth that we are seeking is revealed by assuming that for such a period the forces of progress are brought to a standstill.

CHAPTER XIV

EFFECTS OF DYNAMIC INFLUENCES WITHIN THE LIMITED ECONOMIC SOCIETY

How the General Unification of Methods of Production Calls at First for an Increased Exportation of Capital from the Central Area and Checks the Immigration of Laborers.—A study of the causes of the interchanges which take place between the economic center and its environment shows that the movement of goods, the diffusion of modern methods of making goods, and the movements of capital and labor across the border of the economic society we are studying are interdependent. Opening a field for a profitable export trade increases the productivity of labor at home and tends to attract immigration. On the other hand, establishing in the outer zone a market for the products of the center prepares the way for introducing modern manufactures into the more densely peopled parts of the outer area. The company that sells cotton goods to the Chinese or the Hindoos will find that there is more to be made by utilizing the cheap labor of those peoples for making the goods by efficient machinery. Commerce tends to diffuse a knowledge of the most economical processes of manufacturing, and this interposes a certain stay on migrations of labor toward the center. It will in time help to retain Chinamen in China and Hindoos in India. It does, however, cause a movement of capital from the center outward, followed in time by a creation of wealth in the outer zone for proprietors residing within the center. The Englishman draws dividends from investments in many lands not within the field covered by the present studies. In so far as he reinvests them, as capital, in those lands, they supply a need that, without them, would have to be supplied by a new exportation of capital from the home country, and they therefore tend to check such exportation. In so far as the dividends are brought home they directly neutralize a certain amount of exportation of capital.

Effects experienced within Economic Society from Interchanges with the Environing Area.—The introduction of improved methods of production within the central area usually calls for an expenditure of capital there, and this is largely furnished from the net profits from previous economies in production, and will, in its turn, furnish net profits that will convert themselves into the capital needed for applying future inventions. The study of the causes of an increase of capital, as well as of each of the generic changes that are going on within the center we defer for later chapters; but at present we need to know that the changes going on within what we define as economic society are affected by the intercourse which that society maintains with its environment. Immigration across the outer boundary of the general division enhances the rapidity of growth of the population within it, while emigration reduces it. Exporting capital in itself reduces the rate of accumulation at home, and importing increases it. Introducing into foreign regions economical methods in use at home, modifies the trade which goes on between the great areas, and there is a perpetual rivalry between the direct and the indirect process of obtaining goods at home. When a unit of labor can directly make more of A''' than it can procure by making A and exchanging it abroad for A''' , the manufacture of A''' is legitimate and profitable, but when the unit of labor can procure more of A''' by the indirect process in which an exchange with a foreign region intervenes, static law requires that this indirect process be resorted to. We should make A and buy A''' in order to get the most of the latter commodity. This is the essence of the time-honored argument for freedom of trade, but the conclusion to which it leads is modified by a consideration of further dynamic influences which will, in due time, be presented.

How we may get Valid Results by Studying only a Part of the World. —It is entirely possible to study by themselves the activities of such a part of the world, and we will therefore draw a line of demarcation about the countries which constitute the economic center of it, and thus include an area within which economic causes produce speedy effects. Each part of this area quickly responds to influences that originate in any other part. If the steel mills in America make radical improvements in their machinery, this change should, in the absence of a strong monopoly, affect

the price of rails in England, Germany, etc. Within the central region wages and interest tend toward uniformity, though, as we have seen, they do not attain it. Across the boundary which separates this center from the outer zone, economic influences act in a more feeble way and are unable to bring rates of wages and interest even to an approximate equality. Western Europe, America, and whatever regions are in very close connection with them, we treat as a society, with the remainder of the world as its environment. This center trades with the enviroing region, sends some capital and labor thither, and draws some of each thence to the home countries. Willingly or otherwise, it instructs the people of the outer region in modern methods of industry, and thus causes what we may regard as a slow annexation of a part of the outer zone to the economic center and a modification of the character of industries at home and abroad. The principal movement of labor is in an inward direction, and from our point of view it is immigration not into one country merely but into all economic society. The predominant movement of capital has been outward.

Mode of Studying Interchanges between Center and Enviroing Zone.—All these movements have to be recognized in a study of the economic life of the central society. How, for example, is commerce with undeveloped regions to be regarded if we have the center only in view? It is simply one of two possible ways of getting goods. The people of the center can make a commodity that they use, or they can make something to send into the outlying countries in exchange for it. In the latter case they acquire it indirectly rather than directly, but they acquire it by their own industry in the one case as well as in the other.

Natural Selection of Modes of procuring Usable Goods.—Under natural influences, as we have said, men select the most economical way to get what they use, or—what is the same thing—they select the mode of utilizing their own labor and capital that will give them the largest return in goods. There is competition between different methods of directly making goods, and the best method survives. The man with a good machine undersells the man with a poor one; this latter producer must improve his equipment, or fail, and appliances thus tend toward a maximum of efficiency. In like manner there is competition between the direct and the indirect mode of obtaining goods. The man who, by using a certain amount of labor for a week in making steel for exportation, can obtain in exchange fifteen yards of silk, can undersell and drive from the field the man who, by using the same amount of labor for a week in silk making, can produce ten yards of silk. The importer naturally supplants the manufacturer when, by bartering with foreigners the product of a given amount of labor, he can get from them more than can be produced at home by the same amount of labor. The manufacturers naturally survive when direct production gives the larger returns. In our studies of the economy of the society that is most advanced and central, we may treat whatever is imported as, in an indirect way, produced. In a sense the activities of that society are nearly self-contained since, by the direct or the indirect method, the people produce within their own boundaries the most of what they consume. In doing so they naturally use with a maximum of economy the forces at their command, and resort to traffic when that is profitable.

Mode of Treating the Exportation of Capital.—Capital is moving across the boundary mainly in an outward direction. This fact, standing alone, would be equivalent to a mere retarding of the rate of increase of capital within the economic center; but the exported capital, as it is used outside of the exporting society, produces an income for owners living within it. The income comes in kind, since it takes the form of goods which are an addition to those imported in the course of ordinary exchanges. This tribute paid to capitalists within the industrial center comes chiefly in the form of consumers' goods, the receiving of which does not entail the producing of something to send away in exchange for them. The material agent which creates the imported goods remains outside of the society, and sends its product into the society with no offset. The fact of such an income coming from beyond the pale of an economic society has compelled us to qualify the statement that the economy of the society is self-contained, for there is a small part of its income which is not created within its borders. This comes about by the exportation of capital and the importation of some of its products.

Effects of Drawing Interest from Investments beyond the Social Boundary.—Not all of these are

consumers' goods. Some capital goods are imported and, moreover, many consumers' goods are passed over to the group called *HH''* in our table,—the one that makes active instruments of production,—and in this indirect way the earnings of capital invested abroad add to the amount of capital at home. In the long run the exportation of funds for permanent investment may, by its other and more indirect effects, increase the supply of them at home. The literal fact in each year is that what is exported is itself a reduction of the amount that would otherwise be added to the home supply, but that the income accruing from what has been exported in earlier years makes an addition to what is in this year accumulated at home. Primarily, the exportation of capital is to be treated as causing a modification of the rate of accumulation of capital and, in a long term of years, an increase of the rate.

Movements of Labor.—Laborers cross the boundary in both directions, but inducements favor the inward movement. In the absence of positive obstacles the denser populations of Asia could overflow into America with a startling rapidity. Such a movement, on whatever scale it occurs, is to be treated as causing an acceleration of the rate of increase of the population within the center. Whatever results arise from growth of population within are emphasized by immigration.

The Assimilation of Economic Methods and Forms of Organization. —People without the center are borrowing from it the newer and more efficient methods of production. Already Asiatics are making some things by machinery, and when they shall do it more generally there will take place changes that will be very revolutionary in their own economic life and will react on the life of the center itself. Learning to use a thousand and one machines will rend China and disturb Europe and America. In general, better appliances and a more efficient organization will make it possible for Asia to create for herself, and ultimately export much that she now imports, and this will react on the character of the industries of America and Europe. We shall somewhat modify our industries in order to get the benefit of new openings for commerce, and some of the things which we now directly produce we may find it more profitable to get by exchange, which is indirect production. On the other hand, some foreign products which we now get with great economy of labor, because the goods we exchange for them are scarce and dear in the countries that receive them, we shall get on less favorable terms, because the goods we now send to the foreign lands will have become there more abundant and cheap. In general, we must regard the opening of a profitable avenue for trade as we should the invention of a new machine, the discovery of a better electrical transmitter, or the utilizing of a cheaper motive power. It gives us more goods as the fruit of a given expenditure of labor and capital and affords a profit which, as we shall see, comes first to *entrepreneurs* and later to laborers and capitalists within the pale. Ultimately, those living beyond the pale will get a share of this gain.

Summary of Facts concerning the Economic Center.—We may, then, regard a certain limited part of the world as a society in itself. It is modified by its environment, but, in an important sense, it has a self-contained life. The economic changes which go on within it can be grouped under the five generic heads: increase in the amount of labor, increase in the quantity of capital, improvement of method, improvement in organization, and changes in the wants of the individual consumers.

The Geographical Boundaries of Society not Fixed.—The boundaries of this central area are not fixed. As relations between the center and the part of the outer zone which is nearest to it become more and more intimate, the adjacent region takes on the character of the center. It is, in an economic way, assimilated to it; and in this way the center may be regarded as annexing to itself belt after belt of the environing world. Ultimately it will doubtless annex the whole of it; and for this reason, even though we confine our studies to the center, we shall establish a system of economic laws which will apply, in the end, to all the world. This indeed is not the only way in which the economic life of the outer area comes into the economist's purview, for he can study it for itself. This zone has its peculiar life, which is a distant reflection of the life of the center. It is a type of economic activity in which all the primary forces work, but in which friction abounds and adjustments are made with extreme slowness. For the present, what interests us is the life of the center itself, and in studying this we take account of the influence of the environment. The effects of these influences are first seen in changes in the rate at which the five general dynamic

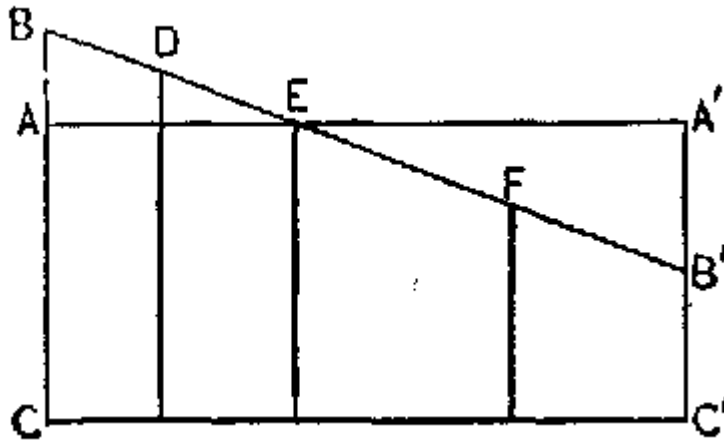
movements go on within the center. The grand resultant is more rapid progress within the center.

What is involved in a Full Study of the Relative Density of Populations.—A full treatment of the subject of the comparative density of population in different places would include an extended study of the kinds of industry which find their natural homes in densely peopled countries and of those which flourish in sparsely peopled ones, and a much more detailed tracing than it is possible here to undertake of those changes in the character of industries everywhere which result from a leveling out of differences in population. Clearly, if all America were to become as crowded with inhabitants as are Holland and Belgium we should develop industries of a different type from those that we now have, and the change would be in the direction of producing relatively more form utilities and relatively less of the elementary utilities. Labor and capital would move from the subgroups which in our table we have called A, B, and C toward A''', B''', and C'''. We should spend more of our energy in making finished goods and less in getting raw materials. I shall note in a very general way the changes in social industry caused by increase of population without looking forward to that remote time when the density of population shall be equalized.

Why an Approximately Static Adjustment of Industries within the Central Area permits Unequal Density of Population in Different Parts of It.—We exclude from view the ultimate static adjustment of the whole world, and content ourselves with an approximate adjustment within society as we have defined it. Even within this limit there are inequalities in the density of population which it would require a very long time to remove, and a perfectly static state cannot be reached till they are leveled out. The selection of industries in Texas and in Belgium cannot be, in the ultimate sense, natural till population in these two regions is so adjusted that there is no longer an economic motive for migrating from the one to the other. If, in order to determine what an absolutely static condition for the central society would be, we were to apply the rule of imagining all new dynamic influences precluded and of allowing time enough to elapse to bring about a normal apportionment of population within that limited area, we should encounter a measure of the same difficulty which confronted us when we proposed to attain a similar static state for the entire world, though the trouble would be less serious in degree. In waiting long enough for population to distribute itself naturally, we cut off influences that, within that period, will affect production and distribution far more than the change in population will affect them. In so far as Texas or any newly occupied region is concerned, the changes thus precluded are those which would have tended to reverse the effect of the redistribution of population. Migrations from Belgium to Texas, if extensive and long continued, would reduce the productive power of labor in Texas; while the dynamic changes which will actually go on within any such period will increase the productive power of that labor, and it is not certain whether the one or the other influence will predominate. For the United States as a whole it is probable that progress in the useful arts will more than offset the influx of new laborers and give to wages a rising trend. If, however, we establish the natural standard of wages by cutting off such progress and letting the influx of labor continue, the test would give a standard lower than the present one,—a false, as well as a discouraging result. The resultant of all the changes we are about to study will probably give to the future pay of labor in America a rising trend.

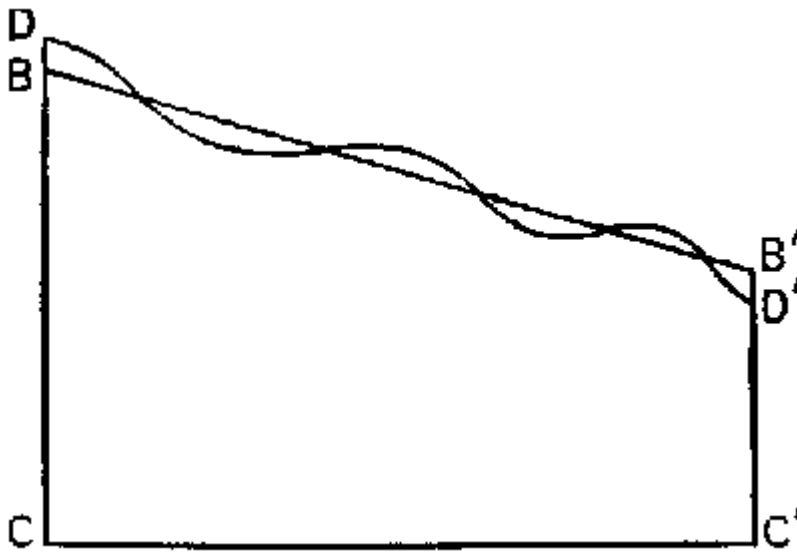
How Industries adapt themselves to Unequal Density of Population.—In view of this fact it is necessary to recognize a proximate rather than an ultimate static state as that toward which the adjustments now going on are immediately tending. We will treat the unequal density of population within our economic society as something which will last, not forever, but so long that it will not be removed or appreciably affected within the period required for the other adjustments that we are studying. Given a population that is dense in Belgium and sparse in Texas, and competition will cause the industries to take on the types which they would have and retain if that difference in density were destined to be permanent. The type toward which the economic life of both regions is tending is thus a proximate rather than an ultimate one. Each region will, in the near future, be of the type toward which influences which do not involve an equalization of population are impelling it. We get the true direction of the change that is going on in the earning power of labor and in the shape of the industrial organism in both regions by recognizing the fact that the differences in the

density of their populations will continue through the period which we are considering.



If the line BC represents the productive power of a unit of labor in a region which is sparsely peopled, and the line $B'C'$ represents the productive power of a unit of labor in a densely peopled region, we may assume that AC and $A'C'$, which are equal to each other, represent the product of a unit in either locality when, general progress being precluded, the difference in the density of population should have been leveled out. Move people at once and in a wholesale manner till there is nothing to be gained by further moving them,—let pressure of population on the land be fully equalized,—and you may be supposed to create a condition of uniform productive power for laborers of a given grade in the entire region. The horizontal line AA' , which is everywhere the same distance above the line CC' , represents the universal level of the productivity of labor in such a theoretical condition. The line BB' represents the actual and different levels of the natural earnings of labor in the different regions. Assuming that all other static adjustments are made, but that the equalization of population has not taken place, labor will earn the amount BC in one place and the amount $B'C'$ in another. Somewhere it will earn an amount represented by the vertical line descending from D and somewhere that expressed by the line descending from F , while there will be places where the earnings of labor are measured by the line descending from E , which is the amount that labor would everywhere create and get if the population could be quickly made normal in all regions. The standard of wages for the whole of the great region, largely European and American, which constitutes the economic center of the world, shows varying levels in different countries and parts of countries, and the actual rates in every place fluctuate about this proximately normal standard for that place, the standard rate in one locality being higher than that of another.

The line $A'B'$ exceeds in length the line AB , and this expresses the fact that equalizing the pressure of population on the land in different regions adds more to the productivity of labor in the region now crowded than it deducts from that of labor in regions now sparsely peopled. The overcrowding does greater and greater harm the further it is carried, and therefore taking away a surplus of people from a region which has suffered greatly from overcrowding affords a relief which more than offsets what is lost in other places by a moderate increase of population. Moreover, the fact has to be recognized that at present there are ten square miles of sparse population for one that is very densely peopled, and reducing all to an equality would add only slightly to the number of inhabitants of the regions that now contain few of them.^[1]



If the line BB' represents the unequal level of *natural* wages in different localities, on the assumption that populations remain unequal, the undulating curve DD' which crosses and recrosses the line BB' represents actual local rates fluctuating about the standard ones.

How a Static Adjustment for the World is a Dynamic Influence within a Limited Part of It.—Commodities are, by traffic, crossing the social boundary in both directions, and with the goods there go and come influences that affect the economic life of the central society. Methods and modes of organizing business are taught by each region to the other, though most of the teaching is done by the people of the center and most of the learning by those of the environment. All this affects the center and falls within our study. It has dynamic effects within the center, though it is only a part of a static adjustment for the world as a whole. If the grand bank of Newfoundland were to subside to the level of the middle of the Atlantic, there would be a great rush of water toward the place that the banks now occupy, but this would be only what is required in bringing the general level of the sea to an equilibrium. It would be essentially a static phenomenon, but for the region of the banks it would be dynamic in the highest degree. A rush of population from China to America would be a change tending to establish an equilibrium of population in the world, but it would be a startling bit of dynamics for America. Teaching the Chinese all the mechanical arts that we know would be creating an equilibrium of another sort, in which methods would be similar in the two countries; but for China itself this acquiring of practical arts would be dynamics acting on a vast scale. What is a static adjustment for the world is a dynamic change for parts of the world, and all such changes that can occur within the area of economic society proper and within the period we can wisely include in our study we need to take into account. Changes in population, wealth, method, and organization must be studied, however they may originate.

FOOTNOTES

- [1] Exceptional local conditions may make an influx of population for a time a cause of greater productivity rather than of less. The general and permanent effects are otherwise, and it is on these that the present argument rests.

CHAPTER XV

PERPETUAL CHANGE OF THE SOCIAL STRUCTURE

Perpetual Change of the Social Structure.—We confine ourselves to that economic society *par excellence* which we have called the industrial center of the world. In this region economic influences are forever changing the very structure of the society itself. They move labor from place to place in the system and they transfer capital to and fro in the same way. If we think of our table of groups and subgroups as representing the whole of this great industrial world, we must think of labor and capital as in a perpetual flow from subgroup to subgroup, making some industries larger and others smaller by reason of every such movement. The great force of labor and the fund of capital are like restless seas whose currents carry the water composing them now hither and now yon as the direction and force of the moving influences change.

Movements of Labor within the Group System caused by Increasing Population.—If the population were to increase while the amount of capital and the mode of using it remained the same, the effect would be a downward movement of both labor and capital in the series of subgroups by which we represent industrial society. Labor and capital would tend to desert the subgroups A''' , B''' , and C''' in our table and to move to A , B , and C :—

A'''	B'''	C'''
A''	B''	C''
A'	B'	C'
A	B	C

Causes of Downward Flow of Labor in the Group System.—A larger population means, of course, not merely an increase in the amount of labor performed, but also an increase in the number of consumers. It means more mouths to feed and more bodies to clothe. It entails also, according to principles that we have already studied, a lower earning power and a lower rate of pay for labor. This means that simple food, cheap clothing, inexpensive houses, furnishings, etc., constitute a larger element in the consumers' wealth of society than they have heretofore done. Society uses fewer luxuries and more necessities, and the necessities of life are products in which raw materials predominate and costly form utilities are wanting. This makes a heavier draft upon the land than does the production of highly wrought articles of the same value.

Luxurious articles are fashioned with a great amount of artisan's or artist's labor and a relatively small amount of the labor of cultivators and miners. The subgroups A , B , and C are the ones that furnish the rawest materials, and it is they, therefore, that receive the largest portions of the new labor that enters the field.

How Economic Friction works to the Disadvantage of Immigrants.—Unless capital grows more rapidly than population, there is a certain friction to be overcome in obtaining places for new laborers. If they come largely as immigrants, they are crowded at the points of disembarkation and are then scattered over a large territory. They may have to gain employment by offering to *entrepreneurs* some inducement to take them. If capital has not increased, and the *entrepreneurs* are in no special need of new men, they will take them only at a rate of pay which is low enough to afford of itself a slight margin of profit. If the capital has already grown larger and the new men are needed, the situation favors them, and their pay is likely to be as high as it was before, or higher.

The Effect of Increasing Capital.—The growth of capital has an opposite effect. It means a lower rate of interest, though it means more interest in the aggregate, since it insures a larger fund on which the interest is received. The rate does not decline as rapidly as the amount of the fund increases, and this insures a larger gross income from the fund; and it also insures larger individual incomes for many persons. There is, then, a large number of people who are in a

position to make their consumption more luxurious, and this causes an upward movement of labor and capital in the group system. More workers will be needed in the subgroups A''' , B''' , and C''' , where raw materials receive the finishing touches, and also in the other subgroups above the lowest tier. It is to these subgroups that a large portion of the new capital itself will come, and the labor will come with it. Larger incomes, more luxury, more labor spent in elaborating goods as compared with that required for procuring crude materials,—such is the order.

Effect of an Increase of Both Labor and Capital.—It is clear that a certain increase of capital might practically neutralize the increase of population, in so far as the movements thus far considered are concerned, and a greater increase of capital would reverse the original downward movement caused by the increase of labor and result in a permanent upward movement toward the subgroups A''' , B''' , and C''' . In this case the men occupy themselves more and more in making the higher form utilities. They make finer clothing, costlier furniture, etc., and the new production requires proportionately less raw material than did the old. This is the supposition which corresponds to the actual facts. Capital is increasing faster than labor, and consumption is growing relatively more luxurious; dwellings, furnishings, equipage, clothing, and food are improving in quality more than they are increasing in quantity. Goods of high cost are predominating more and more, and the subgroups that produce them are getting larger shares of both labor and capital. Population drifts locally toward centers of manufacturing and commerce. It moves toward cities and villages in order to get into the subgroups which have there their principal abodes. The growth of cities is the visible sign of an upward movement of labor in the subgroup series.

A Change in the Relative Size of General Groups.—If all the steady movements of labor and capital were stated, it would appear that a relative increase in the amount of labor, as compared with the amount of capital, would enlarge the three general groups, AA''' , BB''' , and CC''' , and reduce the comparative size of the general group HH''' , which maintains the fund of capital by making good the waste of active instruments. Gain in capital estimated per capita would cause relatively more of the labor and more of the fund of capital to betake itself to the group HH''' . The movement toward the upper subgroups which is actually going on is attended by a drift toward this general group. An increase of luxurious consumption and an enlargement of the permanent stock of capital goods go together.

Regularity and Slowness of Movements caused by Changes in the Amounts of Labor and Capital.—The important fact about the movements thus far traced is that they are steady and slow. They do not often call for taking out of one part of the system mature men who have been trained to work there. They are movements of *labor* which do not, in the main, involve any considerable moving of *laborers* from group to group. The sons of the men in the subgroup A do not all succeed to their fathers' occupations, but many of them enter A' , A'' , and A''' , so that labor moves from the lowest subgroup to higher ones. Such a transfer of labor entails few hardships for any one, and in general it is to be said that all the movements of labor and capital which are occasioned by quantitative changes in the supply of these agents are of this comparatively painless and frictionless kind. About changes caused by new methods of production there is a different story to tell. The transformation of the world does not go on without some disquieting results, however inspiring is the remote outlook which they afford. The irregularity of the general movement, the fact that it goes by forward impulses followed by partial halts, is a further serious fact. Hard times present their grave problems, and we need to know whether it is necessary that dynamics—the natural and forward movement of the industrial system—should produce them. This problem is for later consideration.

Movements caused by Changes in the Processes of Production.—Mechanical inventions are typical movers of labor and capital—constant disturbers of what would otherwise be a comparatively tranquil state. Dynamos for generating electricity and devices for conducting it to great distances from its sources have done much to rearrange the society of a score of years ago, as economical steam engines had done at an earlier date. Every device that "saves labor" calls for a *rearrangement of labor* in the system of organized industry.

In a perfectly static condition there would be, as we have seen, a standard shape for all society, which means a normal apportionment of labor and capital among the producing groups and subgroups and also among the local divisions of the general area. The elements would subside to a state of equilibrium and become motionless, as water finds its level and becomes still in a sheltered pool. The body of fluid takes its standard shape and retains it, so long as no disturbing force appears. Now, society would have such a standard shape and would require, in the absence of dynamic changes, a relatively short time in order to conform more or less closely to it, if it were not for the unnatural apportionment of population in different parts of the area that the society inhabits and the obstacles which wholesale migrations encounter. For the solution of problems of the present and the near future we must accept as a standard the quasi-static adjustment of the population and the consequent quasi-static selection of industries in the different local divisions of the broad area—the arrangement that we have described as locating an excess of manufacturing in the more densely peopled areas and an excess of agriculture in the more sparsely settled ones. With this qualification it may be said that there is a standard apportionment of labor and capital among the producing groups, and that these agents gravitate powerfully and even rapidly toward it. If there were a certain amount of labor and capital at *A*, a certain amount at *B*, and so throughout the system, this standard shape would be attained, and the elements would not move, except as a very slow movement would be caused by changes in the comparative density of population of different regions.^[1] This standard shape would long remain nearly fixed if it were not for the appearance of the dynamic influences which are so active within the area we are studying.

Alternations in the Direction of Movements caused by Improved Methods.—In a dynamic state this standard shape itself—the approximately static one—is forever changing. At one time, for example, conditions exist which call for a certain amount of labor at *A*, another amount at *B*, etc. A little later these respective quantities at *A*, *B*, etc., are no longer the natural or standard quantities; for something has occurred that calls for less labor at *A*, more at *B*, etc. If *A* represents wheat farming, the amount of labor that it required when grain was gathered with sickles is more than is necessary when it is gathered with self-binding reapers, always provided that there has been no increase in population, which would require an increase in the food supply. The society therefore will not be in what has now become its standard shape till men have been moved from the wheat-raising subgroup to others.

If the invention of the reaper were not followed by any others and if no other disturbing changes took place, labor would move from the one group, distribute itself among others, and bring the system to a new equilibrium; but it has not time to do this. It begins to move in the way that the new condition occasioned by the introduction of the reaping machine impels it to move; but before the transfer is at all complete there is a new invention somewhere else in the system that starts a movement in some other direction. Before the labor from *A* is duly distributed in *B*, *C*, etc., there is an invention in *B* which starts some of it toward other points.

Why Movements are Perpetual as well as Changeful.—Such improvements are perpetual, and the dynamic society is not for an instant at rest. If the disturbing causes would cease, the elements of the social body would find their abiding place; and the important fact is that at any one instant there is such a resting place for each laborer and each bit of capital in the whole system. As we have seen, the men and the productive funds would go to these points but for the fact that before they have time to reach them new disturbances occur that call them in new directions. Again and again the same thing occurs, and there is no opportunity for placing labor and capital at exactly the points to which recent changes call them before still further improvements begin to call them elsewhere.

Why Technical Changes are more disturbing than a General Influx or Efflux of Population.—When the moving of labor is gradual, it is effected, not so much by transferring particular men from one occupation to another, as by diverting the young men who are about entering the field of employment to the places where labor is most needed. When the son of a shoemaker, instead of learning his father's trade, becomes a carpenter, no *laborer* has abandoned an accustomed occupation and betaken himself to another; but *labor* has gone from the shoemaking trade to that

of carpentering. A man often stays where he is to the end of his life, although during that life labor has moved freely out of his occupation to others. If we represent the facts by a diagram, they will stand thus:—

A	B	C	D	
50	40	70	100	Natural and actual apportionment of labor in 1850.
45	35	90	90	Natural apportionment after change of method in 1850.
47	38	80	95	Apportionment in 1855 when the movement initiated in 1850 is partially completed.
52	41	65	102	Natural apportionment in 1855, with movements then initiated.

A, B, C, and D represent different occupations or subgroups in the table we have before used. At one date a static adjustment called for fifty units of labor at A, forty at B, seventy at C, and one hundred at D. A half decade later, after improvements had taken place at A, B, and D, static forces, if they were allowed to have their full effect, would leave only forty-five men at A, and thirty-five at B, but they would place ninety at C and at D. The first movements that would tend to bring this about are in the direction indicated by the dotted lines. The transfers are made, not by forcing men from A, B, and D to C, but chiefly by diverting to C young laborers who would otherwise have gone to A, B, and D to replace men who are leaving in these groups.

Now, before the transfers are completed something happens that calls for a different movement. Let us say that only three units of labor have as yet gone from A to C instead of five, leaving forty-seven at A; only two have gone from B, leaving thirty-eight; and only five have gone from D, leaving ninety-five at that point. Eighty would then be at C, and the static adjustment would not have been perfectly attained. It is at this point that a new change of conditions occurs, which calls for fifty-two units at A, forty-one at B, sixty-five at C, and a hundred and two at D. C now contributes something to A and B, but it gives more to D; and the fluctuations go on forever. Particular men may, more often than otherwise, stay in their places, since the incoming stream of new labor, by going where it is needed, may suffice to make the adjustments, in so far as they are gradually made; but labor, in the sense of the quantum of energy embodied in a succession of generations of men, is never at rest. It is a veritable Wandering Jew for restlessness and in a perpetual quest of places where it can remain. Moreover, there are to be taken into account changes so sudden that they thrust particular workers from one group to another.

A Perpetual Effort to conform to a Standard Shape which is itself Changing.—We think, then, of society as striving toward an endless series of ideal shapes, never reaching any one of them and never holding for any length of time any one actual shape. One movement is not completed before another begins, and at no one time is the labor apportioned among the groups exactly in the proportions that static law calls for. Men are vitally interested to know what they have to hope for or to fear from this perpetual necessity that some labor should move from point to point.

Questions concerning the Effects of these Transformations.—These changes of shape involve costs as well as benefits. The gains are permanent and the costs are transient, but are not for that

reason unimportant. They may fall on persons who do not get the full measure of the offsetting gains. What we wish to know about any economic change is how it will affect humanity, and especially working humanity. Will it make laboring men better off or worse off? If it benefits them in the end, will it impose on them an immediate hardship? Will it even make certain ones pay heavily for a gain that is shared by all classes? Are there some who are thus the especial martyrs of progress, suffering for the general good?

Natural Transformations of Society increase its Productive Power.—There is no doubt that the changes of shape through which the social organism is going cause it to grow in strength and efficiency. More and more power to produce is coming, as we have seen, in consequence of these transmutations. They always involve shifting *labor* about within the organization and often involve shifting laborers, taking some of them out of the subgroups in which they are now working and putting them into others, something that cannot be done without cost.

Immediate Effects of Labor Saving.—Inventing a machine that can do the work of twenty men will cause some of the twenty to be discharged. They feel the burden of finding new places, and if they are skilled workmen and their trade is no longer worth practicing, they lose all the advantage they have enjoyed from special skill in their occupations. Do they themselves get any adequate offset for this, or does society as a whole divide the benefit in such a way that those who pay nearly the whole cost get only their minute part of the gain? Is there unfair dealing inherent in progress in the economic arts, and must we justify the movement only on the ground of utility, though knowing that a moralist would condemn it? These are some of the general questions that are to be decided by a study of this phase of economic dynamics. We need to know both what the movement will in the end do for humanity and what it will at once do for particular workmen.^[2] In addition to ascertaining what the ultimate results of the movement will be, we need to trace, with as much accuracy as is possible, the effects of the disturbances that are involved in generally beneficent changes.

FOOTNOTES

[1] It is obvious that capital as well as population is distributed with uneven density over the territory occupied by society; but the movement of capital is less obstructed than that of a great body of people, and moreover it is chiefly the fact that the people are not dispersed over the area in a natural way which creates the chief obstacle to the moving of capital. It goes easily when it accompanies a migration of laborers.

[2] Our study may lead to a moral verdict without being itself an ethical study; we limit the inquiry to questions of fact, but perceive that some of the facts are of such a kind that they must lead a reader to condemn or approve the social economic system.

CHAPTER XVI

EFFECT OF IMPROVEMENTS IN METHODS OF PRODUCTION

Displacement of Labor and Capital by Inventions.—Inventions are "labor-saving." Employers are engaged in a race with each other in reducing the outlays involved in producing goods, and a common way of doing this is to devise machinery that will do what laborers have heretofore done. The same thing is accomplished by developing cheap sources of motive power or introducing new commodities which are good substitutes for dearer ones. Mechanical automata have at a thousand points taken labor out of human hands; electricity, which is "harnessing Niagara," may at some time harness waves and winds and make them turn the literal wheels of mechanical progress. Such things, by causing a given amount of labor to produce a larger amount of consumers' wealth, are product multipliers; but this is the same thing as saying that they yield a given product at the cost of less labor, and as we more commonly see their effect in this light, we call them labor savers.

Why Labor Saving is not always and everywhere Welcomed.—To an offhand view it would seem that product multiplying is the greatest blessing that, in an economic way, can come to humanity; and if general and permanent effects be considered, it is so. The solitary hunter who has to catch and club his game would get unqualified benefit from the possession of a bow and arrows; the fisherman would get the same benefit from a canoe, the cultivator of the soil from a spade, etc. Society in its entirety is an isolated being and derives similar gains from engines, looms, furnaces, steamships, railroads, telegraphs, etc. Yet there are persons within the great social organism to whom the benefit *from one special improvement* may be small and the cost great. There are none who are not better off because of *all improvements* past and present.

The General Demand for Labor not Lessened.—It is a matter of common experience that new machines are labor displacers. At its introduction an economical device often forces some men to seek new occupations, but it never reduces the general demand for labor. As progress closes one field of employment it opens others, and it has come about that after a century and a quarter of brilliant invention and of rapid and general substitution of machine work for hand work, there is no larger proportion of the laboring population in idleness now than there was at the beginning of the period.

A Voluntary Reduction of Toil Desirable and Probable.—A full study of the effects of technical progress will show that there is never a reduction of the general field for employment in consequence of it. There is an increase of pay, and this causes a certain unwillingness to work for as many hours as men formerly worked; and there is also a change in the nature of the operations that labor performs, which tends in the direction of more comfort and less painful toil. For the famous statement of J. S. Mill that "It is questionable if all the mechanical inventions yet made have lightened the day's toil of any human being" we may safely substitute, "It is the natural tendency of useful inventions to lighten the toil of workers and to give them, withal, a greater reward for their work." Mechanical progress is the largest single ground for hope for the future of laboring humanity, and by its effects, direct and indirect, it has already insured a great alleviation of toil, with an increase in its rewards. It has helped to counteract the world crowding that for a century has gone on and the diminishing returns from agriculture which the crowding entails. Inventions may make disturbances, and their better effects may be temporarily and locally counteracted; but a society where competition rules is sure to secure the benefits in the end and does, in fact, secure them in greater and greater measure as the years go by. Such are some of the theses which research will justify.

Facts concerning Disturbances incidental to Progress.—We have first to take account of the disturbances. They are prominent in economic discussion and constitute the subject of one of the grave indictments brought against the system of competitive industry. They have actually caused great hardships in the past, as skilled handicraftsmen have seen machines come into use which,

for rapidity and accuracy of work, excel the best results that long apprenticeships formerly gave. Now that machinery has possession of most of the field, there is no longer the former opportunity for displacing hand workers; but the remainder of hardships incidental to progress is not to be overlooked. This part of the dynamic movement involves present local sacrifices for the sake of future general gains. Here, therefore, there are developed antagonisms of interest which may hinder progress and, if they were extensive enough, might conceivably throw a doubt over the future of the working class. While there is no great disposition to question the ultimate benefit which mechanical progress insures, there is some uncertainty as to the process by which this benefit is extended to workers and there is a struggle to avoid the immediate cost. There is, in some quarters, a disposition to rate the cost so highly as to draw the inference that we need to adopt a socialistic plan of living for the sake of enabling workers to avoid the hardships and secure the benefits of "labor saving." It will appear, however, if we grasp the essential facts of what we may call the dynamics of method, that the tendency of it is to reduce the burdens which progress entails, and to diffuse a large share of the benefits of it among the working class. It will further appear that the socialistic plan of organizing industry would at least throw a doubt over the progress itself. Nothing, on the whole, puts the future of industry conducted on the competitive plan in a more optimistic light than the fact of the progress in productive methods which it insures. It is the strongest guaranty of a "good time coming," in which all humanity will rejoice when it comes and should rejoice by anticipation.

The Law that insures the Survival of Beneficial Processes Only.—It is self-evident that wherever there is a saving of labor needed to make a given amount and kind of product, there is an increase in the possible product that is created by the aid of a given amount of labor. If workers themselves get a share of the gains, this fact will show itself through that beneficent shortening of the working day to which we have alluded. The men will be unwilling to stand the weariness and the confinement of working through too many hours and will be inclined to take more holidays and vacations; all of which, when it comes about in a natural way, is an indication that the industrial organism as a whole has put its hand on a new and powerful lever and is enriching its members by means of it. It does, however, have to change the character of its work, and this means that some labor has to be transferred from one subgroup to another. The laborer displaced by an invention at a particular point continues to be wanted somewhere. When he and others have found their new employments, the good result appears,—the increase and improvement of goods produced,—and society as a whole then gets the benefit which would come to an isolated worker who, without remitting his labor, finds his appliances growing better and the fruits of his labor growing larger. The collective body gets a greater income than before, and the workers share in the gain.

Importance of the New Forms which the Social Income Takes.—This increasing income takes the form in which society now requires it, and it is this which brings about the readjustment of labor—or the changes in the amounts of labor used in particular subgroups—which have caused hardship in the past.

Nature of the Incidental Evils to be Dreaded.—The problem we have to face is a danger that labor may be displaced either (1) from the particular point within a productive establishment at which it is now working, or (2) from the productive establishment as a whole, or (3) from a subgroup, or (4) from the general group of which the subgroup is a part. Out of industrial society in its entirety it cannot thus be forced. There is a case in which the men whose crafts are supplanted by machines may all stay where they are and operate the machines; but that involves forcing other men to change their occupations. There are more cases in which these men may stay in the mill or shop that employs them, but not in the same department of it. There are still more cases in which they may stay in their original subgroups, and in a majority of cases they may stay in their general groups. In every instance there are places for them in the working society.

Local Expulsions of Labor.—When a single employer who is one of many competitors in an industry adopts an important labor-saving device, it may be possible for him to keep all his men employed and to let the improvement show itself wholly as a means of increasing the output. He may secure a machine which will do what twenty men formerly did. If it were possible to cut the

uppers of a dozen shoes by the quick stroke of a single die, the machine that carried this armature would do the work of perhaps twelve knives handled by that number of skillful workmen. If the original number of men were retained in the cutting department, and if each of them were furnished with the new appliance, it would mean that twelve times as many uppers would be cut as were cut before the change was made. There would, of course, be no use in trying to do so much cutting of uppers for shoes, without doing twelve times as much sewing, welting, making soles and heels, etc., and to secure all this at once would require a twelve-fold enlargement of the manufacturer's plant. This is too much to secure at once. The manufacturer might perhaps double the output of his mill and nearly double the number of his employees, but that would require only two of the twelve cutters he formerly had. The new workers would be in parts of the mill other than the one where the great saving of labor was effected. Ten men would be removed from the cutting department, and the two left there would cut, by the aid of the new machines, twice as many uppers as the whole number cut before, and that would require the furnishing of a double number of all other parts of the shoes and a double working force to make them. The ten men liberated from the cutting department would be available for this purpose, and new ones would be brought in and set sewing, pegging, lasting, welting, etc. Within a single establishment, therefore, a radical saving of labor at one point usually involves some shifting of labor from that point to others, though it may increase the total number employed in the establishment which secures the economical device.

The Effect on a Subgroup of an Improvement by One Entrepreneur.—If an employer who has this experience is one of a hundred in the shoemaking industry and the only one who secures the cutting machine, the market will receive as large an increase of the product as would be involved by multiplying the output of his mill by two, without requiring that the price should be more than slightly reduced. An improvement which is monopolized for a time by a single *entrepreneur* seldom renders it necessary to reduce the aggregate of the labor in his employment. Far more often it makes it for his interest to increase the number and to put new labor in every part of the plant where no improvement in method has been made. It is often the fact, however, that labor has to abandon other establishments in this subgroup, and enough of it may do so to cause the amount in the entire subgroup to become somewhat smaller by reason of an improvement. In the case of a single employer there is a bare possibility that no one should be moved, in consequence of an economical invention, even from one part of the mill to another. The manufacturer of our illustration might even keep his twelve cutters at work after the introduction of the machines referred to and do twelve times as much cutting, provided that he could quickly increase his output of finished shoes to twelvefold its former amount. There are practical reasons why he could almost never do this; but if he actually did it, he might, by some reduction in the price of shoes, find a market for this increased product. If the reduction of price were great, some competitors would probably go at once out of the business; but it is never the policy of a successful producer to make unnecessary haste in reducing prices, and, as a rule, the reduction is gradual. The increase of product from the very efficient mill must cause a certain reduction in the rate at which it sells its goods, and this is apt to force manufacturers who are particularly ill equipped and cannot keep pace with the rate of improvement which their enterprising competitor establishes to go out of business. They thus relieve the market of so much of the product as they have contributed and make a place for the increased output of the newly equipped mill. In such a case the total output from the subgroup is not very greatly increased, and the price of the product does not need to be greatly reduced.

Standard Prices fixed by Cost in the most Economical Establishment.—It is a vitally important fact, as we shall soon see, that the price of an article is, in a dynamic society, always tending toward the cost of making it, not in the most inefficient establishment, where it is produced "at the greatest disadvantage," but in the most efficient one of all. The ultimate effect of any great improvement is naturally to close the shops of *all employers who do not adopt it or get an equivalent advantage of some kind*. Ultimately the whole subgroup will be in the state of efficiency it would have reached if the improvement had been adopted by every *entrepreneur* on its first appearance.

The Effect of an Improvement in Production which is quickly adopted by a Whole Subgroup.—When an improvement is immediately adopted, not by one employer merely, but by all employers

in a subgroup, it is likely to cause a quicker displacement of labor from the subgroup as a whole. A very economical machine introduced by its inventor or manufacturer and quickly adopted by all employers at A'' would nearly always force a certain number of laborers to leave that industry and find employment elsewhere, if it were not for one commercial fact, namely, the reduction in the price of the product and the consequent enlargement of the demand for it.

How Labor may be displaced from a General Group.—The amount of A' that can be created depends on the amount of A that can be furnished as material to be transformed into A' , and also on the amount of A' that will be taken for conversion into A'' . This again depends on the amount of A'' that will be accepted by employers at A''' and sold in this last form to the consuming public. If the market for A''' cannot be much increased by a moderate reduction of the price of it, some labor may have to go into the group of B 's or C 's; and in any case there must be new labor in A , A'' , and A''' if the product of A' is increased. We can now measure the difference between the effect of the adoption of an improvement first by one employer and much later by others, and that of the quick adoption of it by all. In this latter case there is not much delay in increasing the output of the goods, and the market for them does not have time to grow larger because of the growth in the numbers and the wealth of the community. Unless the present market will take an enlarged quantity of the finished goods without requiring that the price should go below the new cost of making them, some labor will have to leave the general group.

How Patents may Cause an Increased Displacement of Laborers.—What we often see is the nearly simultaneous adoption of a labor-saving device by all leading employers in one industry. Something like this takes place when the makers of a valuable machine retain the patent on it in their own hands, and press the sale of it on all the producers who have use for it. In this case, however, the makers usually put the price of the machine at a figure that, while it affords an inducement to buy it, does not reduce the cost of the goods that it helps to make enough to cause a great increase in the demand for them. The owners of the patent on the new appliance charge for it "what the traffic will bear"; and until the patent runs out, the users of the machine have to sell their goods almost at as high prices as before. If the machine enables one man to do the work of a dozen, eleven men must find other things to do. They could find them in their own industry if the product of it were enlarged in consequence of the use of the machine; but if the high price of the patented machine prevents this, they must go elsewhere. When the patent runs out, there is likely to be a considerable enlargement of the industry, and how important this fact is we shall soon see.

How Improvements which call Labor to a Particular Establishment may displace Labor from a Group.—Another typical case is afforded when some one employer has for a time the exclusive use of a labor-saving device, and pushes his production to the utmost in order to get the full benefit from it. Here are seen the more characteristic effects of such an improvement. It *draws labor to* the employer who for the time being monopolizes the new instrument of production, but it *turns labor from* the subgroup of which this employer is a member. He enlarges his output and in time this reduces the price of the product. In the field there are marginal mills, or those so antiquated, ill situated, or badly run that, with their product selling at the former price, they could barely hold their own; and now that the price is reduced, they lose money by running. They have to cease operating, and this makes practicable a further enlargement of the product of the efficient mill. Much labor goes thither, but some part of that which leaves the abandoned mills betakes itself to other subgroups. Not often, indeed, does it have to go to other general groups. The cheap transformation of the material A into A' enlarges the market for A' and calls for more labor at A , and it involves more at A'' and A''' . If the change of method had been gradual, the growth of the social demand for A''' would probably have precluded the need of sending any labor out of the entire group of A 's. Even a rapid change often sends labor out of one subgroup into other subgroups of that series rather than into other general groups.

An improvement that should reduce the cost of converting leather into shoes would, by the sale of the shoes, call for more leather, more cattle, more appliances, more tanning, and larger buildings for shoe factories, furnished with more shoemaking machinery and greater motive power, even though the particular machines which were improved by the invention had become so much more

efficient that no more of them were needed. This depends on the extent to which a certain reduction of cost of a product enlarges the market for it.

Principles Governing the Enlargement of the Effectual Demand for One Commodity.—In determining how much a reduction of the price of a single article will at once enlarge the market for it, there are two things to be considered, namely, the elasticity of the want itself to which the article caters, and the extent to which an article catering to a particular want may be substituted for other articles designed to satisfy the same one. The desire for jewels and other articles of personal adornment is very expansive, and a fall in the price of any one article of this kind causes a relatively large increase in the consumption of it. Since the want to which a costly ornament caters is thus elastic, the cheapening of all articles that cater to this want would enlarge the consumption of all of them. The cheapening of a particular one of these articles, if there were in the market many others of the same general kind, would cause that one to be extensively used in preference to the others. By an enlargement of the total amount of decorative articles used and by a relative favoring of a particular one of them at the cost of others, the sale of that one would be doubly increased. Cheaper diamonds might mean an increased use of them without any large reduction in the use of other gems; but if many other gems happened to be available for the purposes subserved by the diamonds the use of these others would be curtailed and that of diamonds would be disproportionately increased.

The Value of Goods as affected by the Existence of Castes.—One of the reasons why the market for jewels is thus elastic is the fact that they serve as badges of caste, as only something of large cost can do. If, therefore, all gems were to become much cheaper, two things would happen: (1) relatively poor people would buy some of them—partly in lieu of imitations and of cheaper real jewels; and (2) rich people would have to buy more and costlier ones than were formerly needed, in order to retain their positions in the social gradations. This principle affects the consumption of a wide range of articles, the possession of which seems, outwardly at least, to stamp the owners as belonging in a certain stratum of society. It increases the demand for fine clothing, furnishings, and equipage, multiplies social functions, and induces participation in all manner of costly diversions. The elasticity of the market for luxurious goods is, in general, greatly increased by the action of this motive. The cheapening of them causes them to be consumed by the lower classes and renders the use of greater quantities or higher qualities of them a social necessity for the higher classes.^[1]

We shall soon see that a reduction in the cost of any one article usually causes the use of it to trench on that of all manner of things which are on the margin of consumption and are not similarly cheapened.

Changes of Cost of Different Goods Never Uniform.—The cost of all articles is never reduced at the same time, and it is impossible that all of them should remain in the same order of desirability in the estimation of purchasers. Many things, however, are often cheapened at the same time, though in different degrees. Whatever furnishes a very common raw material at a lower cost than has prevailed, as did the invention of the Bessemer process of steel making, makes everything into which that material enters cheaper. By reducing the cost of railroads and engines, cars and steamships, the Bessemer process indirectly lowered the prices of goods that have to be carried, which means practically everything. A cheap motive power acts in the same way and lowers the costs of producing an unlimited number of goods. Even in the case of such general improvements as this the reductions of price are not uniform. Some goods are affected more than others. Cheap steel lessens the cost of bridges more than it does that of dwelling houses, and in the case of many improvements the effect is confined to a limited class of products, if not to a single one.

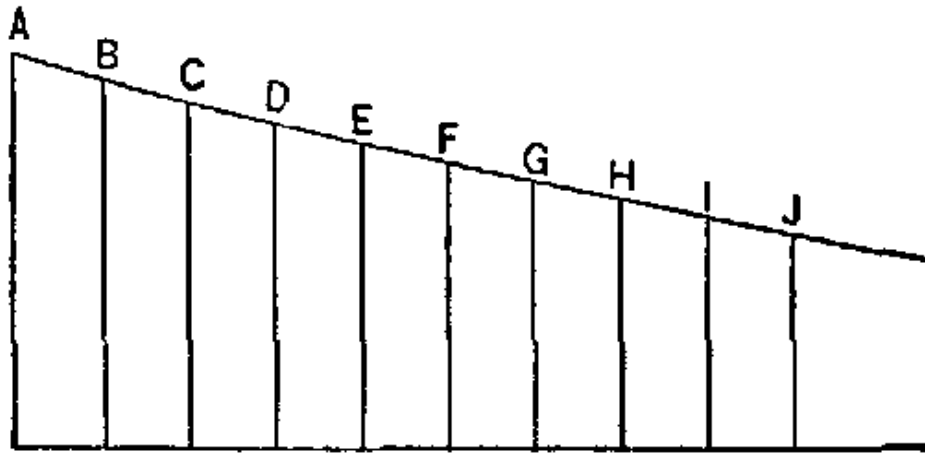
How the Disturbing Effect of a Single Improvement is Limited.—In the case of consumers' goods improvements are going on so nearly incessantly and at so many points that the effect is much the same as if every invention cheapened most of them at once. Harmful disturbances are reduced to minute dimensions by the multiplying of the changes, each of which, if it occurred alone, would produce a hurtful effect. Many inventions cancel one another's unfavorable effects in a way that we shall later examine. What we now have to do is to isolate a single productive change and see

whether there are forces working to reduce its own independent power to create incidental disturbance. What limits the power of a single new and economical process to eject laborers from their accustomed places of employment? This question cannot here be answered in detail, but a brief statement will cover the general principles involved. Obviously the displacement varies inversely with the extent to which increased cheapness enlarges the consumption of the article affected. If by making one thousand men produce as much of the commodity as two thousand formerly produced, you so reduce costs as to double the consumption of the article, you keep all the men who formerly made it in their accustomed places of employment. The elasticity of the want itself to which the article caters is one of the two elements that determine the increase in the consumption of it; but when this increase is due to an extensive substitution of this article for others in the purchasing lists of the consuming public, the result is greatly to reduce the displacement of labor which the new and economical method of production entails. Such substitutions are very general and are a large factor in rescuing men from the hardship of being forced out of the employments they are used to.

On what an Enlarging Market for Tools and Raw Materials Depends.—The market for raw materials and tools depends on that for consumers' goods in their completed state. If *A*, the raw material, enters only into *A'''*, it can be sold in increasing quantities only as *A'''* is thus sold. The chief fact about tools and materials is that they may contribute to a large number of completed goods, and the significance of this fact we shall soon see. The ultimate power to find a market for all products of the lower subgroups depends on finding one for the products of the uppermost ones—the *A'''*, *B'''*, and *C'''* of our table. The laws which govern the market for finished goods of declining cost have first to be studied.

The Effect of Substituting one Consumers' Good for Others.—Reducing the cost of everything would cause an absolute increase in the consumption of everything; but reducing the cost of a single thing always causes, as we have seen, a *relative* increase in the consumption of that one product. While the demand for other articles may not grow absolutely less, it becomes relatively less because of the comparative cheapness of the one product.^[2] A substitution of one article for another in the lists of goods used by the public is a universal phenomenon attending an improvement which affects the production of one article only. When the cost of *A'''* causes it to stand just outside of the purchase limit of a large class of persons, a moderate reduction in the cost of it will make it a more desirable subject of purchase than the articles which have stood just within that limit, and it will be bought instead of one or more of these things. The securing of new customers for a finished product by means of a fall in the price of it is largely brought about by such substitutions. When the new article is added to a consumer's list, the one which has stood as his marginal or least desirable purchase is taken off from it. It is the *relative* desirability of buying one or the other of these articles that influences a buyer in his decision between them, and that cannot fail to be changed by anything that lowers the cost of one, leaving that of the other unchanged.

If the cost of a unit of each of ten articles be represented by the lines falling from the letters *A*, *B*, *C*, etc., to the base of the figure, a considerable fall in the cost of *A* would put it below the cost of each of the other articles represented. If in the case of a large class of persons who did not formerly buy any of the *A* it is as desirable as any of these goods, it will take its place as the most desirable subject of purchase instead of the least desirable. Those whose available means enabled them to acquire all the articles from *J* to *B* inclusive, but did not suffice for *A*, will now take the *A* and omit the *B*. Those whose acquisitions stopped with *C* will substitute *A* for that article, and in general every buyer of any of these things who has not heretofore acquired *A* will now put this in the place of the one which it was least worth while to acquire.



Substitutions caused by a Cheapening of one Utility in an Article which is a Composite of Several.—When different goods cost unlike amounts but are objects of equally strong desires, only one of them is a marginal purchase, and the others afford a personal gain to the consumer which is not offset by a cost. We have seen that this rule applies to the different utilities in a single good. In the case of every article several grades of which are sold, there is one component element or one utility which is worth to the buyer exactly what it costs, while the others afford a consumers' surplus. If the letters in the diagram represent, not whole articles, but utilities in articles, as discussed in Chapter VI, it will accurately express the essential facts. In such cases, which are very numerous, it is only necessary to reduce the price of the one utility which is now just worth its cost in order to induce more consumers to buy the grade containing this utility, instead of a lower grade of the same thing. In doing this, they forego the purchase of something else altogether, or content themselves with a lower grade of that other commodity. If jeweled watch cases should become cheaper, some persons would substitute them for plain cases and would forego buying, say, pictures which were just within their purchase limit, or would content themselves with cheaper pictures. This taking of one thing within the margin of consumption and discarding others is far less frequently done than is the taking of a lower grade of one kind of goods for the sake of securing a higher grade of another.

Why Substitutions reduce the Displacements of Labor.—The question will, indeed, arise why the burden caused by the change may not be merely transferred to men in industries the products of which are displaced by the substitution. Something of this kind would occur if, in consequence of the cheapening of one article, any one other were generally discarded. The important fact is that it is not any one thing, but a wide range of things which are consumed in smaller quantities in consequence of the change; and the effect on the makers of any one of them is small. If a thousand men begin to buy the A''' of the table we have frequently used, some of them will forego B''', some C''', and so on through the list; and the market for no one of these things will be much affected. Moreover, the nearly universal fact is that a man who begins to buy one article that he never before used will save the price of it by contenting himself with a slightly cheaper quality of a number of others. He will give up a dozen utilities in as many entire commodities in order to be able to buy the one entire commodity that he adds to his purchasing list. The reduction of demand is so extensively subdivided that it causes relatively few displacements of labor.

Substitution a Prominent Cause of Varying Sales of Goods.—Substitution is, then, the general rule whenever the cheapening of a commodity wins new purchasers of it. This practice is not indeed universal in the case of those who formerly consumed these goods. Former purchasers of an article which has become cheaper may make no change except to buy more of it or a better quality of it for the same amount which they have been accustomed to spend for the inferior quality. They are not then obliged to economize in any other direction, and the change does not trench on their consumption of other goods. On the other hand, it is sometimes the case that they continue to use the original amount of the article that has become cheaper and use the liberated means of purchase—the "money," as it would ordinarily be termed—in buying other goods. The cheapening of A''' thus even enlarges the demand for B''', C''', etc. There are thus two cases in which a reduction in the cost of one thing would not decrease the use of other things.

Substitution More General in the Case of New Consumers.—The substitution of a cheapened article for others is the dominant fact in the case of new consumers of such an article, while an increased consumption of other things sometimes occurs in the case of old consumers. This does not have as large

commercial effects as the other change. If we produce cheaper shoes, we make it easier to acquire good ones, and those who formerly contented themselves with an inferior kind take a better one. That means that they add to their purchase lists the higher utility which is present in the one grade and absent in the other. They buy a new element in goods rather than more of those goods, and while they may not always change their consumption of articles of other kinds they more frequently do so. Those who begin to use something which formerly they went without altogether usually give up the use of some good or some quality in it, or get on with a smaller quantity of it in order to make the new indulgence practicable. The man who, when bicycles became cheap, bought the first one he ever owned probably gave up some other gratification.

How the Sale of Goods which wear out in the Using increases as the Price Falls. —When goods deteriorate as they grow older, users have to buy new ones often if they are not willing to use those which are worn out and inferior. If we want always to wear clothes of good quality, we refrain from wearing a suit too long. We discard many things when they have somewhat deteriorated, and this forces us to buy, in a term of years, a larger number of them than we should otherwise do. We discard carpets and upholstery early when they are so cheap that we can afford to do so. We thus improve our goods qualitatively by adding to them quantitatively.

Substitutions a Protection for Labor against Undue Displacements.—Now, not only are the substitutions we have cited of commercial importance, but they act in the direction of retaining labor in a group where "labor saving" has been effected. They help to prevent this process from being equivalent to labor expelling in so far as either a general group or a subgroup is concerned, since they increase the social demand for the products of the group in question and cause a relative diminution of the demand for other things. Quite evidently there is, for these reasons, the more need for labor within this group and less need of it elsewhere. Cheap shoes may thus never mean fewer shoemakers and cheap watches may not ever mean fewer watchmakers.

Substitutions of One Capital Good for Others.—It is not merely in the realm of consumption that the demand for a particular good may increase greatly in consequence of cheapness. The same thing happens in the realm of production, but here the substitution of one thing for others is an even more prominent cause of the increased use of the particular commodity. Aluminum and copper are rivals as carriers of electrical power, with the advantage at present somewhat in favor of copper. As soon as the cost of making aluminum shall be reduced by a moderate fraction it will become the cheaper material for such uses and, unless there is a fall in the price of copper, will thrust itself into use for trolley wires and other conductors of electricity. The possession of an enormous market by the one or the other material depends on their relative costs, and these may easily so change as to transfer most of the demand from the one material to the other. A further fall in the cost of aluminum would make it available for sheathing the hulls of ships and would bring it into general use for many household implements, while a sufficient fall would make it a leading building material and give it a limitless market for the framing and finishing of substantial structures. In these various uses it would substitute itself, not only for copper, but for steel, stone, wood and other materials, and the change would be extensive enough to give it an enormous market without requiring a correspondingly great reduction in its cost. Lowering the cost of aluminum by a third might, by merely making it the favorite carrier of electricity, multiply the present use of it by ten, and lowering it by two thirds might multiply the present use of it by a hundred. If this should take place, saving labor would be anything rather than expelling it from its position in the aluminum-making group. When less labor came to be needed for making a ton of the metal, more labor would be used in the industry that makes it.

So long as the substitution caused by the cheapening of aluminum affected copper only it might be a serious matter for the producers of copper; but when it came to replacing in some degree steel, stone, brick, wood, and other materials, the effect would be so diffused and subdivided as to create small disturbances in any one of these industries.

Effects of Reduced Cost of Materials which already enter into Many Finished Products.—In the case of aluminum the prospect of a greatly increased market brings with it the probability that it may come to be a component element of products into which it does not at present to a great extent enter. Such things as steel, stone, and wood already constitute important components of more articles than can be counted, and there is no great prospect that they will enter into a much greater variety of products. In the case of these materials there is a prospect that cheapness will show itself in reduced costs of the finished goods that are made of them, and that these finished goods will be used in greater quantities without substituting themselves for other things in so drastic a way as that which we have described in the case of aluminum. A reduction in the cost of steel would indeed bring about a substitution of that material for others at every point where the steel and something else are now on a plane in desirability. The type of building that now is

made with plain brick walls and wooden floors, because that cheap mode of building enables it to earn a slightly larger interest on its cost, would often be made with a steel frame and concrete floors. At every such marginal point steel would gain somewhat on its rivals in the extent to which it would be used; but in addition to this enlargement of the market for it by substitution, one might count on an increase in the use of it because of an increase in the use of very many things that are already made of it. Some of these cater to highly elastic wants, and persons who use a quantity of them may be induced to use more without discarding anything else. Such an absolute enlargement of consumption is highly probable in the case of any material that enters into a vast number of products, and this, together with the enlargements that come by substitution, may suffice to create a great demand for the raw material and call for as much labor in the subgroup that makes it as was used before the improvement was made. In the case of the raw materials of industry the resources for gaining an increased market by substitution are:—

- (1) The substitution of the material for others in uses different from those in which it is now employed;
- (2) The substitution of it for other materials in the marginal parts of its present field, where it is already nearly as available as other things;
- (3) The substitution of the finished consumers' goods made of it for other consumers' goods.

In addition to all these there is the direct increase in the use of finished goods wholly or partly made of the material by persons who do not, for this reason, discard any other goods.

This statement places the different influences in the order of their relative efficiency in the majority of cases in which they act.

Effects of cheapening Tools of Industry.—What is true of a raw material which enters into many completed products is true of the tools of industry which are used for many purposes. A turning lathe, a planing machine, or a circular saw helps to make a large number of products, and the assertions we have made concerning steel, stone, or wood apply to it. As it becomes cheaper it gains an enlargement of its market by a combination of the four influences just enumerated. It is brought into new uses, is employed more in its present marginal uses, and is required in greater quantity because its products are substituted for other things and are also required in greater amounts independently of these substitutions.

Cheap Motive Forces.—Motive power is so nearly universal in its applications that developing a cheap source of it is much like improving the method of producing everything and securing a universal increase of products. We shall see why such a general enlargement of the output of all the shops creates no displacements of labor which entail hardships. If the power is used more in the upper subgroups than in the lower ones,—if it is more frequently available for fashioning raw materials than for producing them through agriculture or mining,—the development of it checks in some degree the drift of labor from the lower subgroups toward the upper ones, which has been referred to in an earlier chapter.

Utilizing the power of Niagara, that of Alpine torrents and other unused streams, that of the waves of the sea, and that which has long slumbered in the culm heaps of coal mines, will give increased facility for producing nearly everything; and though the amount of the enlargement of output will vary in different cases and some effect on the movements of labor will be produced, few serious hardships will result, and a majority of the persons who will suffer from these changes at all will get an offsetting benefit from the enlarging productiveness of industry.

FOOTNOTES

[1] It is also true that an entire variety of gems or other things of this genus might, by mere cheapness, be branded as too common to be used by the very wealthy, except for new and inferior modes of adornment.

[2] It is worth noticing (1) that uniformly reducing the cost of everything would cause *comparative* changes in consumption. Anything which should take away a quarter of the cost of every article in the entire list of social products would increase the consumption of some articles more than it would increase that of others. There is an extremely theoretical case in which there might even be a lessening of the effectual demand for a few things because a uniform reduction of twenty-five per cent would cause other things to be extensively substituted for them. This thinkable possibility is not practically important.

A detailed study would show (2) that a reduction in the cost of any single article in the entire list

of social products causes an increase in the consumption of commodities in general. As an isolated man who has had to work hard for mere food and content himself with a few comforts and no luxuries will indulge in luxuries when food production becomes much easier, so society as an organic whole will increase its indulgences all along the line whenever the work of getting any one thing is reduced and some working time is thus liberated.

CHAPTER XVII

FURTHER INFLUENCES WHICH REDUCE THE HARDSHIPS ENTAILED BY DYNAMIC CHANGES

In the absence of an unusually great increase in the consumption of an article the improvement which reduces the cost of it tends to displace labor. The first thing that will occur to any one who looks for influences which mitigate this evil is the fact that economical changes are going on at nearly all points in the system, and that this cancels out most of the displacing influence. If something sends men from the group *A* to groups *B* and *C*, while something else sends them from the group *B* to groups *A* and *C*, and still another influence impels men from *C* to *A* and *B*, there is likely to be very little actual moving. A question will in such a case arise as to whether the three movements may not expel labor from all the groups and remand them to a state of idleness. History is clear in the answer it gives to this question; such a result has not occurred, and at the end of a century of brilliant mechanical progress the amount of enforced idleness is not greater than it was at the outset. It remains to show that economic law precludes a universal displacement and insures laborers for all time against being at the mercy of an industrial system which has nowhere any need of their services. Productive devices widely introduced mean great and general gains and comparatively little cost. They mean what on their face they ought to mean, more comforts and less toil for everybody. Before studying this influence—the reciprocal action of improvements scattered through the general economic system—we have to determine the action of one or two other influences which also lessen the disturbances which progress causes.

One can see that the quick adoption of an economical device in every shop of a subgroup, at a time when all other industries are in a stationary state, would usually expel some labor from that one. If consumers should, on a large scale, substitute the product of this subgroup for that of others, it might save the situation; but the general fact is that the consumption of the cheapened product must increase in a ratio that is greater than the ratio representing the saving of labor used in making it, in order to prevent displacement of labor. If we get on with two thirds of the labor which the making of the commodity out of raw materials formerly required, we do not save two thirds of the total expense of making the finished article; and yet to retain all the labor that is now in the business we must sell one and a half times the former number of the goods produced.^[1]

Counteracting Influences.—The importance of a gradual introduction of an improvement rather than a rapid one lies in the fact that it permits these influences to do their work and often to render the actual moving of laborers even from their subgroup unnecessary. Time is the salvation of the laborer menaced by an impending displacement from his field. When we see what is the grand resultant of all the dynamic influences we are studying, we shall see how this neutralizing and canceling of the labor-expelling force takes place. But for them one isolated change would tend to expel labor from its subgroup and would nearly always send it away from the point within an establishment where the new device is introduced. It usually attracts labor to this establishment and away from the inefficient or marginal ones. A gradual adoption of the improvement allows time not only for a general increase in the size and the wealth of the community, but for other influences which act more quickly and in practice make it nearly always unnecessary to reduce the total amount of labor in an industry which produces an article in permanent demand. Statistics may be confidently appealed to in support of this general statement.

The Dynamic Law of Price and its Effects.—We briefly noted in passing that the price of a product the making of which is subject to repeated improvements naturally tends toward the cost of it in the establishment having the latest method and the greatest facilities for production. The natural price at any time is the cost of that part of the supply which is created at the greatest advantage, and not the cost of the part produced at the greatest disadvantage, as an old formula expressed it. It is the mill that makes the goods most cheaply which is enlarging its product and bringing the price down toward its level of cost; as soon as other establishments get possession of the improvement they help forward the process, and as they get still better appliances they help in carrying the price to still newer and lower standards.

The Cause of the Coincidence of Maximum Cost and Price.—At any one moment, it is true, there are ill-located, ill-equipped, or ill-managed mills that are making nothing and are likely soon to be abandoned. They are the marginal mills we have spoken of, and the goods that they make cost all that purchasers will give for them. This insures a coincidence of the price of the goods with the cost of making them in such a

mill, but this is merely an incident in the process of eliminating the inefficient establishments from the field. In the mill which happens at this date to be the one about to be crowded out the cost of the goods equals the selling price of them and will exceed it as soon as the price goes to a lower point. This cost happens transiently to coincide with the price, but does not *regulate* it. It is the outlay that the best mill incurs that does that, since it sets the standard toward which the price is made to tend.^[2]

The Importance of Delay in the Closing of Marginal Establishments.—Now, this process looks as if, by the closing of mills that are distanced in the race of improvement, labor must be forced out of the subgroup. So it would be if the reducing of the price to its new static level were an instantaneous operation and the inferior mills were, in the same instantaneous fashion, compelled to close their doors. These, however, are gradual operations, and before they can possibly produce their full effects, influences will have been set working which will counteract the expelling tendency. We have cited as such an influence the general growth of society in numbers, wealth, and consuming power, making it possible for a group, when an economical change has taken place, to produce and sell more goods than before and to keep its accustomed force of labor in order to do so. There are certain more specific influences which have a similar effect and render it as unnecessary as it is useless to attempt to resist the course of improvement.

Centralization of Business an Effect of Progress.—From the facts here cited it appears that conservatism of the kind that resists all changes condemns an *entrepreneur* to destruction. He must keep in a moving procession in order to survive. As the essential thing which is changing is the price-making cost of goods, the *entrepreneur* must see to it that in his establishment cost declines. While this does not necessarily mean that every such establishment needs forever to grow larger, since there are local conditions in which relatively small shops may be economical enough to survive, yet those which cater to the general market and directly encounter the competition of the great producing establishments must, as a general rule, have the advantages of great size in their favor, or sooner or later be crowded out of the field. Many of the smaller ones fall by the wayside, and the business they have done passes to their already large rivals. Wherein the advantages of the great shop lie and how one that is of less than a maximum size may survive in spite of them, are points for later consideration.

How Displaced Labor is Replaced.—When men are actually forced to leave an industry,—say the subgroup A' ,—they find themselves, in the search for employment, in the same position as a body of newly arrived immigrants in quest of work. Men of either class must offer themselves at a rate that will induce employers to take them. If much new capital has lately been created, it is naturally possible for the men to get employment without having to overcome serious friction or to reduce their demands in the way of pay. In the absence of such additions to the capital, they might possibly have to offer some inducement to employers, in order to overcome their reluctance to make changes in their shops. We shall see in due time, however, that where improvements are well distributed through the industrial society and have their natural effect, they tend to increase the general demand for labor at the original rate of pay.

Effects of a Series of Improvements confined to One Industry contrasted with those of Improvements diffused through the Groups.—A continuous series of radical improvements, all originating at one point, would tend of themselves to cause a series of expulsions of labor from that point, and the mere increase of population and wealth might not so fully counteract this tendency as to prevent a positive exodus of labor from the occupation affected. A merely relative reduction of labor in this occupation would not cause much hardship, since it would only mean that other industries were attracting the greater number of young laborers entering the field and gradually getting a larger and larger part of the whole working population. If men actually in A' can stay there, no one is injured; but too great a concentration of improvements at this point might drive some of them away. Such concentration is the opposite of the general rule. Improvements do not confine themselves to one point or to a few points, but originate at very many, and this fact neutralizes their labor-expelling tendency and might reduce it practically to *nil*. If labor could be made more efficient in every group of the whole system, the result would be to increase the quantity of every kind of goods. Making more of one's own product is acquiring power to buy more of the products of others; and enlarging the general output of goods tends thus to increase the demand for all kinds of goods as well as the supply. If you make clothes and I provide food, and we exchange products, but do not satisfy each other's wants to the point of repletion, it is well for both of us that you should become able to make more clothes and I to furnish more food. We can then go on with our original occupations and both live better. In this there is involved no displacement of labor at all; and neither would there need to be any disturbance caused by multiplying in well-adjusted proportions the output of each group and subgroup in the system of industry. Where formerly a unit of A''' was exchanged for one of B''' or C''' , there are now two units of A''' given for two of either B''' or C''' , and every one has more things to consume than he formerly had.^[3]

Labor attracted toward a Subgroup as a Result of Improvements which are made Elsewhere.—The fact that the demand of consumers for different goods is not uniformly elastic has to be taken into account. There are two distinct kinds of movements in the group system, brought about by improvements in method. Each improvement in and of itself has, as a rule, a labor-expelling effect, but this effect is partly neutralized by general growth in consumption and still more by improvements occurring elsewhere. Labor that is thrown out of the *A* group would naturally go to group *B*, *C*, etc.; but if, as we have just seen, similar influences tend to expel labor from the *B* group and the *C* group, the labor may, for the most part, stay where it is, with the result that more of *A'''*, *B'''*, and *C'''* is offered to consumers. *The increased output of one group is itself a means of retaining labor in other groups*, even though, thanks to mere methods, that involves making more of every other kind of commodity.

The Supply of One Kind of Goods Equivalent to a Demand for Others.—There should be no difficulty in interpreting, in this connection, the traditional statement that "the supply of one kind of goods constitutes a demand for another." An increment of *A'''* and one of *B'''* coming into existence together supply wants common to their two sets of producers and both groups can gain by exchanging such portions of their respective products as they do not retain for their own use. If *A'''* and *B'''* were the only consumers' goods used, a part of the excess of each would be distributed among the members of the group producing it, and the remainder would be given in exchange for some of the other kind of goods, also for distribution among the members of the first-named group. This is what actually happens when a multitude of articles for consumption are produced in increasing quantities.

Effect of an Increase of Individual Incomes on the Character of Goods Consumed.—Such an increase of the productive power of a group means, of course, an increase of individual incomes, and it causes men, as we have seen, to consume better things rather than more of them. There is a certain merely quantitative enlargement of every one's consumption of goods of a given kind, every one using more of *A'''* than he used before; but the greatest change shows itself in the quality of what he uses. Every man buys and consumes better articles of the *A'''* kind, as well as of other kinds. His food, his clothing, etc., are all prepared in a more elaborate way, and he has more of what we call form utility which results from the fashioning of things, and relatively less of the elementary utility which inheres in the raw material. There is somewhat more of raw material and very much more form utility in the goods he demands for personal consumption. This requires that labor should move upward in the group system, and that more of it than before should betake itself to those subgroups where the fashioning of the raw material is done and where the finishing touches are applied to goods. The effect of the constant improvement of all processes of production, therefore, so far as the effect on labor is concerned, is akin to the effect of an addition to capital, in that it moves labor upward in the subgroup series. It puts more labor into mills and shops which make articles of comfort and luxury.

The Nature of the Movements actually caused by Improvements.—This upward movement cannot go on as smoothly and with as little disturbance as that which is caused by the increase of capital. Whenever a greater gain is made at one point than is made at another, an influence is set working which, of itself, tends to send labor from the one point to the other. The slowness with which the change of method proceeds affords the time that is necessary for the protection of labor in the first-named group, since little movement takes place before the effects of improvements made in the second group begin to be felt. If in 1906 an improvement is made which, in the course of five years, would cause some labor to move from the subgroup *A'''* to the subgroup *B'''*, and in 1907 a corresponding improvement is made in the latter industry, the equilibrium is restored before enough disturbance has taken place to require any absolute reduction of labor in *A'''*. The facts are (1) that new laborers as they enter the field are drawn more to the upper subgroups than to the lower ones,—to the *A'''* and the *B'''* rather than to the *A* and the *B* of the two series,—and that in moving upward they are drawn at first more strongly toward *B'''* and later more strongly toward *A'''*. This is the nearly constant fact in industry and is the grand resultant of all the forces we have described—an upward flow that is continuous but does not follow strictly vertical lines. As young men—the sons of workers in *A*, *B*, *C*, and *D*, who might otherwise have remained in their fathers' occupation—move to the subgroups that stand higher in the several series, they first go in larger number toward *B'''* than toward *A'''*, and later in larger number toward *A'''*. There is a wavy movement toward the right and then toward the left in the steady flow of labor from the groups that create the raw material to those that impart to these materials the form utilities which they need to fit them for service. An actual lessening of the number of workers in an entire group in consequence of an improvement in the method of production is practically unknown, and even a positive lessening of the number in a subgroup is exceedingly rare.

Apparent Exceptions to the Rule.—Exceptions to this rule which are rather apparent than real will occur to

every one. The discovery of a great supply of mineral oil put an end to the use of whale oil for illuminating purposes, though it allowed the whale fishery to survive on a reduced scale and produce oil for other purposes, in so far as the rawest material, the whales themselves, were not exterminated. The exhaustion of a supply of raw material was here a dominant fact, and the effects it produced may be again expected when mineral oil shall, in turn, become scarce. Men will move out of the subgroup producing the crude oil, as nature forces them to do so, but their movement cannot be referred merely to improvement in the mode of extracting the oil or transporting and refining it. The fact which illustrates the rule we have stated is that while mineral oil drove whale oil out of the field as an illuminant, this did not reduce the number of men in the general group which produces illuminating oil. More men were set working in the oil fields than ceased working on the whaling ships. A new raw material was used in creating a similar finished product, and as the general industry which made this product grew larger rather than smaller, the total demand for labor in oil production was not lessened. This does not prove that old sailors did not suffer from the change. Young sailors could go to the oil fields or elsewhere, but men who were not adaptable could not do so, and the hardship thus entailed is not to be overlooked. We are, however, forming a judgment of movements which pervade a vast industrial system, and we need most to know what is their grand resultant. If that were a general displacement of labor, causing increasing idleness and suffering, the system that involved this result would stand condemned. The general resultant is the opposite of this.

A Drift of Labor toward Certain General Groups.—We have just noticed that movements of labor in the group system, caused by improvements in method, consist mainly in an upward flow of labor, accompanied by irregular lateral movements, the labor drifting to the right or the left as it is more strongly attracted now to one point and now to another on the same horizontal plane. The general mass of it swerves now to the right and now to the left in its general ascending course, though none may be actually expelled. This description of the drift of labor is too general even to describe all the permanent currents. Some entire groups produce only or chiefly luxurious goods, and to those there is the same drift of labor as there is to the upper subgroups of the general series. If there be a group of *D*'s making an article which only the well-to-do can afford to use, it will swell in size and in the volume of its output from the same causes—improved methods and general enrichment—which cause *A'''*, *B'''*, and *C'''* to outgrow *A*, *B*, and *C*.

Displacements of Mature Laborers naturally tending to Diminish.—When an improvement is made in one of the upper subgroups while the general flow of labor is toward these groups, the effect is not usually to lessen the absolute number of workers in the upper subgroup where the improvement has been made, but merely to prevent it from getting a *pro rata* share of the labor that is moving upward toward this tier of subgroups from the lower ones. The change in the apportionment of the social laboring force between the upper subgroups and the lower ones is made gradually, without violent transfers of particular men from point to point, and merely by directing to the upper subgroups a disproportionate number of young workers who are selecting their fields of employment. In general, *labor* moves from point to point in the system without requiring many *particular laborers* to do so. As actual loss of places by persons of mature age is the chief evil connected with changes in methods of production, it is a most welcome fact that the influence which we are studying tends naturally to reduce the extent of it.

The Discarding of Aged Laborers mainly caused by a Further Influence.—Quite apart from a demand for less labor at a particular point in the system, there may occur a discharging of men merely because of age and a substituting of younger men. In establishments where the pace is a rapid one men have thus to give place to young successors at an earlier age than the one at which men give place in other employments. The effect of some machinery is to improve the chances of old men, while that of other machinery is to reduce them. A lightening of toil and a shortening of the working day preserve men's powers and enable them to retain employment longer.

The Natural Tendency perverted by Monopoly.—When hardships come on a large scale in consequence of a discharging of workers, they are chiefly due to an abnormal influence which now shows itself in ugly and disquieting ways throughout the industrial system, that, namely, of monopoly. Reducing forces for the sake of curtailing production and raising prices is what does the mischief. This influence undoes at many points the beneficent effects of free competition and causes grave hardships to particular workers while affording no compensating gain to the consuming public. It portends evil for society as a whole as well as for the working classes, on which its hand may be heavily laid. In a perfectly natural system, in which competition would do all that pure theory at the outset of this study has assumed that it will do, the evil entailed by local improvements would be relatively small and the diffused benefits enormous. In proportion as the movement approaches steadiness and as gains are made, not by radical changes, now here, now there, and now elsewhere, with long intervals between them, but by smaller economies made nearly everywhere and in

very quick succession, the cause of the hardship is reduced. There is less of violent expulsion of labor from its fields and more of a gradual drifting of *labor* rather than particular laborers from the subgroups that create elementary products to those which fashion them into fine and costly shapes. There is small hardship in the natural selection by new laborers of the employments where they are most needed, and there is often little in a transfer of a person who has tended a machine of one kind to a machine of a different kind. Instances there still are of manual skill brought to naught by the invention of a mechanical automaton that does the work more rapidly and accurately than the hand of man can do it; and the worker who possesses this skill must usually, in such cases, content himself with an employment where his more general aptitudes may stand him in good stead and insure him at least an average rate of pay. The special aptitude which he had for performing one operation counts for nothing; and this happens when men who have worked in one department of a mill have to accept work in other departments of the same mill or in other employments.

A Workman's Specific Loss as compared with his Share of a Social Gain.—The test question in cases like these is whether the man is helped or harmed by the general effect of improvements, including not only the one which has caused him to change his occupation, but all others which have taken place since he began working. To this question there can be but one answer: in the course of a lifetime the balance is in favor of progress *even in the case of the average victim of the movement*, and it is overwhelmingly so in the case of others. What a man sacrifices when he is transferred from one machine to another is usually more than offset in a term of years by what he gains in consequence of the general increase in the producing power of labor. At the time of the displacement he suffers, but by its constant increase in wealth and productivity society more than atones for the injury. The goods that emerge from the mills are multiplied; the share falling to labor, as that share is determined by the test of final productivity, grows steadily larger; and the men who have never served a long apprenticeship at anything, but have learned their present trades quickly and can learn new ones as quickly, are producing and getting far more than they could possibly get under a régime of skilled manual labor or of inferior machinery, and far more also than their successors will get hereafter if, by any calamity, mechanical inventions shall cease to be introduced and other product multipliers shall be barred from the field. The hope of working humanity lies mainly in the continuance of the changes which give it a forever enlarging command over nature. Some classes might live comfortably without this, but for the worker it affords the main ground of hope for increasing comfort and a coming time of general abundance.

FOOTNOTES

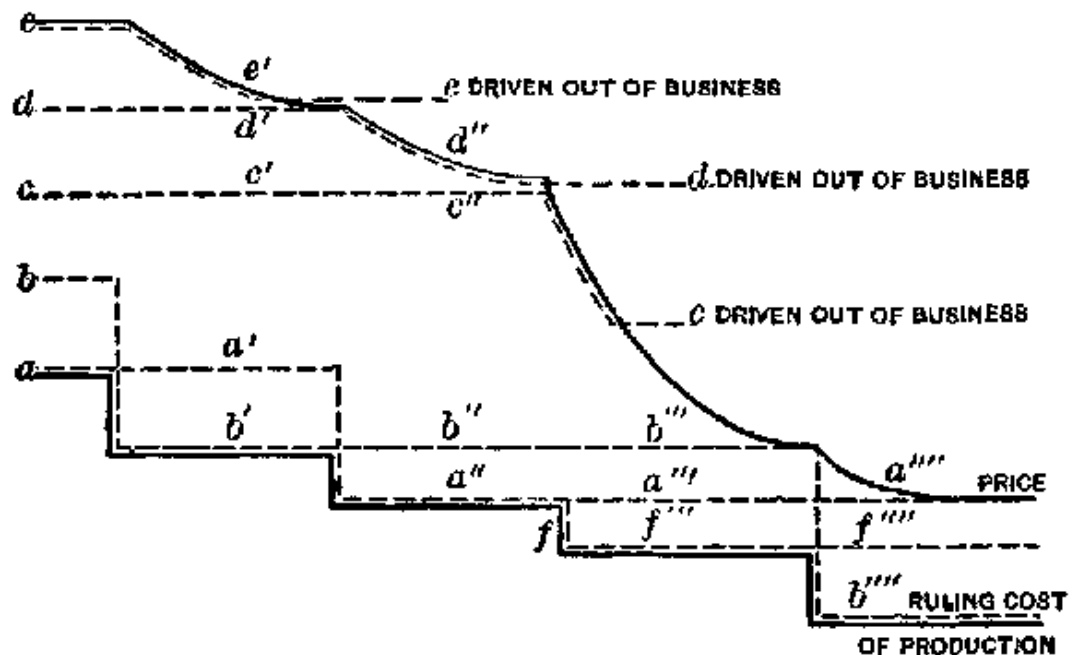
[1] The mathematical problem stands thus: If all the subgroups of the A series have the same amounts of labor and a machine enables a half of the force now in A'' to do all that is required in transmuting the usual supply of A' into the usual amount of A'' , then some of the labor in A'' would in most cases betake itself to entirely different industries. The superfluous labor at A'' would amount to an eighth of all the labor required for the complete creation of A''' . If wages constituted the only cost which the *entrepreneur* must defray, the price of A''' would be reduced to seven eighths of the former price, and this might, in the case of some goods, enlarge the demand to eight sevenths of its former amount and so keep all the labor in the general group. Since there are outlays to be met besides wages, this reducing of wages by an eighth would not usually reduce total cost by more than about a twelfth, and even if price quickly went down to eleven twelfths of its former amount, it would be too much to expect that the consumption of the A''' should increase by a seventh, except in cases in which this amount of reduction of price caused A''' to take the place of B''' , C''' , etc., in the purchase lists of many consumers. The enlargement of consumption would have to take place in a ratio greater than that which represents the saving in cost. Costing eleven twelfths as much as before, the article must sell eight sevenths as freely—which is possible only when it thrusts itself extensively into the place of other consumers' goods. Even then some labor would have to move from A'' to other subgroups of the series. One half of the amount of labor formerly at A'' does the whole work formerly done there, and to keep it all at work at that point would require that the output from the whole group be doubled. Saving one twelfth in cost could not well insure selling double the amount of goods. In this view improvements would have a threatening look, though their ultimate effect would still appear as beneficial as ever, were it not for the fact that the disturbances that result from them are made to be relatively small by the influences we are studying.

[2]

The figure represents a subgroup in which five producers, *a*, *b*, *c*, *d*, and *e*, are operating. Later, a new establishment *f*, is introduced. The upper dark line represents the price of a unit of the product, and the lower dark line the cost of making a unit in the establishment which is for the time the most efficient.

The dotted lines represent the respective costs of production in the different mills, ranging from *a*, the most efficient, to *e*, which can barely hold its own. What the figure represents as happening is as follows:—

b first makes an improvement which lowers his cost of production, as shown by the descending dotted line. This enables him to increase his output, and so has its effect on the price, which descends. Now, producer *e* was already selling goods at cost, but he is not at once driven out of the business. Instead, even though he cannot earn full interest on the original cost of his fixed establishment, he will continue to run as long as he can make his plant earn anything at all. The result is a virtual reduction of the capitalized value of the plant (the interest on which is an item of cost), and this is what is represented by the descent of the dotted line which represents *e*'s cost of production. The situation is now represented by the series of points,—*b'*, *a'*, *c'*, etc., representing at their second stage the differing levels of cost in the case of different producers.



The next thing that happens is an improvement made by *a*, causing his cost of production to fall below that of *b*. The resulting fall in price now finally drives *e* out of business; he can no longer earn anything at all on his fixed plant. We may assume that producers *a*, *b*, and *c*, who have been making profits, have enlarged their productive capacity enough to supply the market fully without *e*'s contribution. *d* is now in the same position in which *e* was at the preceding stage,—earning nothing on his fixed establishment and barely induced to remain in the business.

The next occurrence represented is the opening of a new, large, and very efficient mill by *f*. The effect is like that of improvements, but more violent. The fall in price drives both *d* and *c* out of business. *b* is now on the margin, but saves himself from loss by a second improvement, which makes him again the most efficient producer. And so the process goes on *ad infinitum*.

This figure illustrates the fact that, while at any time the price of a good roughly equals the cost of it to the least efficient producers, still this cost does not govern the price. The ruling factor is the cost in the most efficient mill, toward which the price tends; and all that the cost in the least efficient mill determines is how long that mill shall continue running.

In order that the claim here made—that price equals cost in the establishment which is about to be crowded out of the field—may hold good it is necessary to define terms with some care. In a typical case an employer who is destined soon to close out his business has, perhaps, an antiquated mill, which itself pays nothing, but enables its owner to use circulating capital and labor in a way that affords interest on that capital and wages for the labor. No interest on the cost of the antiquated mill is chargeable to the business unless the site and the building can be sold for a new purpose. If they have completely lost all productive power, they are not, as we use terms, capital goods at all; and in that case the only interest which the *entrepreneur* should

reckon as a cost is that which accrues on other capital used in connection with the worthless mill. If the site and the building have some value for another purpose, and if the machinery has some value as junk, then whatever the owner can get by disposing of the plant constitutes a sum the interest on which constitutes a cost of producing goods in this mill. It is a sum which the plant owner foregoes as long as he refrains from selling the plant. He can afford to use it in production as long as the price of the product covers the cost as thus defined, but must stop when it ceases to do so.

[3] It will be seen that the maintenance of the present exchange ratios between A''' , B''' , C''' , etc., when costs of all of them are reducing, would require that these costs be reduced in exactly the same degree in each case, and that the quantities sold at the new cost prices should be increased in unequal degrees, so as to bring the different prices to cost levels. The demand for one article is more elastic than is the demand for another. A slight increase in the supply of A''' may cause a large reduction of the selling price, while it may require a great addition to the supply of B''' to produce this effect. There must, therefore, be some changes in the relative quantities of labor in the different subgroups, even though there has been an equal amount of "labor saving" or cost reducing in all of them. This change is so slight in amount as compared with what would be caused by improvements confined to one subgroup, that it is effected with relatively little hardship and mainly by disposing the constant inflow of new labor at the points where it is needed.

CHAPTER XVIII

CAPITAL AS AFFECTED BY CHANGES OF METHOD

Labor Saving and Capital Concentrating.—There is a common impression that whatever saves labor usually requires an increase of capital in the industry where the economy is secured, and this impression is justified by the experience of the century following the invention of the steam engine and the early textile machinery. Hand spinning and weaving require small amounts of fixed capital, while the mills in which spinning and weaving are done by steam or water power require a great deal. Fortunately in any long period this capital comes as abundantly as it is needed from the profits of the very business that calls for it and does not reduce the capital of other industries. The profit of one year furnishes the new instruments required in the next; but the immediate effect of substituting a costly machine for hand labor is to concentrate capital, or to call it from places to which it would otherwise go.

The Liberation of Capital by Invention.—For a long period it was the general rule that a mechanical invention at first called capital to the point at which it was applied, although it afterward created new capital and sent it away to make more than good the draft it originally made. This rule is no longer universally applicable. When an invention cheapens capital goods, it liberates capital. It is clear that a hundred and twenty-five years ago there was small chance that an invention would liberate very much capital by reducing the cost of making tools, buildings, rails, machinery, etc., since there were so few of them to cheapen. Now that machines are at hand in myriad forms the chance is large that an invention will substitute for many of them others of less costly construction. It will in these cases cause less capital to be required per machine than was formerly needed.

Simplifying the Forms of Machinery and Cheapening the Materials of It.—The history of invention shows that the early machines sometimes took cumbersome and expensive forms, for which simple and cheaper forms were later substituted. Much simplifying of mechanical appliances is all the while going on, and this, of course, liberates some capital. Making instruments of any kind out of cheaper materials has the same effect that anything has which reduces the cost of constructing the instruments. Bessemer steel has made rails, bridges, ships, buildings, steam boilers, and a vast number of mechanical tools and appliances less costly than they were, and so has liberated some of the capital which such things formerly embodied. After one of the machines of the costlier type has earned the fund on which its owner relies for replacing it as it is worn out, it appears that a part of this fund will suffice for procuring a perfectly good substitute for it, and the remainder may be used for procuring other appliances of production.

Cheapening the Process of Making Instruments.—If we recur to the table which represents the groups

A'''	B'''	C'''	H'''
A''	B''	C''	H''
A'	B'	C'	H'
A	B	C	H

of the industrial system, we shall see that improvements of method in the general group $H-H'''$ have the effect of liberating capital in the other groups and subgroups. H''' is the comprehensive symbol that represents active instruments of all kinds. It is engines and boilers, looms and spindles, lathes and planers, rails, cars, bridges, tunnels, canals, ships, buildings, and all the myriad instruments which actively aid man in making the things he wants for consumption. New methods at $H-H'''$ make the supply of all these things cheaper, which means that the labor and capital of the group $H-H'''$ which would have been required for replacing the instruments used in the other groups will more than suffice for that purpose, and a part of their time may be given to making machinery, etc., not formerly used. This amounts to liberating a part of the fixed capital in the three groups producing A''' , B''' , and C''' , although the free capital that is thus gained may in part be used in furnishing additional appliances for use in these same groups.

Local Concentration of Capital which causes a General Liberation of It.—In such a case the new method used at H''' may, at its introduction, require more capital than was formerly used at that point in the system. Building Bessemer converters was a costly operation, though the output of cheap steel afterward saved far more capital than the converters required. The power canals of Niagara cost something, but the products created by means of them are cheapening many tools of industry; and like effects follow most applications

of electricity for utilizing waterfalls and carrying to great distances the power which they generate. They follow on a considerable scale as the culm of coal mines is economically burned and made to generate steam and drive dynamos. All cheapening of transportation, besides making consumers' goods cheaper, has the same effect on producers' goods, and by this means liberates capital. It causes a single productive appliance to cost less than it otherwise would cost and renders available for other purposes a part of the outlay that was formerly required for replacing it at the end of its industrial career.

Effect of Speeding Machinery.—Increasing the speed of a machine is a capital-liberating operation, since it enables a certain number of machines to do the work of a larger number. Running spindles and looms rapidly, while it requires fewer laborers for a given amount of product, requires fewer spindles and looms also.

Cases in which Liberated Capital remains partly in the Same Industry in which it has been Used.—A distinction has carefully to be made between causing less capital to be used *per unit* of physical product, and causing less to be used in a particular occupation without regard to the amount of the product. If we cheapen the operation of cloth making, we shall increase the consumption of cloth, and in this way we may draw new capital into this business, even though we can build and equip a mill of a given capacity more cheaply than before. In this case we have liberated capital in this business and at once reemployed it at the same point. If we use as many looms as before, the more rapid running calls for more spindles to furnish yarn, and the new spindles require larger engines and boilers, or more water wheels, wheel pits, and reservoirs, to furnish power. Enlarging a business in this way usually calls for an enlarged general capital *in the industry*, though it calls for less capital for a given output; and the striking fact is that this effect may be realized by means of devices which actually save capital at particular points in the industry. If, after power looms were introduced, some inventive genius had made them cost only a quarter as much as on their first introduction they had cost, the profits of the business would have been increased and, in time, far more capital in the shape of spinning machinery, engines, etc., would have been required than had formerly been used in those forms. With general growth of population and wealth the increased consumption of cloth calls, in the end, for more capital in the form of the looms themselves.

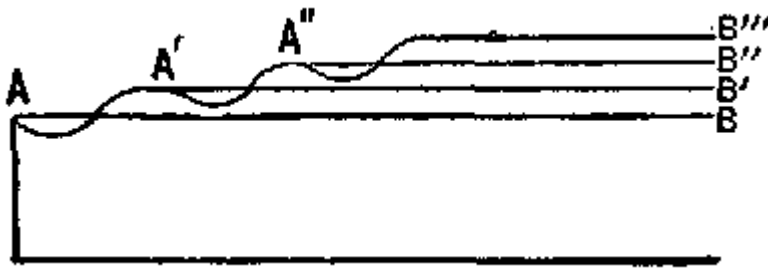
General Consumption as affected by a Specific Increase of Productive Power.—Consumption in the generic—the use of consumers' goods of every kind—grows as the power to make the good increases; but a point that is of great importance is that any *specific* increase of productive power brings about a *general* increase of consumption. It brings about a greater all-round creating and using of commodity. If we can hereafter make the A''' of our table with the expenditure of half as much labor and capital as we have heretofore used in creating it, the liberated agents of production become available for making whatever is most needed, and they will, in fact, be used for increasing the supply of all three types of consumers' goods represented in the table. They will give us more of A''' , B''' , and C''' in quantities adjusted by the laws of value. The outcome of this is that an economy in making A''' actually gives us more of A''' , B''' , and C''' . We become larger consumers of everything because of the cheapening of anything which enters into our list of articles for personal use. This presents a further aspect of the process of moving labor and capital from group to group, in which the possibility of hardship for particular persons inheres. The conclusion to which a fair weighing of the effects of mechanical progress has already led us is that there are very few, even of the workers who suffer displacements of this kind, who do not during their lives gain far more than they lose by general progress; and the effects of cheapening capital goods at one point, and so liberating capital for use at other points, increases this beneficent effect. The special costs of making the new kinds of machinery have been large in the earlier stages of the process, but have afterward grown smaller; and as machinery has come into general use the liberating of capital by the cheapening of the machines has become a more and more important factor. Some of the capital liberated at A goes to assist labor in furnishing the additional amount of B''' and C''' which enlarged consumption requires.

Hardships entailed on Capitalists by Progress.—As the old handicrafts have now been largely supplanted by machinery, and the hardship that continuing progress entails on laborers is greatly reduced, there is involved in progress a new burden which falls altogether on the capitalist employer. The machine itself is often a hopeless specialist. It can do one minute thing and that only, and when a new and better device appears for doing that one thing, the machine has to go, and not to some new employment, but to the junk heap. There is thus taking place a considerable waste of capital in consequence of mechanical and other progress. As there have come into use marine boilers made of steel and capable of standing a very high pressure, the low-pressure boilers of former days have become useless. With the advent of triple expansion cylinders, twin screws, and better and larger hulls, ships of the old type lost their value; and similar things are occurring in every line of production. A new mill is built and equipped with the best machinery known at

the date of its building; but before a year has gone by all the machines in one department are so antiquated that it is best to throw them out. Indeed, a quick throwing away of instruments which have barely begun to do their work is often a secret of the success of an enterprising manager; but it entails a destruction of capital. What is easily to be seen is (1) that a single change of that kind makes an immediate draft on the general fund of available social capital; and (2) that this draft, as a rule, is soon repaid with increase. Machinery that is nearly new is thrown away when it appears that another kind soon will earn enough to make good the waste thus entailed, and the paradox is in the fact that the *entrepreneur* who quickly destroys capital really saves it, while he who, by using the old appliances, tries to hold on to the capital loses it, since he sacrifices profits from which more would have come. Running his antiquated engine, the unenterprising man has to content himself with small returns and, in the meanwhile, sees his actual productive fund dwindling by the deterioration of the old equipment.

The Offset for Capital destroyed by Changes of Method.—What has happened in such a case to the enterprising man is a loss of personal capital. What he has just paid for the supplanted instruments has gone for nothing. His financial status is improved rather than injured because of the prospective profits which the new appliances will earn. What has happened to the man who keeps the old machinery is a partial or total loss of whatever he has lately put into it, not offset by such profits. By keeping his capital goods he is losing his capital without having his rival's assured prospect of regaining it. Whether the gains made by those who promptly discard antiquated appliances offset the wastes suffered by those who hold on to them too long, is a question that requires more space than can here be allotted to it; but the following facts determine the answer:—

- (1) Instruments naturally at any one date are of an average age equal to about half their working duration.
- (2) Discarding all of one kind at any one date would involve drawing on the fund of social capital for about one half of the amount needed to replace these instruments.
- (3) Very few are at once discarded on the invention of the improved types.
- (4) Nothing but a fall in the price of the product created by the aid of these old machines can prevent them from earning the remainder of the fund required for replacing them. If they do this, they prevent any positive destruction of capital which many inventions cause.
- (5) When only one *entrepreneur* introduces the new appliance, his production is usually increased, but not to an extent that causes a quick fall in price. This affords to the users of old appliances whose plants are not already at the final point of inefficiency a chance to continue accumulating the fund for replacement. The profits of the user of the better appliance are meanwhile accruing.
- (6) When all *entrepreneurs* introduce the new appliance at once they do so—provided that their act is intelligent—because the saving effected in the cost of production makes the change advantageous in spite of the waste entailed. They expect an all-round net profit during the period before the price of the product falls to its new level, and they expect that this will give them more than is required for interest, cost of future replacement of the superior instruments, and the deficit in the accounts caused by the early discarding of the superseded appliances.
- (7) Without treating this prospective profit inhering in the new appliance as capital, we must regard it as affording an assurance that new capital will soon appear. There are great gains to be made by using the new appliances, and some of these will add themselves to the permanent fund of productive wealth.
- (8) The cost of the new appliances may be defrayed by their owner's earlier accumulations or by loans. In either case they come out of a social fund that is created mainly by the appliances which in a preceding period have yielded special gains. The machine of to-day is paid for from the available surplus created by the machine of an earlier day, and a series of inventions enlarges the social fund of capital in spite of all wastes by which it is attended.



The effect that a series of improvements has on the amount of social capital, if we measure the fund solely on the basis of the cost of the capital goods which embody it, may be represented thus:—The horizontal line measures time and is graduated in years from one to ten. The distance of the point above this base represents the amount of capital as estimated in units of cost, in the possession of the society at the time a particular improvement is made, and would remain unchanged if society were static. The level of the line AB represents what, under such a condition, would be the capital of a decade. The curved line AB' , dipping below AB and then rising above it, expresses the fact that a single important improvement first trenches on the amount of capital in use, and soon makes good the deduction and makes a positive addition. It raises the sum total of capital to the level of the latter part of the line AB' . The curved line $A'B''$, first falling below $A'B'$ and then rising above it, expresses the fact that a second improvement, made a year or two after the first one, makes a reduction of the amount of capital as determined by the first improvement, and later adds more than enough to make good this reduction. A third improvement, at the end of two or three further years, has the effect expressed by the line $A''B'''$; that is, it first reduces the fund below the level at which at that time it would otherwise have stood,—but by no means to the level at which it stood when the series of improvements began,—and later carries it above the line expressing the highest level it would, without this improvement, have attained. In so far as these three improvements affect the level of the social capital for the ten-year period, it stands at the level indicated by the line $AA'A''B'''$, and no later improvement, even at the time of its introduction, does more than to make a small reduction of the increment of capital accruing from the products of the earlier improvements. A series of economical changes means a perpetual increase of the social capital as well as a perpetual improvement in the mode of applying labor. The increments of capital due to the earlier changes are far more than is required by the introduction of any later one.

The Impossibility of Reducing Capital by too Rapid Progress.—There is a theoretical question whether this series might be too rapid to permit this result. If the interval were a month instead of several years, and if the amount of capital put into the new appliances were the same that, in the figure, they are represented as requiring, the effect would be to make twelve deductions from the amount of the social capital in the course of a year, which would carry it some distance below its original level, *while in this one year* there would have been no time for the profits to accrue in order to restore and add to the fund. In the next year and the following ones this would follow, and the effect, in the course of ten years, would be to carry the social capital to a still higher level than the one it reaches in consequence of the slower succession of economical changes. Increasing the rapidity of productive inventions only multiplies the additions made to the social capital.

We may summarize the chief facts concerning technical progress as follows:—

- (1) Progress may throw particular men out of their present employment, but cannot destroy the social demand for their labor. Somewhere in society there is a place for them.
- (2) If improvements were long confined to one subgroup, they might send labor into other subgroups and even into other general groups. Occurring as they do at nearly all parts of the system, they very seldom require an absolute diminution of the amount of labor in a subgroup, and practically never cause such a reduction in a general group.
- (3) The gradual introduction of an improvement is important, since it affords time for an increase in the social demand for the product which is thus cheapened and for introducing at many other

points improvements which neutralize, in a large degree, the labor-expelling effect of the first improvement.

(4) Technical gains are the largest source of additions to the total amount of the social capital. The constant influx of new capital facilitates the placing of laborers at the points where they are needed.

(5) The fact that elementary utilities which are produced by agriculture cater to a less elastic demand than do the form utilities which are the product of manufacturing occupations, has caused labor to move slowly from the lowest subgroups of the various series to the upper ones, as the productive power of labor in agriculture has increased.

(6) This movement is so gradual that it can be accomplished almost entirely by devoting to the industries constituting the upper subgroups an enlarged share of new laborers as they enter the field in quest of employment. Young men drift from the farm to the village and the city.

(7) In addition to the upward flow of labor in the series of subgroups there are some lateral movements, or transfers from group to group, to be taken into account. The fact that improvements are widely diffused and that there is a succession of them at each point makes it possible to make these lateral movements of labor in the same way in which the movement within the groups is accomplished; namely, by putting the new men who are entering the field of employment in the places where they are most needed.

(8) These facts do not always prevent particular men from losing the special benefit that skilled handicrafts have insured to them, since a machine, to the running of which they are compelled to betake themselves, may often be as well tended by persons who have never learned such a handicraft.

(9) The loss thus entailed on craftsmen was very large during the original process of supplanting hand labor by machinery, but bids fair to be relatively small hereafter, since fewer men go through long and costly apprenticeships, and since the operator of one machine can usually learn to operate another with little waste of time.

(10) Such injuries as particular men now suffer from the introduction of economical devices are, as a rule, more than atoned for even to these men by the greater productivity of social labor, as it is applied in new ways, and by the greater abundance of social capital. These gains are the result of improvements made in the earlier periods, and they benefit every one who labors.

(11) The new capital created by productive inventions is an essential cause of the continuing gain of the working class.

(12) While most inventions at first draw capital from the social fund to the point where they are applied, many of them soon liberate capital by cheapening particular appliances of production, and nearly all of them, by means of the profits they insure, ultimately add to the social capital.

The Vital Importance of Continued Improvement.—Intelligent study will make it clear to every one that any assertion that machinery is the enemy of labor is not merely erroneous, it is a contradiction of the most striking and important fact connected with general progress. The gains of labor during the past century, which have been partly due to the occupation of areas of new land, have been largely due to the mechanical inventions and technical discoveries which have put the forces of nature so largely at man's disposal. These forces have worked for all society, indeed, but they have worked largely for the men who labor, whether in the factory, in the shop, on the railroad, or on the farm. Their effects are all-pervasive, since they signify an increase in the productive power of that final unit of social labor on which wages generally depend. General riches have been and must continue to be generally beneficent. As an isolated man working, Crusoe-like, for himself alone, gains by every technical discovery he can make and by everything he can add to his stock of productive appliances, so society, the great and isolated organism which is the tenant of our planet, reaps a benefit by every improvement it can make, and the forces of distribution see to it that this benefit is carried through and through the system and made to improve the condition of

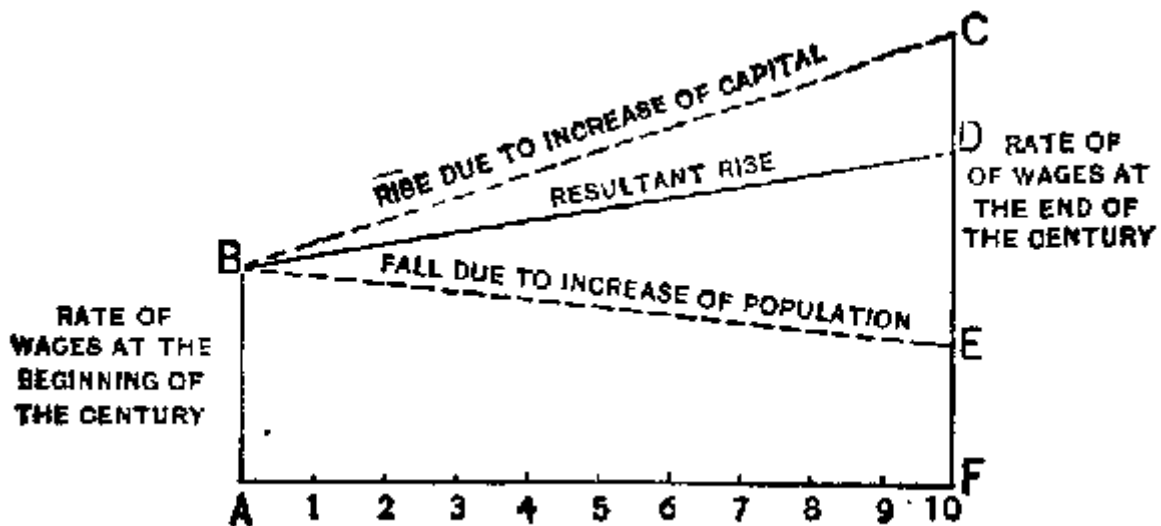
the most humble members. Since the great areas of new land are no longer available as a future resource, the hope of labor during the coming centuries, under any form of industrial organization, whether it be competitive or socialistic, rests on the prospect of continued technical gains,—an unending succession of calls on the exhaustless serving power of nature.

The Effect of Changes in the Relative Amounts of Labor and Capital. —The law of wages, as stated in an early chapter of this work, makes it evident that an increase of population, while the social fund of capital remains the same, would reduce the product of marginal labor and therefore the rate of wages. In every establishment into which more workmen should come, while its capital remained the same in amount, the power of an individual worker to produce goods would be lessened. Moreover, any influx of laborers into the society as a whole would be attended by a diffusion of them among all the groups and subgroups, so that the power of an individual laborer to create any kind of goods would be reduced. This means that labor has lost some of its power to create *commodity*, which is the concrete name for general wealth, and its wages fall accordingly.

An influx of capital without any change in the number of laborers would have the opposite effect. It would add to the productive power of marginal labor. As the new capital should diffuse itself through the producing organism it would enlarge the product of workers everywhere. The wages of labor depend in part on a numerical ratio between units of capital and units of labor, as they coöperate in production; and the change in the ratio which enlarging capital causes improves the condition of the working people. The capital also diffuses itself throughout the system, every subgroup gets a share of it, and labor everywhere responds to this influence and produces more than before. In a change in this ratio—in a gain of *per capita* wealth in productive forms—lies one influence which has a great power over human destiny and is one main cause of weal or woe for coming generations. Method as it improves is related in two ways to this critical change in the ratio of capital to population. It is a prominent cause of the increase of capital. What men make by juggling with values and putting taxes on other men adds nothing to the aggregate wealth; but what they make by improved methods of production causes a net addition to it. The improvement in method also directly reënforces the influence of enlarging capital, by infusing productivity into labor and increasing its returns.

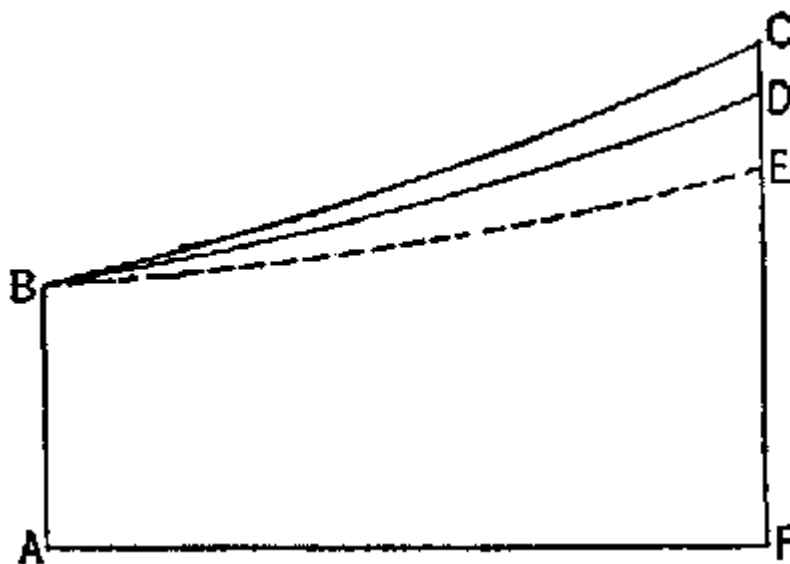
The Resultant of the Five Dynamic Changes acting Together.—So long as the increase of capital more than offsets the increase of population, the ultimate result of all five of the general changes which characterize a dynamic state is to increase the well-being of laborers. The movement of labor from point to point in the system of industrial groups is a necessary means of securing the largest gain for society as a whole and of diffusing the benefit among all members. It is wage earners who are most numerous and most needy, and the greatest benefit which can be credited to any economic influence is that which takes the shape of a rise in wages. Moreover, an upward trend in the rate of pay is of far greater importance than the level of the rate at any one time. A system that should afford high present wages would stand condemned if it precluded all chance of higher ones hereafter; while a system that should begin with a low rate and afford a guaranty that it should grow higher each year to the end of time would have the most important merit which any system could possess. The outlook it would afford for humanity would far outweigh a measure of hardship imposed on the present generation. A present purgatory with dynamic capabilities must in the end excel any earthly paradise which is held fast in a stationary state.

We may represent the resultant of the actual growth of population and of capital by the following figure:—



Measuring time by decades along the horizontal base line and the rate of wages at the beginning of a century by the line *AB*, we represent the increase in the pay of labor which would be brought about by an increase of capital not counteracted by any other influence by the dotted line *BC*, and the reduction which would be caused by an increase of population by the dotted line *BE*. The line *BD* describes the resultant effect of these two changes acting together, on the supposition that during the latter part of the century the growth of population is somewhat retarded and that the increase of capital is the predominating influence.

We may further represent the change in the rate of wages which is caused by improvements in method and organization by lines rising above the one which expresses the trend of wages as it is affected only by an increase of capital and of population.



AF measures time as before and *AB* the rate of pay at the beginning of the century. The dotted line *BE* represents the rise in wages due to the increase of capital, as it more than counteracts the growth of population. The rise of the line *BD* above *BC* represents the additional increase in wages which is brought about by improvements of method, and finally, the rise of *BC* above *BD* expresses the further addition to the pay of labor which comes by reason of improved organization. The uppermost line *BC* describes the resultant of all the dynamic changes on the supposition that they act in a natural way.

It will be seen that *BC* at first rises above *BD* rapidly and later runs nearly parallel with it. This expresses the fact that while gains insured by organization may continue for a long period, the

amount of them does not greatly increase after a fairly efficient type of organization has been secured. On the other hand, the fact that *BD* rises above *BE* by a wider and wider interval expresses the fact that gains which come from technical improvements may increase for an indefinitely long time.

The Rate of Interest contrasted with the Absolute Amount of it; this Amount Increasing.—The changes which make wages rise cause interest to fall and there would seem to be a partial offset for the general gain; but the chief cause of a declining *rate* of interest is an increase of the *total amount* of capital. The size of the income which comes to the capitalists as a class from their entire invested wealth grows larger wherever the amount of the fund increases more rapidly than the rate of interest falls. A million dollars yielding four per cent gives a larger income than a half million yielding five or six. It is a condition such as this which we have described in outline, and it enables the holders of investments to receive a constantly increasing total return, although the percentage yielded by a given amount invested grows continually smaller.

The Conditions of Increasing Future Well-being.—The realization of this resultant of all dynamic forces requires that the rate of growth of population should be subject to a natural check, that the increase of capital should not be unduly retarded, that technical improvements should go on, and that the organization which is effected should be of the kind which makes for efficiency but not for monopoly. Competition must be kept alive. In altered ways, indeed, the essential power of it must forever dominate the industrial system, as it will do if the state shall do its duty and not otherwise. A dynamic society requires a dynamic government whose enlarging functions are shaped by economic conditions.

CHAPTER XIX

THE LAW OF POPULATION

Since the optimistic conclusion reached in the preceding chapter is contingent on an increase of wealth which is not neutralized by an increase of population, it remains to be seen whether the population tends to grow at a rate that gives reason to fear such a neutralizing. Does progress in method and in wealth tend to stimulate that enlarging of the number of working people which, in so far as they are concerned, would bring progress to an end? Is the dynamic movement self-retarding and will it necessarily halt? The answer to this question depends, in part, on the law of population.

The Malthusian Law.—We need first to know whether the growth of population is subject to a law, and if so, whether this law insures the maintenance of the present rate of increase or a retarding of it. The law of population formulated by Malthus at the beginning of the last century is the single extensive and important contribution to economic dynamics made by the early economists. It was based more upon statistics and less on *a priori* reasoning than were most of the classical doctrines. Even now the statement as made by Malthus requires in form no extensive supplementing, and yet the change which is required is sufficient to reverse completely the original conclusion of the teaching. Malthusianism constituted the especially "dismal" element in the early political economy, and yet, as stated by its author, it revealed the possibility of a comfortable future for the working class. One might look with cheerfulness on every threatening influence it described if he could be sure that the so-called "standard of living" on which everything depends would rise. The difficulty lay in the fact that the teaching afforded no evidence that it would thus rise. The common impression of readers was that it was destined to remain stationary and that too at a low level. The workmen of Malthus's time were not accustomed to getting much more than the barest subsistence, and not many economists expected that they would get much more, even though the world generally should make gains.

The Popular Inference from the Malthusian Law.—If we state the conclusion which most people drew from the Malthusian law in its simple and dismal form it is this: Whenever wages rise, population quickly increases, and this increase carries the rate of pay down to its former level. The earnings of labor depend upon the number of laborers; a lessening of the number of workers raises their earnings and an increase depresses them; and therefore, if every rise in pay brings about a quick increase of population, labor can never hold its gains; every rise is the cause of a subsequent fall.

Malthus's Qualification of his Statement. —As we have said, Malthus so qualified his statement that he did not positively assert that this would describe the experience of the future; the fall in pay that should follow the increase of numbers might not always be as great as the original rise, and when a later rise should occur the fall following it might be less than this second rise. In some way workers might insist upon a higher standard of living after each one of their periodical gains.

Why this Qualification is not Sufficient.—The mere fact that the standard of living may conceivably rise does not do much to render the outlook cheerful, unless we can find some good ground for supposing that it will rise and that economic causes will make it do so. We should not depend too much on the slow changes that education may effect, or base our law on anything that presupposes an improvement in human nature. We need to see that in a purely economic way progress makes further progress easier and surer and that the gains of the working class are not self-annihilating but self-perpetuating. We may venture the assertion that such is the fact: that when workers make a gain in their rate of pay they are, as a rule, likely to make a further gain rather than loss. While there must be minor fluctuations of wages, the natural and probable effect of economic law is to make the general rate tend steadily upward, and nothing can stop the rise but perversion of the system. Monopoly may do it, or bad government, or extensive wars, or anarchy

growing out of a struggle of classes; but every one of these things, not excepting monopoly, would naturally be temporary, and even in spite of them, the upward trend in the earning power of labor should assert itself. Instead of being hopelessly sunk by a weight that it cannot throw off, the labor of the future bids fair to be buoyed up by an influence that is irrepressible.

Refutations of Malthusianism.—The Malthusian law of population has been so frequently "refuted" as to prove its vitality. It is in the main as firmly impressed in the belief of scientific men as it ever was, and some of the arguments which have been relied upon to overthrow it require only to be stated in order to be discarded. One of these is the claim that the statement of the law is untrue because, during the century in which the American continent, Australia, parts of Africa, and great areas elsewhere were in process of occupation, mankind has not actually pressed on the limits of subsistence. No intelligent view regards that fact as constituting anything but an illustration of the Malthusian law. A vast addition to the available land of the world would, of course, defer the time of land crowding and the disastrous results which were expected from it, but with the steady growth of population the stay of the evil influence would be only temporary.

An Objection based on a Higher Standard of Living.—The second objection is also an illustration rather than a refutation of the Malthusian doctrine; it asserts that the standard of living is now higher than it was, and the population does not increase fast enough to force workers to lower it. Malthus's entire conclusion hung upon an *if*. The rate of pay conformed to a standard, and if that standard were low, wages would be so; while if it were higher, wages would be higher also.

The Real Issue concerning the Doctrine of Population.—There is a real incompleteness in all such statements. Does the standard of living itself tend to rise with the rise of wages and to remain above its former level? When men make gains can they hold them, or, at any rate, some part of them, or must they fall back to the level at which they started? And this amounts to asking whether, after a rise in pay, there is time enough before a fall might otherwise be expected to allow the force of habit to operate, to accustom the men to a better mode of living and forestall the conduct that would bring them down to their old position. The standard of living, of course, will affect wages only by controlling the number of laborers, and the discouragement due to Malthusianism lies in the fact that it seems to say that the number of workers is foreordained to increase so quickly, after a rise in wages, as to bring them to their old level. Whether it does or does not do this is a question of fact, and the answer is a very clear one. The higher standards actually have come from the higher pay, and they have had time to establish themselves. Subsistence wages have given place to wages that provided comforts, and these again to rates that provided greater comforts and modest luxuries; and the progress has continued so long that, if habit has any power whatever, there is afforded even by the Malthusian law itself a guarantee that earnings will not fall to their former level nor nearly to it.

A Radical Change in Theory.—Progress is self-perpetuating. Instead of insuring a retrogression, it causes further progress. The man who has advanced from the position in which he earned a bare subsistence to one in which he earns comforts is, for that very reason, likely to advance farther and to obtain the modest luxuries which appear on a well-paid workman's budget. "To him that hath shall be given," and that by the direct action of economic law. This is a radical departure from the Malthusian conclusion.

Three Possible Conditions for the Wage-earning Class.—Workers are in one of three possible conditions:—

- (1) They may have a fixed standard and a very low one. Whenever they get more than this standard requires, they may marry early, rear large families, and see their children sink to their own original condition.
- (2) They may have a fixed standard, but a higher one. They may be unwilling to marry early on the least they can possibly live on, but may do so as soon as their pay affords a modicum of comfort.
- (3) They may have a progressive standard. There may be something dynamic in their psychology,

and it may become a mental necessity for them to live better and better with advancing years, and to place their children in a higher status than they themselves ever obtained.

A Historical Fact.—The manner in which Malthus was actually interpreted was as much due to the condition of workers in his day as to anything which he himself said. It was small comfort to know that, under the law of population, wages might conceivably become higher and remain so because of a higher standard of living, provided the higher standard was never attained. Facts for a long time were discouraging. In due time they changed for the better. The opening of vast areas of new land made its influence felt. It raised the pay of labor faster than the growth of population was able to bring it down. This had the effect of establishing, not only a higher standard, but a rising standard, and as one generation succeeded another it became habituated to a better mode of living than had been possible before. It was the sheer force of the new land supplemented by new capital and new methods of industry that accomplished this. It pushed wages upward, in spite of everything that would in itself have pulled them down.

A Retarded Growth of Population.—If Malthusianism, as most people understood it, were true, population should increase most rapidly during this period of great prosperity, and should do its best to neutralize the effect of new lands, new capital, and new methods. In some places the increase has been abnormally rapid, and in a local way this has had its effect; but if we include in our view the whole of what we have defined as civilized industrial society, the rate of growth has not become more rapid, but has rather become slower during this period. In one prosperous country, namely, France, population has become practically stationary. Even in America, a country formerly of most rapid growth, the increase, apart from immigration, has been much slower than it was during the first half of the nineteenth century. The growth of population, then, may proceed more slowly or come to a halt, even while wealth and earning powers are increasing. If this is so, a further accumulation of capital and further improvements in method will not have to struggle against the effects of more rapidly growing numbers, and their effects will become more marked as the decades pass. There will be a weaker and weaker influence against these forces which fructify labor and they will go on indefinitely, endowing working humanity with more and more productive power and with greater accumulations of positive wealth. Home owning, savings bank deposits, invested capital, and comfortable living may be more and more common among men who depend for their income mainly upon the labor of their hands. Is this more than a possibility? Is there an economic law that in any way guarantees it? Can we even say that general wealth will, without much doubt, redound to the permanent well-being of the working class, and that the more there is of this prosperity, the less there is of danger that they will throw it away by any conduct of their own? The answer to these questions is to be found in a third historical fact.

The Birth Rate Small among the Upper Classes in Society.—In most countries it is the well-to-do classes that have small families and the poor that have large ones. It is from the interpretation of this fact that we can derive a most important modification of the Malthusian law. It is the voluntary conduct of different classes which determines whether the birth rate shall be large or small; and the fact is that in the case of the rich it is small, in the case of the poor it is comparatively large, while in the case of a certain middle class, composed of small employers, salaried men, professional men, and a multitude of highly paid workers, it is neither very large nor very small, but moderate. In a general way the birth rate varies inversely as the earning power of the classes in the case, though the amounts of the variations do not correspond to each other with any arithmetical exactness. If one class earns half as much per capita as another, it does not follow that the families belonging to this class will have twice as many children. They do, on the average, have more children. There is, then, at least an encouraging probability that promoting many men from the third class to the middle class would cause them to conform to the habit of the class they joined. This class is at present largely composed of persons who have risen from the lowest of the classes, and any future change by which the third class becomes smaller and the second larger would doubtless retard the average birth rate of the whole society.

Motives for the Conduct of the Different Classes.—History and present fact are again enlightening in that they reveal the chief motive that determines the rapidity of the increase of the population.

When children become self-supporting from an early age, the burden resting on the father when he has a comparatively small number of them is as large as it ever will be. If they can earn all they cost when they reach the age of ten, the maintenance of the children will cost as much when the oldest child has reached that age as it will cost at any later time. Even though one were added to the family every year or two, one would graduate from the position of dependence every year or two, and the number constantly on the father's hands for support would probably not exceed five or six, however large the total number might become. The large number of children in families of early New England and the large number of them in French Canadian families at a recent date were due to the fact that land was abundant, expenses were small, and a boy of ten years working on the land could put into the family store as much as his maintenance took out of it. The food problem was not grave in those primitive places and times, and neither were the problems of clothing, housing, and educating. It is in this last item that the key to a change of the condition lay, for the time came when more educating was required, when the burden of maintaining children continued longer, and a condition of self-support was reached at no such early date as it had been in rural colonies.

The Effect of Endowing Children with Education and with Property.—When children need to be thoroughly educated, the burden of maintaining a family of course increases. An unduly large family means the lowering of the present standard of living for all and a lowering of the future standard for the children. With most workmen it is not possible either to endow many children with property or to educate them in an elaborate way. The fear, therefore, of losing present comforts for the family as a whole and the fear of losing caste by seeing the family drop, at a later date, into a lower social class, are arguments against large families.

Why Economic Progress perpetuates Itself.—The economic motive which causes progress to perpetuate itself and to bring about more and more progress is the determined resistance to a fall from a social status. The family must not lose caste. It must not sacrifice any of the absolute comforts to which it is accustomed, particularly when so doing entails a degradation. Such is human nature that the unwillingness to give up something to which one is accustomed is a far stronger spur to action than the ambition to get something to which one is not accustomed; and a social rank once attained is not surrendered without a struggle. A tenacious maintenance of status is the motive which figures most prominently in controlling the growth of population and the increase of capital. The rich maintain the status of the family by means of invested wealth, the poor do it by education, and members of the middle class do it by a combination of the two.

Status maintained by Education.—In case of wage earners the need of educating children and the advantages that flow from it overbalance the need of bequeathing to them property; and yet the need of bequeathing property of some kind is a powerful motive also. It is important to enable them to procure the tools of some handicraft, or to secure themselves against dangers from sickness or accident. Moreover, it is not altogether technical education which counts in this way. Culture in itself is a means, not only of direct enjoyment, but of maintaining a social rank. The well-informed person accomplishes directly what a well-to-do person accomplishes indirectly, in that he gets direct pleasures from life which other people cannot get, and he enjoys consideration of others and has influence with them as an uninformed person cannot. The need, therefore, of educating children for the sake of making them good producers and the need of doing it for the purpose of making them good consumers and of enabling them to make the most of what they produce works against too rapid an increase of numbers.

The Effect of Factory Legislation.—These motives are powerfully strengthened when they are reënforced by public opinion and positive law. The ambition of workers to secure laws which will forbid the employment of children under the age of sixteen is, in this view, a reasonable wish and one that if carried out would tend to promote the welfare of future generations. It is doubtless true that this is not the sole motive, and some weight must be accorded to the desire to reduce the amount of available labor, and to protect adults who tend machines from the competition of children who could do it as well or better. There is, however, an undefined feeling in the laborers' minds that when children all work from an early age the wages of the whole family somehow

become low, and that it takes all of them to do for the family what the parents might do under a different condition. The Malthusian law shows how, in the long run, this is brought about. The increased strength of the demand for factory laws and compulsory education is a positive proof of the growth of the motives which put a check on population.

Absolute Status and Relative Status both Involved.—The absolute comfort a family may enjoy and its social position are both at stake, and we need not trouble ourselves by asking whether the comparative motive—the need of keeping pace with others in the march of improvement—will cease to act if a whole community advances together. We saw at the outset that this motive acts powerfully on a superior class, which has before its eyes a lower class into whose rank some of its members may possibly drop. The lowest class must always be present, however a community may advance, and a well-to-do worker will always dread falling into it. If it should grow smaller and smaller in number, and if the second of the three classes we are speaking of should grow larger, the dread of falling from the one to the other would not disappear. The relative status—that which appeals to caste feeling and the desire for the consideration of others—would continue to be influential, as well as the desire for positive comforts; and the motive that depends on comparisons might even be at its strongest when the lowest class should so dwindle that few would be left in it except cripples, the aged, or the feeble-minded. An efficient worker would struggle harder to keep his family out of such a class than to keep it out of one which would have upon it only the ordinary stigma of poverty.

Checks more Effective as Wealth Increases.—It is clear that the dominant motives which restrain the growth of population act more powerfully on the well-to-do classes than on the poor. The need of invested wealth, the need of education, the determination to adhere to a social standard of comfort and to avoid losing caste, are stronger in the members of the higher classes than in those of the lower ones, and become more dominant in the community as more and more of its members belong to the upper and the middle classes.

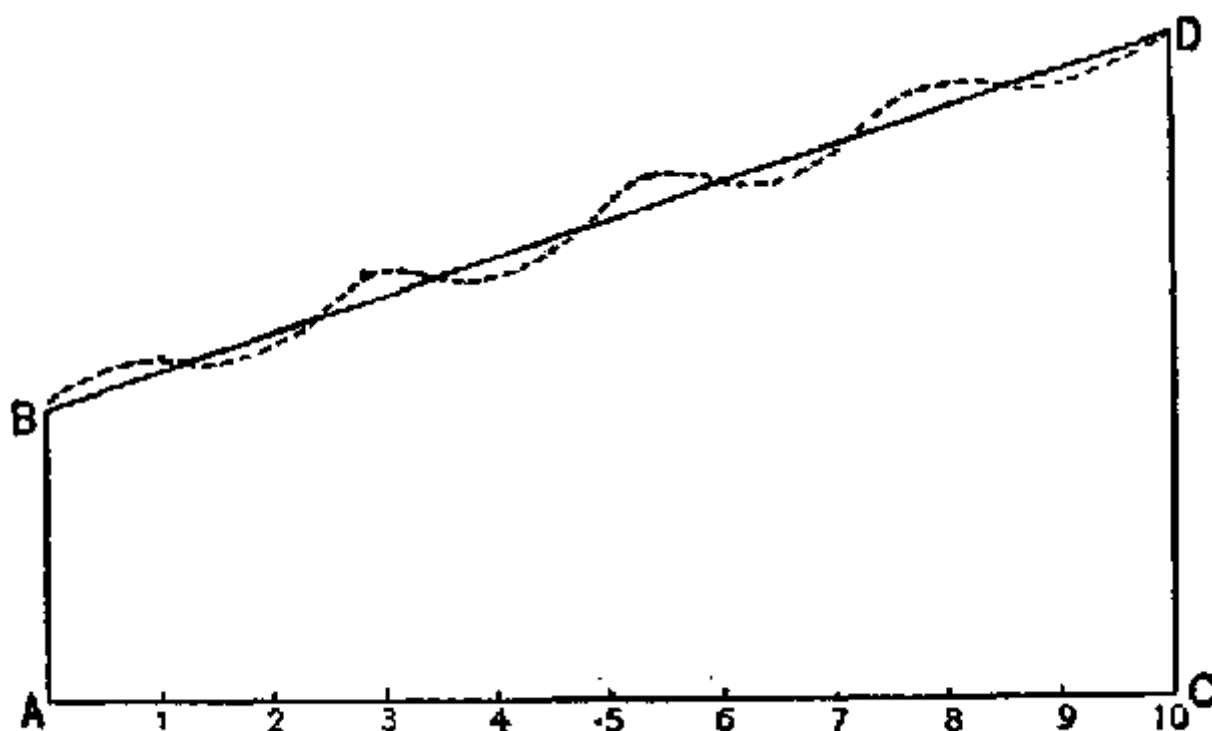
Immediate Causes of a Slow Increase of Population.—The economic motive for a slow growth of population can produce its effect only as it leads to some line of conduct which insures that result. Means must be adopted for attaining the end desired, and when one looks at some of the means which are actually resorted to, he is apt to get the impression that an indispensable economic result is in some danger of being attained by an intolerable moral delinquency. Must the society of the future purchase its comforts at the cost of its character? Clearly not if the *must* in the case is interpreted literally. A low birth rate may be secured, not at the cost of virtue, but by a self-discipline that is quite in harmony with virtue and is certain to give to it a virile character which it loses when men put little restraint on their impulses. Late marriages for men stand as the legitimate effect of the desire to sustain a high standard of living and to transmit it to descendants; and late marriages for women stand first among the normal causes of a retarded growth of population. Moreover, the same moral strength which induces men to defer marriage dictates a considerate and prudent conduct after it, and prevents unduly large families without entailing the moral injury which reckless conduct involves. On the other hand, there may be an indefinite postponement of marriage by classes that lack moral stamina and readily lapse into vice. There are vicious measures, not here to be named in detail, which keep down the number of births or increase the number of deaths, mostly prenatal, though the infanticide of earlier times is not extinct. By strength and also by weakness, by virtue and also by vice, is the economic mandate which limits the rate of growth of population carried out. A limit of growth must be imposed if mankind is to make the most of itself or of the resources of its environment. There is no great doubt that it will be so imposed, and the great issue is between the two ways of doing it; namely, that which brutalizes men and depraves them morally and physically, and that which places them on a high moral level.

Moral Losses attending Civilization.—There is little doubt that vice has made gains which reduce in a disastrous way the otherwise favorable results of increasing wealth. The "hastening ills" that are said to attend accumulating wealth and decaying manhood have come in a disquieting degree and forced us to qualify the happy conclusions to which a study of purely economic tendencies leads. The evil is not confined to the realm of family relations, but pervades politics, "high finance," and a

large part of the domain of social pleasures. The richer world is the more sybaritic—self-indulgent and intolerant of many moral restraints; and if one expects to preserve an unquestioning trust in the future, he must find a way in which the economic gains which he hopes for can be made without a casting away of the moral standards which are indispensable. The greatest possible achievement in this direction would be an abandonment of vicious restraints on population and a general increase of the forethought and the self-command which even now constitute the principal reliance for holding the birth rate within prudent limits.

The Working of Malthusianism in Short Periods as Contrasted with an Opposite Tendency in Long Ones.—There is little doubt that by a long course of technical improvement, increasing capital, and rising wages, the laboring class of the more prosperous countries have become accustomed to a standard of living that is generally well sustained and in most of these countries tends to rise. There is also little uncertainty that a retarded growth of population has contributed somewhat to this result. One of the facts which Malthus observed is consistent with this general tendency. Even though the trend of the line which represents the standard of living be steadily upward, the rise of actual wages may proceed unevenly, by quick forward movements and pauses or halts, as the general state of business is flourishing or depressed. In "booming" times wages rise and in hard times they fall, though the upward movements are greater than the downward ones and the total result is a gain.

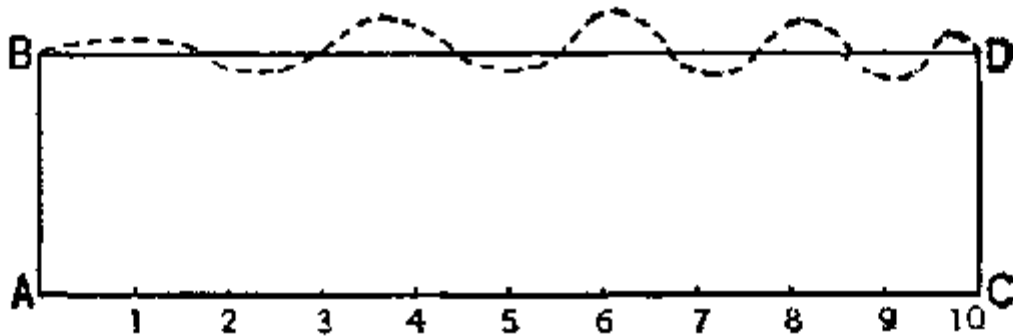
Now, such a quick rise in wages is followed by an increase in the number of marriages and a quick fall is followed by a reduction of the number. The birth rate is somewhat higher in the good times than it is in the bad times. Young men who have a standard of income which they need to attain before taking on themselves the care of wife and children find themselves suddenly in the receipt of such an income and marry accordingly. There is not time for the standard itself materially to change before this quick increase of marriages takes place, and the general result of this uneven advance of the general prosperity may be expressed by the following figure:—



The line AC measures time in decades and indicates, by the figures ranging from 1 to 10, the passing of a century. AB represents the rate of wages which, on the average, are needed for maintaining the standard of living at the beginning of the century; and CD measures the amount that is necessary at the end. The dotted line which crosses and recrosses the line BD describes the actual pay of labor, ranging now above the standard rate and now below it. Whenever wages

rise above the standard, the birth rate is somewhat quickened, and whenever they fall below it, it is retarded; but the increase in the rate does not suffice to bring the pay actually down to its former level. The descent of the dotted line is not equal to the rise, and through the century the earnings of labor fluctuate about a standard which grows continually higher.

The pessimistic conclusion afforded by the Malthusian law in its untenable form requires (1) that the standard of living should be stationary and low, and (2) that wages should fluctuate about this low standard. In this view the facts would be described by the following figure:—



AC measures a century, as before, by decades, and the height of *BD* above *BC* measures the standard of living prevailing through this time. The dotted line crossing and recrossing *BD* expresses the fact that wages sometimes rise above the fixed standard and are quickly carried to it and then below it by a rapid increase in the number of the laborers.

Members of the Upper Classes not Secure against the Action of the Malthusian Law if a Great Lower Class is Subject to It.—It is clear that if the workers are to be protected from the depressing effect which follows a too rapid increase of population, the Malthusian law in its drastic form must not operate in the case of the lowest of the three classes, so long as that is a numerous class. A restrained growth in the case of the upper two classes would not suffice to protect them if the lowest class greatly outnumbered them, and if it also showed a rapid increase in number whenever the pay of its members rose. The young workers belonging to this class would find their way in sufficient numbers into the second class to reduce the wages of its members to a level that would approximate the standard of the lowest class. Under proper conditions this does not happen; for the drastic action of the Malthusian law does not take place in the case of the third class as a whole, but only in the case of a small stratum within it.

Countries similarly exposed to Dangers from Other Countries.—Something of this kind is true of a number of countries which are in close communication with each other. If a rise of pay gave a great impetus to growth of population in Europe, and if this carried the pay down to its original level or a lower one, emigration would be quickened; and although the natural growth in America might be slower, the American worker might not be adequately protected. The influx of foreigners might more than offset the slowness of the natural growth of population in America itself. The most important illustration of this principle is afforded by the new connection which America is forming with the Asiatic nations across the Pacific.

CHAPTER XX

THE LAW OF ACCUMULATION OF CAPITAL

Adam Smith and many others have noticed that the growth of capital varies with the intelligence and the foresight of a population. It should therefore increase in rapidity as intelligence increases. A high valuation of the future is a mark of intelligence, and there is no reason why an entirely rational being should value a benefit accruing to himself in the future any less than he does a benefit accruing at once. Perfectly rational estimates of present and future, if there are no influences affecting the choice except these mere differences in time, mean that the two stand at par. It was once supposed that the disposition to save from one's present income varies directly as the rate of interest of the capital which is thus accrued, and in the main this is still regarded as a nearly self-evident proposition. Abstinence imposes a present cost on anybody that practices it. Whosoever saves a dollar misses the gratification which that dollar might bring. He may regard that sacrifice as fixed. It causes him to go without his marginal gratification, whatever that may be. If interest for a year amounts to twenty-five cents, the man has at the end of the year one dollar and twenty-five cents, with which to do whatever he may choose. He may spend it, if he will, and get all the gratification that a dollar and a quarter can bring. If interest stands at five per cent per annum, his abstinence will bring him only one dollar and five cents a year, and that, or whatever he can get by means of it, is a smaller benefit than the one he could get for one dollar and a quarter. If it is barely worth while to go without something now in order to have a dollar and five cents in the future, it is more than worth while to do it in order to have a dollar and a quarter at the same future date. If a man is induced to save only a dollar, for the sake of having a dollar and five cents at the end of the year, why should he not save two dollars, in order to have two dollars and a half at that time? Why should not the amount of his present privation increase, when the surplus of benefit he can gain by it at a future date grows greater? Such is the reasoning, and it seems entirely plausible, if we assume that what the man loses is the gratification he might have by spending his dollar, and that what he gains is the benefit of spending it and its accumulation of interest at the end of the year. The assumption is that the man proposes at a certain future date to spend the principal or the capital which he acquires by saving in the present, together with whatever it may have earned as interest; that he measures the personal benefit which he can get by this spending, and finds the larger benefit better worth a fixed sacrifice in the present than a small one.

The Actual Purpose of Abstinence.—Most capital is saved with no expectation of ever spending the principal. The motive is a perpetual income, which the capital will earn. What the man appraises in his own mind is not the personal benefit he can get by spending a dollar and five cents at the end of the year; it is the benefit that will come from spending five cents at the end of the first year, another five cents at the end of a second, and a more or less similar amount at the end of every year that shall follow. It is a perpetual income, and as the man's life is limited, the greater part of it must accrue to others than himself. The satisfaction which he will get from it near the close of his own life comes altogether from the prospect of passing the principal unimpaired to others and in assuring to them and to their successors the perpetual income which the foundation yields.

Even on this basis it might be supposed that a large perpetual income would offer a greater inducement to save than a small one, and therefore that the amount of saving would be greater when the rate of interest was higher. This would be true if the importance of the perpetual income could be estimated in this simple way by the mere amount of it.

Conditions affecting the Importance of a Future Income.—The importance of a future income may be large because of the prospective helplessness or poverty of the one who expects to enjoy it. A workman may save at a great present cost to himself in order to provide for old age or sickness, in which case the income from the savings, and often the savings themselves, would be the means of averting a great calamity. To make one's self secure against privation in the future is worth more

than to add to one's comforts in the present. If a certain minimum amount were needed to avert starvation at the end of a man's life, he should secure that amount at all hazards, however much that may trench on his present comforts. Now, as the amount which he can have at the end of his life depends largely on the rate of interest which his savings will earn, during such time as they may remain in a productive shape, it will take more positive abstinence on his part to keep himself from starvation when the rate of interest is low than it will when the rate is high. If there were no interest at all, he would have to put by from his income his entire old-age fund. If the rate were a hundred per cent per annum, taking a very small part of the fund out of the income of his active years would suffice, since the fund itself would earn the remainder. Is the income which is provided for the future to be treated as a variable amount in addition to some other income, or is it to be regarded as a fixed amount, which is needed for some definite purpose? On the answer to this question depends the entire issue as to whether a low rate of interest or a high one affords the larger incentive for saving.

Future Incomes More or Less Fixed usually Needed.—Recent writers have called attention to the fact that in many cases saving has the providing of a definite future income in view. The owner of a landed estate, who intends to leave it to a son, may try to provide from his rents an endowment which will save from want or from an unhappy approach to want his daughters and his younger sons. He might accomplish this, indeed, without any present saving by putting rent charges or mortgages upon his land, but that would trench on the income which his heir can derive from it. It would reduce the establishment which the heir can maintain and cause him to fall out of the class to which his father has belonged. Rather than do this, the present owner will usually reduce the present standard of living of the entire family and try to make sure that its future standard shall not fall below the one thus established. It seems better to maintain the somewhat lower standard through a series of generations than to make the present mode of living more luxurious at the cost of unclassing one's self and one's heirs at a later date.

This Fact heretofore Underestimated.—To the writers who have cited this familiar fact it appears to require merely a partial amendment of the general proposition that a high rate of interest insures more saving than a low one, and the inference which one naturally draws from this supposed fact is that growing wealth, as is still supposed, reduces the incentive for the accumulation of more wealth. Such an accumulation is an essential part of general progress and is practically necessary for sustaining the rate of wages. Here, then, if this supposition is true, we might see an important influence tending to bring progress to a standstill. Great wealth as the result of progress, a reduced motive for acquiring still further wealth, a retarding of progress—such would be the sequence. Dynamics would thus be, in a very important respect, self-retarding if not self-halting.

Future Standards of Living the Important Element.—The actual fact, as we may venture to affirm, is that the standards of living which need to be maintained in the future are the all-important element in the case. To the laboring man it is necessary to avoid starvation or the workhouse; to the well-paid artisan it seems necessary to do this and to make for his children a provision which will keep them in the same class with himself. To the capitalist who by successful business has raised himself above the artisan class it seems necessary to keep his children above the rank from which he has lifted the family; and the same principle applies to all the wealthier classes. The tenacity with which a man holds to a station in life outweighs his desire to add to his own present luxuries, and his ambition to keep his children in a certain station far outweighs his desire to add to their present luxuries.

The Importance of Future Standards not affected by the Fact that Men differ in Altruism.—This does not at all raise the question how many people care as much for their children as they do for themselves. That is not the principle at issue. *In so far as men do care for their children* the end they seek for them is to enable them to avoid what seems like a disaster, rather than to make positive gains in the way of comfortable living. Even in the case of those who have little altruism, such provision as they make for descendants is inspired by the desire to keep them within a certain class more than by any computation of how many comforts or luxuries a surplus income of any amount might give them. Whatever provision for children a selfish or dull person makes is

dictated by the same motive that incites him to make provision for his own future, and in both cases it is chiefly the maintenance of a standard that he usually has in mind.

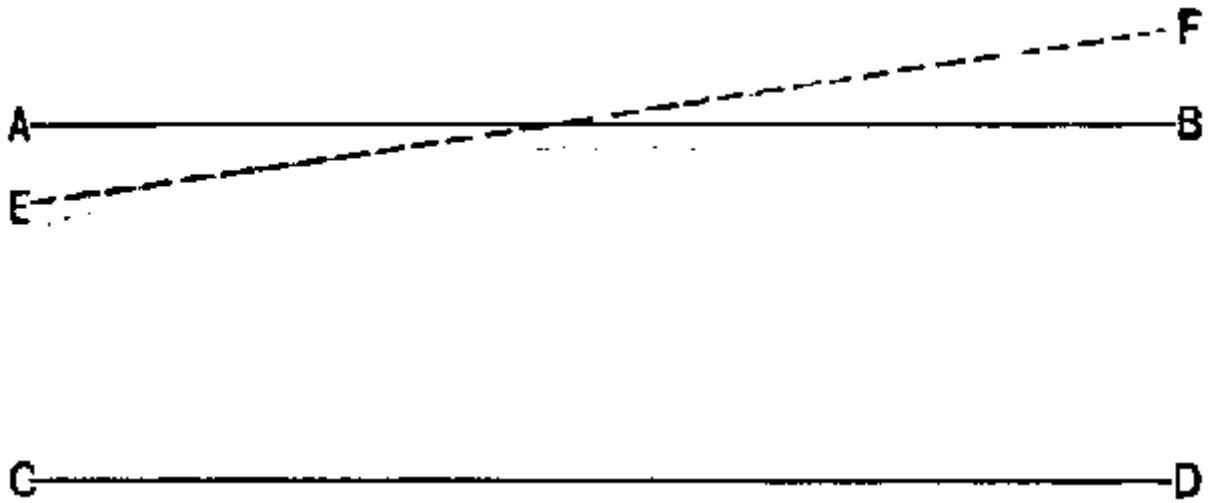
The Principle not invalidated by the Fact that Forethought is often Weak.—All the motives for saving may be unduly weak. The man may care far less for the future than he should do, and may make an unreasonably small provision for it. Incapacity to estimate the importance of this provision, as well as the degree of selfishness which excludes the exercise of self-denial for the benefit of others, are not the only reasons for this disregard of the future. There is an optimism which is natural; and a religious faith which bids one not to take unduly anxious thought for the morrow may occasionally be carried to the harmful length of justifying a neglect of coming years and their needs. An intelligent trust in Providence, however, incites a man to do his own full duty, and it is the better men who do the most to avert future evils from their families. The principle that we are maintaining applies as completely in the cases of those who make small provision for the future as it does in any others. In the majority of cases whatever they do save is set aside chiefly for the maintenance of some standard of living by those who get the benefit of it; and to maintain any standard whatever, whether high or low, requires a larger fortune when interest is low than it does when interest is high.

Forethought limited in the Length of Time it Covers.—There is little danger that we make any mistake in ascribing to the dread of falling below a standard of living more influence on the accumulation of capital than any other motive exerts. This will be clearer if we look at the actual manner in which present and future are estimated and compared. The fact is not that most people care unduly little for all future benefits as compared with present ones, as it is that they throw off responsibility for all the future beyond a limited period. The perspective does not reduce the size of remote objects unduly as often as it cuts off the view of them altogether. In looking through coming years a man is subject to a certain economic myopia. One might compare what he sees with what a man sees in a foggy atmosphere, if it were not for the fact that the view of comparatively near objects is clear. It is as though a circle of fog surrounded him and cut off somewhat abruptly the view of everything that was far away. For a short distance the man sees everything with comparative clearness, but the limitless spaces that lie beyond he sees not at all. We have seen that the amount of abstinence he will practice now for the sake of what he or others will gain later varies as he is rational or foolish, unselfish or selfish, and it is also true that the length of his outlook into the future varies in the same way. There are all gradations of far-sightedness among those who create capital; but even comparatively near-sighted ones usually provide for the maintenance of some standard or other during the period that falls within their range of vision, and this requires that they should save more when interest is low than they do when interest is high.

Marginal Capitalists.—In this connection, however, it is to be noted that economic myopia may go to the extreme length of making men nearly indifferent to all future standards. In this case they constitute an exception to the general rule, since whatever they save, if they save at all, is likely to be more when interest is high than when it is low. They are marginal capitalists, who are not influenced by any benefits except immediate ones and only inquire how much an investment will, from the day when it is made, add to their own incomes. The higher rate is then the greater lure. Moreover, other capitalists, who are influenced mainly by regard for future standards of living, are somewhat affected by the immediate benefit which marginal savers have exclusively in view. To the extent that they are so, the higher the rate of their immediate returns, the more strongly are they impelled to "abstain" and accumulate. The essential fact is that marginal capitalists are few numerically, and their savings count for little as they enter into the general fund, and that most capitalists, including nearly all who save great amounts, do it chiefly from a desire to maintain themselves and their descendants on an established level of living. In the main the social motives for saving are those we have described.

Enjoyment largely Teleological.—There is a special reason why a rational man, if offered an enjoyment now or later, at his option, is quite likely to take it later. Enjoyment is mainly teleological. It consists in a conscious approach to a desirable end. The knowledge that one's efforts to attain a desired goal are successful and that the good thing is really coming, sheds a light on the present.

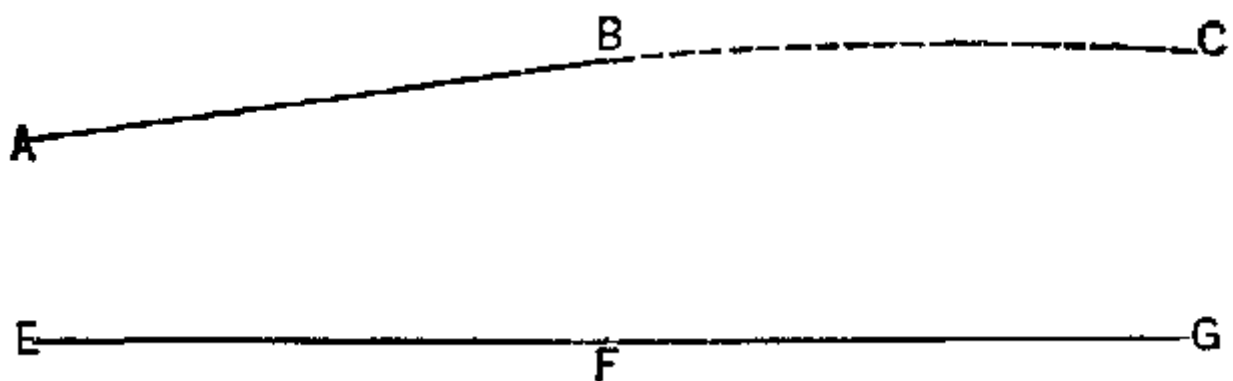
Indeed, it is anticipation and memory which prolong any enjoyment, and of these anticipation is the more effective. The knowledge that one is at a certain time to sail for a foreign tour confers before the sailing an enjoyment which is often more than a foretaste. It often rivals the pleasure that is consciously taken in the trip itself. A man may be happy for years in the prospect of a business success or a prospect of election to a public office, and many years of hard labor in scientific investigation may be illuminated by the expectation of the ultimate discovery and its consequences. There is a good reason why even an average man, as well as a wise one, will wish to distribute his expenditures over the different periods of his life, and to give a preference to the future whenever that is necessary in order to enable him to hold through his earlier years the comfortable assurance that his later ones are well provided for.



If the line *AB* represents by its distance above *CD* a fixed standard of living during a period of ten years, the highly rational man will prefer to take something from the enjoyments of the first five and bestow them on the second five. The consciousness of improvement, of the fact that every year will bring a new enjoyment never before experienced, makes the whole life brighter than it could be with any other disposition of the available means of pleasure. The man's standard of living during the whole ten-year period will be represented by the rising dotted line *EF*.

The Effect of Robbing the Future.—If a man pursued the opposite course, of taking something from the future to add to the desirableness of the present, thus establishing a falling standard of living, he would have to relinquish every year something to which he was accustomed, which would cause him a keen pain. The very excessive gains of the present would thus become sources of unhappiness at a later period, while the anticipation of the later unhappinesses would throw a shadow over the present. The men who in spite of all this live recklessly and waste their present substance do so, not so much because they undervalue so much of the future as falls within their purview, as because they are so extremely short-sighted that over nearly all of the future they have practically no vision at all.

The Actual Conduct of a very Reasonable Man.—The real fact in the case of a reasonable man is represented by the following figure:—



Line *EF* measures fifty years and line *FG* another fifty. The heavy line *AB*, rising toward the right, represents the rising standard of living which the man's reason makes him maintain during the period over which his vision is clear, while the dotted line *BC* represents the standard for which, in an imperfect way, he makes provision during the next fifty years. Over later periods his vision does not extend at all. It loses clearness after the point *B* is passed, and in the same proportion it loses influence over the man's conduct. He therefore reconciles himself to whatever standard may prevail, even though it were a stationary one during the latter part of the time. Very seldom, however, would the man consciously lower the standard even during this later period.

The Effect of Limited Vision on the Valuation of a Perpetual Income.—This failure of vision, or economic myopia, accounts for the fact that the infinite series of payments of interest that a sum of invested capital will earn do not overbalance, in the man's estimate, the principal which he must refrain from spending in order to get them. If interest is at five per cent, abstaining from using a hundred dollars for present pleasure will put into the man's hands, in twenty years, a sum equal to the principal, in twenty years more another like sum, and so on *ad infinitum*. The man who considers whether he shall save a hundred dollars or spend it might be said to be comparing the importance of a hundred present dollars with that of an infinite number of future ones. In his consciousness the number is not infinite, because his vision does not extend over much of the future. The fact of most importance, as determining whether low interest causes small savings, is that in weighing the importance of the dollars which will be used during the period over which his vision ranges the average man is influenced by a desire to maintain some standard of living, which involves the more saving, the lower the rate of interest.

The Action of the Motive for Saving on Minds of Varying Degrees of Reasonableness.—Not only the man who looks a little way forward, but the man so constituted that he can content himself with a falling standard, is impelled to save more if interest is low than he is if interest is high, so long as he deems it necessary to maintain any standard at all; but much importance still attaches to the question whether the standard which the man hopes to maintain is a rising, a stationary, or a falling one. The average man, indeed, does hope to maintain at least a stationary standard during so much of the future as he cares much about. This mode of distributing pleasures appears in matters both small and great. In taking a walk for pleasure one is more likely to go up a rising grade first and descend afterward than he is to go down at first and afterward bear the fatigue of climbing. While there may be those who would rather play in the forenoon and work in the afternoon, when the choice is presented at the beginning of the day, there are certainly more among the classes that society depends on for capital who would put the work in the forenoon and the pleasure in the afternoon or evening. If a man were taking a canoeing trip on a swiftly flowing stream, he would paddle his boat up the stream and then come down with the current, rather than let it float down with the current and then paddle it back. If it be thought that this is true of only a specially rational mind, one may say that the capitalist class represents men who in this respect are more than ordinarily rational. They are generous, foresighted, and in their relation to descendants affectionate. The men who really do the saving for society have more to make them think and act in the intelligent way we have described than do ordinary men. The miser, the paragon of abstinence, can hardly be said to be the man who thinks too much of future enjoyments, for he contemplates no such enjoyments that call for spending money, for he never means to spend it. He is an abnormal type and fortunately a rare one. With him there is a standard of *possessions* to be maintained, rather than one of enjoyments, and it is always a rising standard, since he cares for nothing so much as to see his possessions increasing. To make them increase at any given rate when the direct earnings of capital are small requires severer abstinence than it would if the capital yielded a larger return.

The Effect of an Increase in the Number of Persons who seek to maintain a Rising Standard of Living.—While it is true that even the half-evolved intellects that care little for coming years do, if they care for them at all, find themselves impelled to save more capital when interest is small than they do when it is large; it is also true that minds of a high order save more than minds of a low one. In order to live during one's latter years just out of danger of the workhouse, one does not need to trench deeply on the comforts and pleasures which he is able to enjoy during the greater part of his life; but if he is determined to live to the end of his days as well as he has done at any time and to help his children to do the same, he must practice a severer self-denial and accumulate a larger fund. Still sharper becomes the abstinence and still greater the accumulated fund where men provide for a future mode of living that shall surpass the present one. The importance of this fact lies in this: the condition which brings with it a low rate of interest does so because of the great number of men who do thus value a future standard of living that shall be at least stationary if not positively rising. The growing size of the social capital implies a more general appreciation of the importance of future well-being. Because men's economic psychology has

become what it is and because it is still changing for the better there is a second reason for expecting that the accumulation of capital will not hereafter be retarded. We make here no extravagant claim as to the number of persons in a community who take the more rational views as to present and future. The number of each class is what it is; but facts show that the maintenance of some standard is the most efficient motive for saving in the case of each one of them, and that low interest therefore calls for large accumulations. They do show that the number who take the more rational views is a growing class, that they accumulate more than other classes, and that every addition to their relative number makes for more rapid accumulation within the society of which they are members. Two decisive reasons, then, exist for thinking that the growth of capital will never end or check further growth. There are still further facts, however, which have a bearing on this problem.

The Importance of the Character of the Increases which are the Largest Sources of Accumulation.—If one has a doubt whether the large sums which enter into the capital which is steadily accumulating are saved under the influence of a desire to maintain a standard, this doubt will be removed by a consideration of the source from which great accumulations come. They come most largely from the net profits of the *entrepreneur*. Next to that they come from the earnings of what must be classed as labor, though much of it is labor of a special and very superior sort. The salary which the head of a corporation receives, the fees that its lawyers get, the fees that come to eminent surgeons or engineers, are all payments for labor; and these, taken together with the earnings of well-paid artisans, successful farmers, and very many others, constitute the second contribution to accumulating capital. Savings from simple interest itself constitute the third contribution.^[1]

Now, of these sources of income, net profits and the wages of superior labor are transient, and the profits are particularly so. The man whose mill earns fifty per cent in a particular year would be foolish in the last degree if he used all that as income. That would mean brief and riotous enjoyment, followed by a most painful fall from the standard so established. He will naturally spend some part of the phenomenal dividend and lay aside enough of it to afford a guarantee that his future income will not fall below the present one. The man who during the best years of his working life enjoys a salary or professional fees amounting to a hundred thousand dollars a year would be almost equally foolish if he were to spend it all as he earns it, leaving his family unprovided for and his own later years exposed to the pains of sharp retrenchment. Transient incomes suggest to every one who has any degree of reason the need of establishing and maintaining some future standard of living, and of investing enough to accomplish this. This is more true, of course, when the rate of interest is low.

The Importance of the Need of Enlarging a Business.—There is a special reason why legitimate business profits are morally certain to be to a large extent laid aside for investment. The man would say that he "needs them in his business." They come at a time when there is an inducement to enlarge the scale of his profitable operations. The man who is getting a dividend of fifty per cent per annum must make hay while the sun shines, and he can do it by doubling the capacity of his mill. What he makes and what he can borrow he uses for an increase of his output, which it is important to secure during the profitable time. All this means a quick increase of the total capital in existence.

The profits of a monopoly are not transient, but are likely to be both long-continued and large, and it might seem that they would constitute a larger source of addition to capital than those profits which come from technical improvement. There are several reasons why this is not the fact. In the first place, what we are discussing is the addition that profits make to the total capital of society, rather than to the capital of any one person or corporation. The monopoly makes its gains by taking something from the pockets of the general public, and in so far it reduces the power of the general public to save.

It might be alleged, however, that since a monopoly reduces wages and interest, adds to profits, and creates enormous incomes for a few persons, it really diverts income from a myriad of persons

who would save very little of it, and puts it into the pockets of a few persons who are likely to save a great deal of it. This might conceivably add to the capital of society were it not for the fact that the more secure and regular gains of monopolies are made the basis of large capitalization. A company that earns twenty-five per cent of its real capital per annum may have its stock diluted with four parts of water and pay only five per cent in dividends on its capitalization. This looks like interest and is apt to be treated as such by those who receive it. It is, therefore, not a more favorable income from which to make accumulations of capital than is the interest on real capital. The sudden gains which promoters and manipulators of consolidated companies make are, indeed, transient gains and may be largely added to capital. The introduction of a régime of monopoly may insure a period of much saving by the class that profits by it; but the later career of the monopoly is unfavorable to the growth of capital.

The Special Effect of a Prospective Fall in the Rate of Interest. —If interest which continues steadily at a low rate affords an especially strong incentive for saving, it follows that a falling rate, one that begins low and steadily becomes lower, affords a still stronger one. The average rate during the years of the future for which a prudent man makes provision is made, of course, lower than it would be if the rate were stationary. This influence is probably not as effective as it would be if the remote future were included in the view of those who are securing capital. On account of the near-sightedness to which attention has been called, a rate of interest that begins at four per cent and falls very slowly to three and a half presents to those who have this defective vision the same incentive to saving as one that begins at four per cent and remains steadily at that figure. What is true, however, is that a falling rate is to be expected, that this fact acts as a stimulus for saving in the case of the more far-sighted classes, and that the number of persons in these classes is increasing.

In so far as the increase of capital is concerned society is secure against the danger of reaching a stationary state. Progress in wealth will not build a barrier against itself by stinting the resources on which hereafter labor must rely. When we examine the sources from which capital mainly comes, we shall further test the probability that the instrumentalities which add productive power to human effort will increase through the longest period that science needs to take account of.^[2]

FOOTNOTES

^[1] Gains which come from holding land which rises in value more rapidly than the interest on the price of it accumulates, is to be rated as part of net *entrepreneur's* profits.

^[2] For a somewhat similar view of the effect of a fall of interest on the accumulation of capital, see Webb's "Industrial Democracy," Vol. II, pp. 610-632.

CHAPTER XXI

CONDITIONS INSURING PROGRESS IN METHOD AND ORGANIZATION

The Possibility of a Law of Technical Progress.—It might seem that inventions were not subject to any influence that can be described under the head of a law. Genius certainly follows its own devices, and inventive power that has in it any touch of genius may be supposed to do the same. It is, however, a fact of experience that some circumstances favor and increase the actual exercise of this faculty, while other influences deter it. Moreover, what is important is not merely the making of inventions, but the introduction of such of them as are valuable into the productive operations of the world. Some influences favor this and others oppose it, and it is entirely possible to recognize the conditions in which economies of production rapidly take place in the actual industry of different countries.

Technical progress has been particularly rapid in the United States, though in this respect Germany has in recent years been a strong rival, and ever since the introduction of steam engines and textile machinery, England has continued to make a brilliant record. France, Belgium, and a number of other countries of Europe have developed an industry that is in a high degree dynamic, and Japan is now in the lists and giving promise of holding her own against the best of her competitors. The question arises whether it is something in the people, or something in their natural and commercial environment, which makes differences between their several rates of progress.

Inventive Abilities widely Diffused.—In so far as originating important changes is concerned, mental alertness and scientific training without doubt have a large effect. Some races have by nature more of the inventive quality than others, but within the circle of nations that we include in our purview no one has any approach to a monopoly of this quality. Any people that can make discoveries in physical science can make practical inventions, and will certainly do so if they are under a large incentive to do it. Moreover, alertness in discovering and duplicating the inventions of others is as important in actual business as originating new devices. At present it is a known fact that the Germans not only invent machinery, but quickly learn to make and to use machinery that originates elsewhere and demonstrates its value in reducing the cost of the production; and the remote Japanese have not only surpassed all others in the quick adoption of economic methods that have originated in Western countries, but have put their own touch upon them and revealed the existence of an inventive faculty that is likely to make them worthy rivals of Occidental races.

The Importance of Inducements to make and use Inventions.—Granted a wide diffusion of inventive ability, the actual amount of really useful inventing that is done must depend on the inducement that is offered. Will an economical device bring an adequate return to the man who discovers it and to the man who introduces it into productive operations? If it will, we may expect that a brilliant succession of such devices will come into use, and that the power of mankind to bend the elements of nature to its service will rapidly increase.

The Usefulness of a Temporary Monopoly of a New Device for Production.—If an invention became public property the moment that it was made, there would be small profit accruing to any one from the use of it and smaller ones from making it. Why should one *entrepreneur* incur the cost and the risk of experimenting with a new machine if another can look on, ascertain whether the device works well or not, and duplicate it if it is successful? Under such conditions the man who watches others, avoids their losses, and shares their gains is the one who makes money; and the system which gave a man no control over the use of his inventions would result in a rivalry in waiting for others rather than an effort to distance others in originating improvements. This fact affords a justification for one variety of monopoly. The inventor in any civilized state is given an exclusive right to make and sell an economical appliance for a term of years that is long enough to pay him for perfecting it and to pay others for introducing it. Patents stimulate improvement, and

the general practice of the nations indicates their recognition of this fact. They all give to the inventor a temporary monopoly of the new appliance he devises, but this monopoly differs from others in this essential fact: the man is allowed to have an exclusive control of something which otherwise might not and often would not have come into existence at all. If it would not,—if the patented article is something which society without a patent system would not have secured at all,—the inventor's monopoly hurts nobody. It is as though in some magical way he had caused springs of water to flow in the desert or loam to cover barren mountains or fertile islands to rise from the bottom of the sea. His gains consist in something which no one loses, even while he enjoys them, and at the expiration of his patent they are diffused freely throughout society.

Possible Abuses of the Patent System.—It is of course true that a patent may often be granted for something that would have been invented in any case, and patents which are granted are sometimes made too broad, and so cover a large number of appliances for accomplishing the same thing. In these cases the public is somewhat the loser; but for the reasons about to be given this loss is far more than offset by the gain which the system of patents brings with it.

The gains of the inventor cannot extend much beyond the period covered by his patent, unless some further and less legitimate monopoly arises. If the use of an important machine builds up a great corporation which afterward, by virtue of its size, is able to club off competitors that would like to enter its field, the public pays more than it should for what it gets; and yet even in these cases it almost never pays more than it gets. The benefit it derives is simply less cheap than it ought to be. Much of the power of the telephone monopoly has been extended beyond the duration of its most important patent, and that patent was in its day broader than it should have been; and yet there never was a time when the use of the telephone in facilitating business, and in saving time and trouble in a myriad of ways, did not far outweigh the total cost which the users of telephones incurred. As we shall soon see, important inventions invariably confer some benefit on the public at the start. The owner of the new device must find a market for his products, and must offer them on terms which will make it for the interest of the public to use them largely.

The Effect of Competition in Causing Improvements to Multiply.—Competition insures a large number of inventors and offers to each of them a large inducement to use his gifts and opportunities. A great corporation may employ salaried inventors and, because of its great capital and large income, it may experiment with inventions with far less risk to itself than an inventor usually takes. When large corporations compete actively with one another, the employment of salaried inventors is very profitable to them; and improvements in production go on more rapidly than they are likely to do after these firms consolidate with each other and cease to feel the spur which the danger of being distanced in a race affords. It is a fact of observation, and not merely an inference, that monopolies are not as enterprising as competing companies.

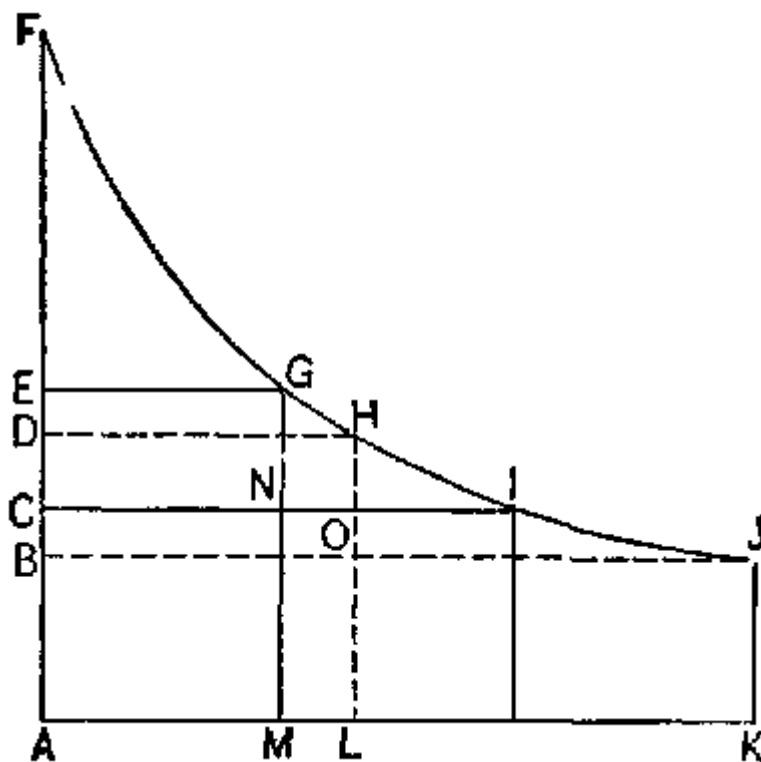
Effects of Monopoly on the Spirit of Enterprise.—In monopolies, theoretically, there is the same inducement to adopt inventions as in the case of competing firms, excepting always the motive of self-preservation. The monopoly can make money by improvements as competing firms would do. A perfectly intelligent monopoly, with disinterested management, would adopt an improvement offered to it as promptly as any competing firm, if the sole motive were profit. There is no reason why an intelligent monopoly should hold on to antiquated machinery, when modern machinery would enable it to stand the cost of introduction and make a net improvement besides. A competing producer gains an advantage over his rivals by discarding old machinery and adopting new at exactly the right time, neither too late nor too early. The true point of abandonment of the old machine, as we have already seen, is reached when the labor and capital that now work in connection with it can make a shade more by casting it off and making a combination of a better kind; and this rule applies to monopolies as well as to competitors. At just the point where a competitor can gain an advantage over rivals by modernizing his appliances, the monopoly can make money by doing so.

An important fact is that the monopoly has as a motive the making of profits for its stockholders. Not only is that a less powerful motive than self-preservation, but it appeals largely to persons who

are not themselves in control of the business. Absentee ownership is the chief disability of the monopoly. Managers may have other interests than those of large dividend making, and in such cases a monopoly is apt to wait too long before changing its appliances. It needs to be in no hurry to buy a new invention, and it can make delay and tire out a patentee, in order to make good terms with him; and this practice affords little encouragement to the independent inventor. On the whole, a genuine and perfectly secure monopoly would mean a certain degree of stagnation where progress until now has been rapid.

Why the Public depends on Competition for Securing its Share of Benefit from Improvements.— Another question is whether the two systems, that of competition, on the one hand, and monopoly, on the other, confer equal benefits on the public by virtue of the improvements they make. Competition does this with the greatest rapidity. As we have seen, it transforms the net profits due to economies into increments of gain for capitalists and laborers throughout all society. The wages of to-day are chiefly the transformed profits of yesterday and of an indefinite series of earlier yesterdays. The man who is now making the profits is increasing his output, supplanting less efficient rivals, and giving consumers the benefit of his newly attained efficiency in the shape of lower prices of goods. In practice rivals take turns in leading the procession; now one has the most economical method, now another, and again another; and the great residual claimant, the public, very shortly gathers all gains into its capacious pouch and keeps them forever.

Would a secure monopoly do something like this? Far from it. It would be governed at every step by the rule of maximum net profits for itself. Its output would not be carried beyond the point at which the fall in price begins really to be costly. The lowering of the price enlarges the market for the monopoly's product and up to a certain point increases its net gains. Beyond that point it lessens them.



Now, even the interest of the monopoly itself would lead it to give the public some benefit from every economy that it makes. This is because the amount of output that will yield a maximum of profit at a certain cost of production is not the same that will yield the maximum of net profit when the cost is lower. Every fall in cost makes it for the interest of the monopoly to enlarge its output somewhat, but by no means as much as competing producers would enlarge theirs. It will always hold the price well above the level of cost. In the accompanying figure distance along the line AK represents the amount of goods produced, while vertical distance above the line measures costs of

production, as well as selling prices, and the descending curve *FJ* represents the fall of prices which takes place as the output of the goods is increased. Now, when the cost of production stands at the level of the line *CI*, the amount of output that will yield the largest amount of net profit is the amount represented by the length of the line *AM*. That amount of product can be sold at the price represented by the line *MG*. The gross return from the sale will be expressed by the area of the rectangle *AEGM*, and the area *CEGN*, which falls above the line of cost, *CI*, is net profits. They are larger than they would be if the line *MG* were moved either to the right or to the left, *i.e.*, if the amount of production were made either larger or smaller. Now, if the cost of production falls to the level of the line *BJ*, it will be best to increase the output from *AM* to *AL*. The whole return will then be represented by the rectangle *ADHL*, and the area *BDHO* represents profits, with the cost at the new and lower level. These are somewhat larger than they would be if the output continued to be only the amount *AM*. Under free competition the price would fall to the line *BJ*, the net profits would disappear, and the public would have the full benefit of the improvement in production.

The Purpose of the System of Patents.—Patents are a legal device for promoting improvements, and they accomplish this by invoking the principle of monopoly which in itself is hostile to improvement. They do not as a rule create the exclusive privilege of producing a kind of consumers' goods, but they give to their holders exclusive use of some instrumentality or some process of making them. The patentee is not the only one who can reach a goal,—the production of a certain article,—but he is the only one who can reach it by a particular path. A patented machine for welting shoes stops no one from making shoes, but it forces every one who would make them, except the patentee or his assigns, to resort to a less economical process.

Patents Limited in Duration indispensable as Dynamic Agents.—If an inventor had no such protection, the advantage he could derive would be practically *nil*, and there would be no incentive whatever for making ventures except the pleasure of achievement or the honor that might accrue from it. In the case of poor inventors this would be cold comfort in view of the time and outlay which most inventions require. Not only on *a priori* grounds, but on grounds of actual experience and universal practice, we may say that patents are an indispensable part of a dynamic system of industry. It is also important that the monopoly of method which the patent gives should be of limited duration. If the method is a good one and the profit from using it is large, the seventeen years during which in our own country a patent may run affords, not only an adequate reward for the inventor, but an incentive to a myriad of other inventors to emulate him and try to duplicate his success. Ingenious brains, which are everywhere at work, usually prevent the owners of a particular patent from keeping any decisive advantage over competitors during the whole period of seventeen years. Long before the expiration of that time some device of a different sort may enable a rival to create the same product with more than equal economy, and the leadership in production then passes to this rival, to remain with him till a still further device effects a still larger economy and carries the leadership elsewhere. That alternation in leadership which we have described and illustrated takes place largely in consequence of our system of patents; and yet every particular patent affords a quasi-monopoly to its holder. The endless succession of them insures a wide diffusion of advantages. At the expiration of each patent, even if it has not been supplanted by a later and more valuable one, the public gets the benefit of the full economy it insures, and wherever an unexpired patent is supplanted by a new one, the public gets this benefit much earlier. Cost of production tends rapidly downward, and the public is the permanent beneficiary.

Patents as a Means of Curtailing Monopolies.—While a patent may sometimes sustain a powerful monopoly it may also afford the best means of breaking one up. Often have small producers, by the use of patented machinery, trenched steadily on the business of great combinations, till they themselves became great producers, secure in the possession of a large field and abundant profit. Moreover, in the case of a patent which builds up a monopoly and continues for the full seventeen years of its duration unsupplanted by any rival device, the public is likely to get more benefit than the patentee, or even the company which uses his invention. In widening the market for its product the company must constantly cater to new circles of marginal consumers, and must give to all but the marginal ones an increasing benefit that is in excess of what it costs them. Probably few

patents have been issued in America which illustrate the unfavorable features of the system more completely than did the Bell telephone patent, which gave to a single company during a long period a monopoly of the telephone business; and yet there are few men of affairs who do not perceive that, in the saving of time which the telephone effected and in the acceleration of business which it caused, they gained from the outset more than they lost in the shape of high fees. Something of the same kind is true of the users of domestic telephones; for though they may cost more than they should, they do their share toward placing those who use them on a higher level of comfort.

The Law of Survival of Efficient Organization.—In broad outlines we have depicted the conditions which favor technical progress. There is a law of survival which, when competition rules, eliminates poor methods and introduces better ones in endless succession. Under a régime of secure monopoly this law of survival scarcely operates, though desire for gain causes a progress which is less rapid and sure. The same may be said of changes in organization, in so far as that means a coördinating of the labor and the capital within an establishment. When the manager of a mill so marshals his forces as to get a much larger product per man and per dollar of invested capital than a rival can do, he has that rival at his mercy and can absorb his business and drive him from the field. In order to survive, any producer must keep pace with the aggressive and growing ones among his rivals in the march of improvement, whether it comes by improved tools of trade or improved generalship in the handling of men and tools. Quite as remorseless as the law of survival of good technical methods is the law of survival of efficient organization, and so long as the organization is limited to the forces under the control of single and competing *entrepreneurs*, what we have said about the advance in methods applies to it. It is a beneficent process for society, though its future scope is more restricted than is that of technical improvement, since the marshaling of forces in an establishment may be carried so near to perfection that there is a limit on further gains. Moreover organization, in the end, ceases to confine itself to the working forces of single *entrepreneurs*, but often continues till it brings rival producers into a union.

The Extension of Organization to Entire Subgroups.—Both of these modes of progress cause establishments to grow larger, and the ultimate effect of this is to give over the market for goods of any one kind to a few establishments which are enormously large and on something like a uniform plane of efficiency. Then the organizing tendency takes a baleful cast as the creator of "trusts" and the extinguisher of rivalries that have insured progress. When monster-like corporations once start a competitive strife with each other, it is very fierce and very costly for themselves; and this affords an inducement for taking that final step in organization which brings competition to an end. That is organization of a different kind, and the effects of it are very unlike those of the coördinating process which goes on within the several establishments. In this, its final stage, the organizing tendency brings a whole subgroup into union, and undoes much of the good it accomplished in its earlier stage, when it was perfecting the individual establishments within the subgroup. While the earlier process makes the supply of goods of a certain kind larger and cheaper, the final one makes it smaller and dearer; and while the earlier process scatters benefits among consumers, the final one imposes a tax on consumers in the shape of higher prices for merchandise. Yet the union that is formed between the shops is, in a way, the natural sequel to the preliminary organization which took place within them and helped to make them few and large. Trusts are a product of economic dynamics, and we shall study them in due time. The organization we have here in view is the earlier one which takes place within the several establishments. It obeys a law of survival in which competition is the impelling force, though it leads to a condition in which an effort is made to bring competition to an end. This earlier organization is most beneficent in its general and permanent effects; and what has been said of the results of progress in the technique of production may, with a change of terms, be said again of progress in the art of coördinating the agents employed. It is a source of temporary gain for *entrepreneurs* and of permanent gains for laborers and capitalists. It adds to the grand total of the social product and leaves this to be distributed in accordance with the principle which, in the absence of untoward influences, would treat the producers fairly—that which tends to give to each producer a share more or less equivalent to his contribution. In its nature and in its results it is the opposite of that other type of organization which seeks to bring competitive rivalry to an end, and in so far as it succeeds divorces men's

contributions to the social product from the shares that they draw from it.

CHAPTER XXII

INFLUENCES WHICH PERVERT THE FORCES OF PROGRESS

Thus far we have been dealing with what we have called natural forces. The phenomena which we have studied have not been caused by any conscious and purposeful action of the people as a whole. They have not been brought about by the power of governments nor by anything which savors of what is called collectivism. Individuals have done what they would, seeking to promote their own interests under conditions of great freedom, and the effect has been a system of social industry which is highly productive, progressive, and generally honest. Production has constantly increased, and the product has been shared under the influence of a law which, if freedom were quite complete and competition perfect, would give to each producer what he contributes to the aggregate output of the great social workshop. We have claimed that, in the world as it is, influenced by a great number of disturbing forces, these fundamental laws still act and tend to bring about the condition of productiveness, progress, and honesty which is their natural result. If the actual condition falls short of this, the fact is mainly due to curtailments of freedom and interferences with the competition which is the result of freedom.

Influences which retard Static Adjustments.—Throughout the study we have paid due attention to those ordinary elements of "economic friction" which all theoretical writers have recognized and which practical writers have put quite in the foreground; and we have discovered that, while they are influences to be taken account of in any statement of principles, they in no wise invalidate principles themselves. For the most part they are influences which retard those movements which bring about static adjustments. An invention cheapens the production of some article and at once the natural or static standard of its price falls; but the actual price goes down more slowly, and in the interim the producer who has the efficient method gathers in the fruit of it as a profit. The retarding influence is a fact that should be as fully recognized in a statement of the law of profit as any other. The existence of it is an element in the theory of *entrepreneur's* profit. Improvements which reduce the cost of goods enhance the product of labor, and this sets a higher standard for wages than the one that has thus far ruled; but a delay occurs before the pay of workmen rises to the new standard. Adjustments have to be made which require time, and these are as obviously elements that must be incorporated into an economic theory as any with which it has to deal.

Influences which resist Dynamic Movements.—If there is anything which, without impairing the motive powers of economic progress, puts an obstacle in the way of the movement, it has to be treated like one of these elements of friction to which we have just referred. In our discussion of the growth of population, the increase of wealth, the improvement of method, etc., we have paid attention to resisting forces as well as others, and have tried to determine what is the resultant of all of them. The forces of resistance have their place in a statement of dynamic laws.

An Influence that perverts the Forces of Progress.—We have to deal, not only with such retarding influences, but with a positive perversion of the force that makes for progress. Everywhere we have perceived that competition—the healthful rivalry in serving the public—is essential in order that the best methods and the most effective organization should be selected for survival, and that industry should show a perpetual increase in productive power. In our study of the question whether improved method and improved organization tend to promote or to check further improvement, we have found that these beneficent changes are naturally self-perpetuating, so long as the universal spring of progress, competition, continues. A proviso has perforce been inserted into our optimistic forecast as to the economic future of the world—if nothing suppresses competition, progress will continue forever.

Monopoly and Economic Progress.—The very antithesis of competition is monopoly, and it is this which, according to the common view, has already seated itself in the places of greatest economic power. "Competition is excellent, but dead," said a socialist in a recent discussion; and the

statement expresses what many believe. There is in many quarters an impression that monopoly will dominate the economic life of the twentieth century as competition has dominated that of the nineteenth. If the impression is true, farewell to the progress which in the past century has been so rapid and inspiring. The dazzling visions of the future which technical gains have excited must be changed to an anticipation as dismal as anything ever suggested by the Political Economy of the classical days—that of a power of repression checking the upward movement of humanity and in the end forcing it downward. No description could exaggerate the evil which is in store for a society given hopelessly over to a régime of private monopoly. Under this comprehensive name we shall group the most important of the agencies which not merely resist, but positively vitiate, the action of natural economic law. Monopoly checks progress in production and infuses into distribution an element of robbery. It perverts the forces which tend to secure to individuals all that they produce. It makes prices and wages abnormal and distorts the form of the industrial mechanism. In the study of this perverting influence we shall include an inquiry as to the means of removing it and restoring industry to its normal condition. We shall find that this can be done—that competition can be liberated, though the liberation can be accomplished only by difficult action on the part of the state.

The comparatively Narrow Field of Present Action by the State.—Economic theory has always recognized the existence and the restraining action of the civil law, which has prohibited many things which the selfishness of individuals would have prompted them to do. Certain officers of the state constitute, as we saw in an early chapter, one generic class of laborers, one of whose functions it is to retain in a state of appropriation things on which other men have conferred utility—that is, to protect property, and so to coöperate in the creation of wealth. In a few directions they render services which private employers might render in a less effective way. The state, through its special servants, educates children and youth, guards the public health, encourages inventions, stimulates certain kinds of production, collects statistics, carries letters and parcels, provides currency, improves rivers and harbors, preserves forests, constructs reservoirs for irrigation, and digs canals and tunnels for transportation. In these ways and in others it enters the field of positive production; but in the main it leaves that field to be occupied by private employers of labor and capital. Business is still individualistic, since those who initiate enterprises and control them are either natural persons or those artificial and legal persons, the corporations.

The Growing Field of Action by Corporations.—Until recently there has been comparatively little production in the hands of corporations great enough to be exempt from the same economic laws which apply to a blacksmith, a carpenter, or a tailor. Individual enterprise and generally free competition have prevailed. The state has not checked them and the great aggregations of capital to which we give the name "trusts" have not, in this earlier period, been present in force enough to check them. The field for business enterprise has been open to individuals, partnerships, and corporations; they have entered it fearlessly, and a free-for-all competition has resulted. This free action is in process of being repressed by chartered bodies of capitalists, the great corporations, whom the law still treats somewhat as though in its collective entirety each one were an individual. They are building up a semi-public power—a quasi-state within the general state—and besides vitiating the action of economic laws, are perverting governments. They trench on the freedom on which economic laws are postulated and on civic freedom also.

How Corporations pervert the Action of Economic Laws.—Whatever interferes with individual enterprise interferes with the action of the laws of value, wages, and interest, and distorts the very structure of society. Prices do not conform to the standards of cost, wages do not conform to the standard of final productivity of labor, and interest does not conform to the marginal product of capital. The system of industrial groups and subgroups is thrown out of balance by putting too much labor and capital at certain points and too little at others. Profits become, not altogether a temporary premium for improvement,—the reward for giving to humanity a dynamic impulse,—but partly the spoils of men whose influence is hostile to progress. Under a régime of trusts the outlook for the future of labor is clouded, since the rate of technical progress is not what it would be under the spontaneous action of many competitors. The gain in productive power which the strenuous race for perfection insures is retarded, and may conceivably be brought to a standstill, by the

advent of corporations largely exempt from such competition. There is threatened a blight on the future of labor, since the standard of wages, set by the productivity of labor, does not rise as it should, and the actual rate of wages lags behind the standard by an unnaturally long interval. There is too much difference between what labor produces and what it ought to produce, and there is an abnormally great difference between what it actually produces and what it gets.

The Fields for Monopolies of Different Kinds.—Monopoly is thus a general perverter of the industrial system; but there are two kinds of monopoly, of which only one stands condemned upon its face as the enemy of humanity. For a state monopoly there is always something to be said. Even socialism—the ownership of all capital, and the management of all industry by governments—is making in these days a plea for itself that wins many adherents, and the demand that a few particular industries be socialized appeals to many more. The municipal ownership of lighting plants, street railways and the like, and the ownership of railroads, telegraph lines, and some mines by the state are insistently demanded and may possibly be secured. We can fairly assume that, within the period of time that falls within the purview of this work, general socialism will not be introduced. In a few limited fields the people may accept governmental monopolies, but private monopolies are the thing we have chiefly to deal with; and it is to them, if they remain unchecked, that we shall have to attribute a disastrous change in that generally honest and progressive system of industry which has evolved under the spur of private enterprise.

Two Modes of Approaching a Monopolistic Condition.—The approach to monopoly may be extensive or intensive. A fairly complete monopoly may be established in some part of the industrial field, and the area of its operations may then be extended. Smelters of iron and steel, after attaining an exclusive possession of their original fields of production, may become carriers, producers of ore, makers of wire, plate, and structural steel, and builders of ships, bridges, etc.

On the other hand, a great corporation may have, at the outset, but little monopolistic power, and it may then acquire more and more of it within the original field of its operations. It may at first make competition difficult and crush a few of its rivals, and then, as its power increases, it may make competition nearly impossible in the greater part of its field and drive away nearly all the rivals who remain. It is necessary to form a more accurate idea than the one which is commonly prevalent of what actual monopolies are, of what they really do, of what they would do if they were quite free to work their will, and of what they will do, on the other hand, if they are effectively controlled by the sovereign state. Regulation of monopolies we must have; that is not a debatable question. The sovereignty of the state will be preserved in industry and elsewhere, and it is perfectly safe to assert that only by new and untried modes of asserting that sovereignty can industry hereafter be in any sense natural, rewarding labor as it should, insuring progress, and holding before the eyes of all classes the prospect of a bright and assured future. We are dependent on action by the state for results and prospects which we formerly secured without it; but though we are forced to ride roughshod over *laissez-faire* theories, we do so in order to gain the end which those theories had in view, namely, a system actuated by the vivifying power of competition, with all that that signifies of present and future good.

The Nature of a True Monopoly.—The exclusive privilege of making and selling a product is a monopoly in its completest form. This means, not only that there is only one establishment which is actually creating the product, but there is only one which is able to do so. This one can produce as much or as little as it pleases, and it can raise the price of what it sells without having in view any other consideration than its own interest.

The Possibility of the Form of Monopoly without the Power of It.—A business, however, may have the form of a monopoly, but not its genuine power. It may consolidate into one great corporation all the producers of an article who send their goods into a general market, and if no rivals of this corporation then appear, the public is forced to buy from it whatever it needs of the particular kind of goods which it makes. Consumers of A''' of our table may find that they can get none of it except from a single company. Yet the price may conceivably be a normal one. It may stand not much above the cost of production to the monopoly itself. If it does so, it is because a higher price

would invite competition. The great company prefers to sell all the goods that are required at a moderate price rather than to invite rivals into its territory. This is a monopoly in form but not in fact, for it is shorn of its injurious power; and the thing that holds it firmly in check is *potential competition*. The fact that a rival *can* appear and *will* appear if the price goes above the reasonable level at which it stands, induces the corporation to produce goods enough to keep the price at that level. Under such a nearly ideal condition the public would get the full benefit of the economy which very large production gives, notwithstanding that no actual competition would go on. Prices would still hover near the low level of cost. The most economical state conceivable is one in which, in many lines of business, a single great corporation should produce all the goods and sell them at a price so slightly above their cost as to afford no incentive to any other producer to come into the field. Since the first trusts were formed the efficiency of potential competition has been so constantly displayed that there is no danger that this regulator of prices will ever be disregarded. Trusts have learned by experience that too great an increase in the prices of their products "builds mills." It causes new producers who were only potentially in the field actually to come into it and to begin to make goods. To forestall this, the trusts have learned to pursue a more conservative policy and to content themselves with smaller additions to the prices of their wares. If it were not for this regulative work of the potential competitor, we should have a régime of monopoly with its unendurable evils; and if, on the other hand, the regulator were as efficient as it should be, we should have a natural system in which complete freedom would rule. The limitless difference between these conditions measures the importance of potential competition.^[1]

Cost of Production in Independent Mills a Standard of Price.—A consolidated company will ultimately have a real but small advantage over a rival in the cost of producing and selling its goods; but at present the advantage is often with the rival. His plant is often superior to many of those operated by the trust. When the combination brings its mills to a maximum of efficiency and then reaps *the further advantage which consolidation itself insures*, it will be able to make a small profit while selling goods at what they cost in the mills of its rival. This cost which a potential competitor will incur if he actually comes into the field sets the natural standard of price in the new régime of seeming monopoly; and it will be seen that if this natural price really ruled, the monopoly would have only a formal existence. It would be shorn of its power to tax the public.

Partial Monopolies now Common.—What we have is neither the complete monopoly nor the merely formal one, but one that has power enough to work injury and to be a menace to industry and politics. If it long perverts industry, it will be because it perverts politics—because it baffles the people in their effort to make and enforce laws which would keep the power of competition alive. In terms of our table the subgroups are coming to resemble single overgrown corporations. Each of them, where this movement is in progress, is tending toward a state where it will have a single *entrepreneur*—one of those overgrown corporations which resemble monopolies and are commonly termed so. Complete monopolies, as we have said, they are not; and yet, on the other hand, they are by no means without monopolistic power. They are held somewhat in check by the potential competition we have referred to, but the check works imperfectly. At some points it restrains the corporations quite closely and gives an approach to the ideal results, in which the consolidation is very productive but not at all oppressive; while elsewhere the check has very little power, oppression prevails, and if anything holds the exactions of the corporation within bounds, it is a respect for the ultimate power of the government and an inkling of what the people may do if they are provoked to drastic action.

Two Policies open to the State.—The alternatives which are open to us are, in this view, reduced to two. Consolidation itself is inevitable. If, in any great department of production, it creates a true monopoly which cannot be otherwise controlled, the demand that the business be taken over by the government and worked for the benefit of the public will become irresistible. If it does not become a true monopoly, the business may remain in private hands. Inevitable consolidation with a choice between governmental production and private production is offered to us. We are at liberty to select the latter only if potential competition shall be made to be a satisfactory regulator of the action of the great corporations.

The Future Dependent on Keeping the Field open for Competitors.—Potential competition, on which, as it would seem, most of what is good in the present economic system depends, has also the fate of the future in its hands. Existing evils will decrease or increase according as this regulator shall work well or ill. Yet it is equally true that the government has the future in its hands, for the potential competition will be weak if the government shall do nothing to strengthen it. It is, indeed, working now, and has been working during the score of years in which great trusts have grown up; but the effects of its work have been unequal in different cases, and it is safe to say that, in the field as a whole, its efficiency has, of late, somewhat declined. With a further decline, if it shall come, prices will further rise, wages will fall, and progress will be retarded. The natural character of the dynamic movement is at stake and the continuance of so much of it as now survives and the restoration of what has been lost depend on state action.

The Impossibility of a Laissez-faire Policy.—Great indeed is the contrast between the present condition and one in which the government had little to do but to let industry alone. Letting free competitors alone was once desirable, but leaving monopolies quite to themselves is not to be thought of. It would, indeed, lead straight to socialism, under which the government would lay hands on business in so radical a way as to remove the private *entrepreneurs* altogether. If we should try to do nothing and persist too long in the attempt, we might find ourselves, in the end, forced to do everything. What is of the utmost importance is the kind of new work the government is called on to do. It is chiefly the work of a sovereign and not that of a producer. It is the work of a law-giving power, which declares what may and what may not be done in the field of business enterprise. It is also the work of a law-enforcing power, which makes sure that its decrees are something more than pious wishes or assertions of what is abstractly right. All of this is in harmony with the old conception of the state as the protector of property and the preserver of freedom. The people's interests, which the monopoly threatens, have to be guarded. The right of every private competitor of a trust to enter a field of business and to call on the law for protection whenever he is in danger of being unfairly clubbed out of it, is what the state has to preserve. It is only protecting property in more subtle and difficult ways than those in which the state has always protected it. The official who restrains the plundering monopoly, preserves honest wealth, and keeps open the field for independent enterprise does on a grand scale something that is akin to the work of the watchman who patrols the street to preserve order and arrest burglars.

A Possible Field for Production by the State.—There is a possibility that in a few lines of production the American government may so far follow the route marked out by European states as to own plants and even operate them, and may do so *in the interest of general competition*. It may construct a few canals, with the special view to controlling charges made by railroads. It may own coal mines and either operate them or control the mode of operating them, for the purpose of curbing the exactions of monopolistic owners and securing a continuous supply of fuel. It may even own some railroads for the sake of making its control of freight charges more complete. Such actions as these may be slightly anomalous, since they break away from the policy of always regulating and never owning; nevertheless, they are a part of a general policy of regulation and a means of escape from a policy of ownership. The selling of coal by the state may help to keep independent manufacturing alive, and carrying by the state may do so in a more marked way. If so, these measures have a generally anti-socialistic effect, since they obstruct that growth of private monopoly which is the leading cause of the growth of socialism.

Evils within the Modern Corporation.—The great corporation brings with it some internal evils which might exist even if it never obtained a monopoly of its field. In this class are the injuries done by officers of the corporation to the owners of it, the stockholders. A typical plundering director has even more to answer for by reason of what he does to his own shareholders than because of what he and the corporation may succeed in doing to the public. In the actual amount of evil done, the robbing of shareholders is less important than the taxing of consumers and the depressing of wages, which occur when the effort to establish a monopoly is successful; but in the amount of iniquity and essential meanness which it implies on the part of those who practice it, it takes the first rank, and its effect in perverting the economic system cannot be overlooked. The director who

buys property to unload upon his own corporation at a great advance on its cost, or who alternately depresses the business of his corporation and then restores it, in order that he may profit by the fall and the rise of the stock, not only does that which ought to confine his future labors to such as he could perform in a penitentiary, but does much to vitiate the action of the economic law which, if it worked in perfection, would give to the private capitalist a return conformable to the marginal product of the capital he owns. A sound industry requires that the state should protect property where this duty is now grossly neglected.

If more publicity will help to do this,—if lighting street lamps on a moral slum will end some of the more despicable acts committed by men who hold other men's property in trust,—sound economics will depend in part on this measure, but it depends in part on more positive ones.

The investment of capital is discouraged and an important part of the dynamic movement is hindered wherever shareholders are made insecure; and therefore the entire relation of directors to those whose property they hold in trust needs to be supervised with far more strictness than has ever been attempted under American law. When invested capital shall be quite out of the range of buccaneers' actions, it will produce more, increase more rapidly, and the better do its part toward maintaining the wages of labor.

Perversions of the Economic System by the Action of Promoters. —The state will be carrying out its established policy if it shall effectively control the action of promoters in their relation to prospective investors. The man who is invited to become a stockholder has a right to know the facts on which the value of the property offered to him depends. How many plants does the consolidated corporation own? How much did they cost? What is their present state of efficiency? What have been their earnings during recent years? Concerning these things and others which go to make up a correct estimate of the value of what the promoter is selling, the purchaser needs full and trustworthy information, and an obvious function of the law is to see that he gets it. That such action would guard investors' personal rights is, of course, a reason for taking it; but the reason that here appeals to us is the fact that it would remove a second perversion of the economic system, accelerate the increase of capital, and help in securing a distribution of wealth which would be more nearly in accordance with natural law.

Perversions of the System caused by the Action of Corporations in their Entirety. —More directly within the domain of pure economics is the relation between the typical great corporation and the majority of the public which is wholly outside of it. In the common mind this relation also often appears as that of plunderers and plundered, and what it often has actually been, is a relation between corporations which have exacted a certain tribute and a body of consumers which has had to pay the tribute. Bound up with this general relation between the manufacturing corporation and the consuming public is one between it and producers of raw material which it buys and with laborers whom it hires. In this last relation what is endangered is the normal rate of pay, present and future. The type of measure which protects consumers protects the other parties who are affected by the great corporation's policy. Workers are safe and producers of raw materials are measurably so if the power of competition in the making and selling of the goods is kept alive. If we prevent the trust from taking tribute from the purchasing public, we shall by the same means prevent it from oppressing laborers and farmers.

Why the Business of a Monopoly should never be regarded as a Private Interest. —The people are already putting behind them and ought to put completely out of sight and mind the idea that the business of a monopoly is a private enterprise which its officers have a right to manage as they please. A corporation becomes a public functionary from the time when it puts so many of its rivals out of the field that the people are dependent on it. As well might the waiter who brings food to the table claim that the act is purely his own affair and that the customers and the manager have no right of interference, however well or ill the customers may be served, as a combination of packers might claim that any important detail of their business concerns them only. The illustration is a weak one; for in the case of a trust which controls a product that is needed by the public, it is the full majesty of the people as a whole which is in danger of being set at naught. Such a company is

a public servant in all essential particulars, and although it is allowed to retain a certain autonomy in the exercise of its function, that autonomy does not go to the length of liberty to wrong the public or any part of it. The preservation of a sound industrial system requires that governments shall forestall injuries which the interests of the monopolistic corporation impels it to inflict. No discontinuance of essential services, no stinting of them, and no demand for extortionate returns for them can be tolerated without a perversion of the economic system. The natural laws we have presented will work imperfectly if, for example, the danger of a coal famine shall forever impend over the public or if this fuel shall be held at an extortionate price. Workmen, indeed, have a larger stake than have others in the maintenance of a fair field for competing producers and an open market for labor, but other classes feel the vitiating of the industrial system which occurs when the fair field and the open market are absent.

Why the Motive which once favored Non-interference in Industry by the State now favors Interference.—We have said that what is needed is vigorous action by the state in keeping alive the force on which the adherents of a *laissez-faire* policy rested their hope of justice and prosperity. These fruits of a natural development have always depended on competition, and they still depend on it, though its power will have to be exerted in a new way. This requires a special action by the state; but in taking such action the government is conforming its policy to the essential part of the *laissez-faire* doctrine. It lays hands on industry to-day for the very reason which yesterday compelled it to keep them off—the necessity of preserving a beneficent rivalry in the domain of production.

America the Birthplace of Consolidated Corporations.—Consolidations of the kind that require vigorous treatment by the state have their special home in America. They have taken on a number of forms, but are coming more and more into the most efficient form they have ever assumed, that of the corporation. The holding company is the successor of the former trust. The method of union by which stockholders in several corporations surrendered their certificates of stock to a body of trustees and received in return for them what were called trust certificates, has been abandoned, and the readiness with which this has been done has been due to the fact that there are better modes of accomplishing the purpose in view. A new corporation can be formed, and, thanks to those small states which thrive by issuing letters of marque, it can be endowed with very extensive powers. It can, of course, buy or lease mills, furnaces, etc., but what it can most easily do is to own a controlling portion of the common stock of the companies which own the plants. The holding company has a sinister perfection in its mode of giving to a minority of capital the control over a majority. It is possible that the actual capital of the original corporation may be mainly a borrowed fund and may be represented by an issue of bonds, while the stockholders may have contributed little to the cost of their plants and their working capital; and yet this common stock may confer on its owners the control of the entire business. The corporation that buys a bare majority of this common stock may have an absolute power over the producing plants and their operations. If the holding company should secure much of its own capital by an issue of bonds, the amount which its own stockholders would have to contribute would be only a minute fraction of the capital placed in their hands, and yet it might insure to them the control of a domain that is nothing less than an industrial empire, if indeed they are not themselves obliged to surrender the government of it to an innermost circle composed of directors.

Earlier Forms of Union.—There are forms of union which are less complete than this and have been widely adopted. There was the original compact among rival producers to maintain fixed prices for their goods. It was a promise which every party in the transaction was bound in honor to keep, but impelled by interest to break; and it was morally certain to be broken. There was this same contract to maintain prices strengthened by a corresponding contract to hold the output of every plant within definite limits. If this second promise were kept, the first would be so, since the motive for cutting the price agreed upon was always the securing of large sales, and this was impossible without a correspondingly large production; but security was needed for the fulfillment of the second promise. This security was in due time afforded, and there was perfected a form of union which was a favorite one, since it did not merge and extinguish the original corporations, but

allowed them to conduct their business as before, though with a restricted output and with prices dictated by the combinations. As a rule each of the companies paid a fine into the treasury of the pool if it produced more than the amount allotted to it, and received a bonus or subsidy if it produced less. This form has more of kinship with the *Kartel* of Germany than the other American forms, and it might have continued to prevail in our country if the law had treated it with toleration. It leaves the power of competition less impaired than does the consolidated corporation, of which the laws are more tolerant. By repressing those unions which can be easily defined and treated as monopolies we have called into being others which are far more monopolistic and dangerous. The economic principles on which the regulation of all such consolidations rests apply especially to the closer unions which take the corporate shape. To the extent that other forms of union have any monopolistic power the same principles apply also to them; but we shall see why it is that the pools which the law forbids have little of this power and the corporations have much of it.

The Condition which precludes True Monopoly.—A monopoly grows up when a company keeps such perfect guard over its economic field that new rivals cannot enter without exposing themselves to peril. As we have seen, it is not always necessary that the rival company should be formed. It is enough that it should be able to be formed and to enter the field with safety. In that case it will actually appear if an inducement is offered. Such an inducement is always afforded when the trust puts an unnaturally high price on its product—a price above that standard set by the cost of production which would rule in a normal market.

Specific Means of Repressing Competition.—In practice a condition is created in which the new competitors are reluctant to appear; for the consolidated company has dangerous weapons with which it can assail them. It can often secure specially low rates for the transportation of its products, and this is sometimes enough to make the competitor's prospect hopeless. Further, the "trust"—with or without the aid offered by the special and low freight charges—can enter the particular corner of the field where a small rival is operating, sell goods for less than they cost, and drive off the rival, while maintaining itself by the high prices it exacts everywhere else. Again, it may reduce the price of one variety of goods, which a particular competitor is making, and crush him, while it makes a profit on all other varieties of goods. Still again, it may resort to the "factor's agreement," by refusing to sell at the usual wholesalers' rate any of its own products to a merchant who handles products of its rivals. If some of its goods are of a kind that the merchant must have, this measure brings him to terms, causes him to refuse to handle independent products, and makes it difficult for the rival producer to reach the public with his tender of goods. The trust can organize special corporations for making war on competitors while itself evading responsibility. A bogus company which, in an aggravated case, is a rogue's alias for a parent corporation, may be formed for the purpose of more safely doing various kinds of predatory work.

The Economic Necessity of Doing what is legally Difficult.—From the point of view of an economic theorist it is enough to show that the practices which cut off the potential competitor from a safe entrance into the field of production so pervert the economic system as to hold in abeyance its most fundamental force, that of competition. They vitiate the action of every law which depends on competition. Value, wages, interest, profits, and the very structure of society feel the perverting effect of this repression of the force that under normal conditions serves to adjust them. From a practical point of view it is enough to show that the existence of such practices—if the monopolies that grow out of them shall continue and increase—present to the people the alternative of accepting an economic state which is unendurable, or accomplishing, in a legal way, what many already pronounce impossible. For the purpose of this treatise it suffices to point to the fact that few attempts worth mentioning have been made to suppress any of these practices except the first—that of favoritism in connection with freight charges—and that in the case of this practice only a beginning of serious effort has been made. While there is some excuse for abandoning a purpose when long and determined effort to execute it has failed, there is no possible excuse for concluding, *in advance of such effort*, that a systematic policy which gives a promise of saving us from an intolerable outcome is impracticable. All the props of monopoly should be taken away and not one merely, and before this shall be tried radical measures will not be in order. Socialism will not be fairly before the people's parliament till it shall come as the only escape from a condition of private monopoly. What economic law clearly shows is that monopoly will not come if the practices on which it depends shall be suppressed, and the people may be trusted to determine whether the suppression is or is not possible. That they may decide this question the issue that depends on it must be brought before them; and all that falls within the sphere of the economist is the stating of the effects of monopoly, the causes of its existence, and the public action that if taken will remove these causes. The preservation of a normal system of industry and a normal division of its products requires the suppression of all those practices of great corporations on which their monopolistic power depends.

[\[1\]](#) For an early statement of this principle the reader is referred to the chapter on "The Persistence of Competition," by Professor F. H. Giddings, in a work entitled "The Modern Distributive Process," written jointly by Professor Giddings and the present writer. This chapter first appeared as an article in the *Political Science Quarterly* for 1887.

CHAPTER XXIII

GENERAL ECONOMIC LAWS AFFECTING TRANSPORTATION

Of all the various clubs used by trusts for attacking rivals and driving them from the field, the first in order is the one which depends on getting special rates for transportation. Railroads develop monopolies within their own sphere and also contribute greatly to the development of monopolies elsewhere. The second fact is the more important, but both require attention. By reason of its special connection with producers' monopolies does the function of the common carrier have much to do in deciding the question whether an economic revolution is or is not impending. It is safe to say that it is imminent as a possibility and will become probable if the favoritism shown by carriers to great shippers is not effectually repressed.

How the Consolidation of Railroads makes the Repression of Favoritism Easy.—It is also safe to say that such repression will be easy if the consolidation of railroads themselves shall actually go to the utmost possible length. With all lines under one central control and earnings entirely pooled, there would be no motive for granting special favors to any shipper except as it might come through a corrupt relation between the shipper and some officials of the railroads. To the carrying corporation the giving of a rebate would merely mean a surrendering of some possible profits. With railroads consolidated the threat of the great shipper to divert his freight from one line to another would lose all its effectiveness, and the interests of the stockholders in the general carrying company would demand high rates from all. The law forbidding rebates and all other forms of favoritism would assist the railroad company in carrying out its own policy, and would be obeyed with the readiness with which an order to pocket an increased gain is naturally complied with.

A Danger which becomes greater as Discriminations become Fewer.—This reveals the fact that the consolidation which makes the suppressing of discriminations easy will make an all-round advance of rates possible, in so far as merely economic influences are concerned. Nothing but the power of the state itself can prevent this; and while the consolidation that would be perfect enough to stop discriminations has not yet taken place, enough of consolidation has been secured to cause some advance in the general scale of freight charges and to threaten much more. It already rests with the government to avert this second evil. Monopolies extending throughout the field of production would mean a demand for socialism which could hardly be resisted; and even a few monopolies in industry assisted by a great one in transportation would mean much the same thing.

General Economic Principles governing Transportation.—With a view to determining the bearing which transportation has on the problem of economic freedom, and thus on the prospect of avoiding the alternative of state socialism, we need to state the essential principles in the theory of railway transportation.

The fact that makes a vast amount of carrying necessary is that agriculture is subject to a law of diminishing returns, while manufacture obeys an opposite law. In tilling the soil labor and capital yield less and less as more and more of them are used in a given area; and therefore both of these agents need to extend themselves widely over the land in order to use it economically. In the production of staple crops which can be freely carried across sea and continent, the natural tendency is to scatter a rural population with some approach to evenness over all the land available for such crops. Market gardening requires less land per man and the areas devoted to it are much more densely peopled; but even within this department of agriculture the law holds true that too much labor and capital must not be bestowed upon an acre of ground. In a general way agriculture diffuses population, while manufacturing concentrates it. This latter work is done most economically in great establishments.

The Law of Diminishing Returns from Land not restricted to that used in Agriculture.—It is commonly said that manufacturing is unlike agriculture in that it is subject to a law of increasing

returns; but this statement is true only when its terms are carefully interpreted. The diminishing returns from agriculture and the increasing returns from manufacturing are not two opposite effects from the same cause. There is, indeed, a logical anomaly in contrasting them with each other. In agriculture we get smaller and smaller results per unit of labor and capital when we overwork a piece of ground of a given size by putting more and more labor and capital on it. The trouble here is that land, on the one hand, and labor and capital, on the other, are not combined in advantageous proportions; and exactly the same effect is produced by the same cause in manufacturing. One can overtax a mill site by confining larger and larger amounts of capital within a given area. If the site is so small that the building has to be carried far into the air and supplied with walls strong enough to resist the jar of machinery on many floors, manufacturing becomes a far less economical operation than it would be if the site were larger and the mill lower. The gain from centralizing the manufacturing process comes in part from the increased size of the particular establishments; but that requires that every part of the plants, land included, should be increased. As the whole of an establishment becomes larger its product becomes cheaper; but, in the enlargement, there should be no undue stinting in the amount of land used. In both agriculture and manufacturing, then, there is a loss of productive power when areas of land are disproportionately small, as compared with amounts of labor and artificial capital; but in the realm of manufacturing large establishments under single *entrepreneurs combining the agents of production in the right proportion increase the productive power of men and instruments* as they do not in agriculture. Great farms show no such economy as great mills.

Basis of the Law of Increasing Returns in Manufacturing.—There would be some increase of returns in manufacturing from making the establishments large even if the work were done by hand; but by far the greater part of the advantage is due to machinery. The invention of the steam engine was the beginning of it, and that of textile machinery afforded a quick continuation of the revolutionary change. In nearly all lines of production, outside of agriculture, machinery is far too elaborate to be used in household industry. One may say that the transformation of the world into one enormous farm dotted over with great workshops, with all the social and political changes which that involves, was brewing in the tea-kettle which the boy Watt is said to have watched, as the lid was raised by puffs of steam and the possibility of a steam engine suggested itself. The mechanical force of steam began at once to centralize manufacturing. That made increased transporting necessary, and it was not long before the same element, steam, provided the means of this extensive transportation. It is necessary, of course, to carry the products of the farm to the mill, and also to carry manufactured goods back to the farm; and neither of these things would have been required on any large scale under a system of household industry. The economy which leads to this lies altogether in the greater cheapness of the manufacturing. The difference between the cost of fashioning materials in the home and that of doing it in the mill is so large that it would have brought about the building of mills and the creation of manufacturing centers, with the carrying which it involves, if neither railroads nor steamboats had come into being. The growth of factory villages had made some headway at a time when no elaborate machinery existed; but if that condition had continued, manufacturing centers would have been smaller, more numerous, and more scattered than they have been. It is the cheapness of carrying by railroads and steamships which has made it possible to get the fullest benefit from the so-called law of increasing returns in manufacturing.

Mining as related to Transportation.—Mining is a process which has to be local, because ores and coal are furnished by nature in a local way; and one might mention this as a second cause of extensive transportation. A great part of the carrying so occasioned depends, indeed, on the growth of the manufacturing centers, since mills and furnaces need great quantities of fuel. A means of heating private dwellings, of cooking food, etc., might conceivably be supplied in a local way, by the growth of forests; but the fuel needed for the centers of manufacturing and commerce has to come from distant points. The law of increasing returns in manufacturing, then, and natural location of mines are the most generic causes of transportation. The system which has resulted gives to everybody more and better food, as well as more and better goods of every kind, than he could possibly have had if the primitive system of local manufacturing had continued. The

cheapness with which form utility is created in the mill and place utility on the railroad are the two causes which are at work.

The Rivalry between Producers of Form Utility and Producers of Form and Place Utilities.—In the technical language of economics, there has been a contest in efficiency between that creating of form utility which is done when goods are made in households or in small villages, and that joint process of creating form and place utility which consists in making goods at central points and carrying them to the widely scattered homes of consumers. The latter process, involving as it does the necessity of creating two utilities instead of one, is now by far the cheaper.

The Ultimate Limit of Charges for Transportation.—Charges for transportation have as one extreme limit the difference between the cost of making goods at one point and the cost of making them at another. This rule is applicable, of course, only to those numerous cases in which it is physically possible to create the goods at both points. If they can be made at point A for ten dollars, by using five days' labor, and at point B for twenty dollars, by using ten days' labor, ten dollars would furnish the extreme limit of a possible charge for carrying them from A to B. In a certain number of cases the actual charge approximates this extreme limit. With a mill in A, working with much economy, and a number of household workshops in B producing with less economy, the product of the large mill may invade the territory supplied by the little workshops, and the carrier may receive in return for transportation about as much as the difference between the two costs of production. With a great mill at A and a small one at B, the same thing may happen.



Narrower Limits usually Applicable.—In by far the larger number of cases such a difference between costs is more than the carrier can get. Usually there is some alternative mode of procuring goods at B which does not involve actually making them on the spot at a serious disadvantage. It may be possible to convey them to B from a third locality, C, where they are made in an advantageous way. If this carrying is done by some process in which competition rules,—if, for instance, C is not far from B, so that goods can be carried thither by drays,—the cost of making the goods in C plus the natural or competitive cost of conveying them to B will together make up the natural cost of procuring them in this latter locality. The difference between that and the cost of making them in the great center which we have called A will constitute the limit of the freight charge from that city to B; and even though between these two points the carrier has a monopoly of the traffic, he can get no more.^[1]

Other Applications of the Same Rule.—This rule applies even where goods made in C have to be carried great distances, provided the carrying is done in some competitive way, at a low rate based on cost. Consumers in B may have the option of bringing the goods by water, along the coast or across an ocean, at a rate that makes the cost of procuring them at B not much above the cost of making them at A. If so, this small difference of costs represents all that any carrier can get for moving them from A to B, and though this carrying may be done by a railroad which has a monopoly of its route, its service will command no higher rate than the one which is thus naturally set for it. The rate is governed by costs, though not by costs incurred by the railroad. Whenever competition rules, the returns for any productive function tend to conform to costs, and we here suppose that it does so rule (1) in the making of goods at A, and (2) in the procuring of the goods by some alternative method at B. The difference between these costs sets the maximum limit of the freight charge between A and B, and this may exceed the cost of this service and leave a profit for

the carrier who uses this route.

Freight Charges and Value.—The return for a productive operation of any kind whatsoever is directly based on the value which it imparts to something; and in the case of carrying, the value is measured by the amount of "place utility" which the carrying creates. This is merely one application of a universal law. What the goods are worth where they are consumed, less what they are worth where they are made, equals what can be had for moving them from the one point to the other. Freight charges are gauged by the principle of "value of service," but so also are the charges for making the goods. When things are produced and used at the same place, the producer's returns equal the value of his product, and this is fixed by the principle of final utility. It is, however, a truism of economics that this value itself tends under competition to conform to the cost of creating it. In our illustration the manufacturing returns are fixed by the value of service and also by the cost of service, and so are the returns for transporting the goods from C to B; but the returns for carrying them from A to B, where monopoly prevails, are not governed by the cost of service but by costs elsewhere incurred.

A'''
A''
A'
A

Freight Charges and Cost.—The law of costs as well as the law of value holds good, in general, in connection with transportation. Competition in this department tends to bring values created to a certain equality per unit of cost and to reward the labor and capital which are used in carrying as well as they are rewarded elsewhere, and not better. If our table of industrial groups were elaborated, there would be between A and A', as well as between A' and A'', and between adjacent subgroups throughout the chart, a symbol which should represent the work done by the carrier; and the fact would appear that naturally this work is neither favored nor injured in the apportionment of rewards. Free competition, if it existed in perfection everywhere, would be a perfectly indiscriminating distributor of earnings, and would apportion all returns according to costs.

Variations of Freight Charges from Static Standards.—Place values are not an exception to the general rule of value; and yet freight charges actually remain at a greater distance from the standards furnished by the direct costs of carrying than do the returns for other services from corresponding standards. There is an approach to monopoly in this department, and, when direct competition exists, it is a more imperfect process here than it is elsewhere. Moreover, the costs which here figure as an element in the adjustment of freight charges are of a peculiar kind, which, although not unknown in other departments of production, have nowhere else so great influence and importance. The study of railroads and their charges is baffling, not because the economic forces do not here work at all, but because here they encounter a resistance which is exceptionally strong and persistent. The quasi-monopoly which elsewhere continues only briefly lasts long in this department of production; but it is subject to the same principles which everywhere rule.

The Modes of Approaching the Study of Freight Charges.—In studying freight charges we may, if we choose, start with the intricate tariffs of railroads, as they now stand, and try to find some principle which, if applied, would bring order out of the mass of capricious and inconsistent rates. Such a rule will ultimately be needed, but it can best be obtained by examining at the outset the transportation which is done by simple means and under active competition. It will be found (1) that basic principles apply to all transportation whether it be by railroad or by simpler means; (2) that in the early development of every system of common carrying the action of these principles is disturbed; (3) that in the case of the more primitive systems the disturbances are soon overcome, but that they continue longer and produce far greater effects in the case of railroads; (4) that one important influence of this kind tends naturally to disappear, while another continues and calls for regulation by the state; and (5) that this regulation needs to be based on natural tendencies and to

conform to the laws which, when competition rules, govern the returns of all classes of producers.

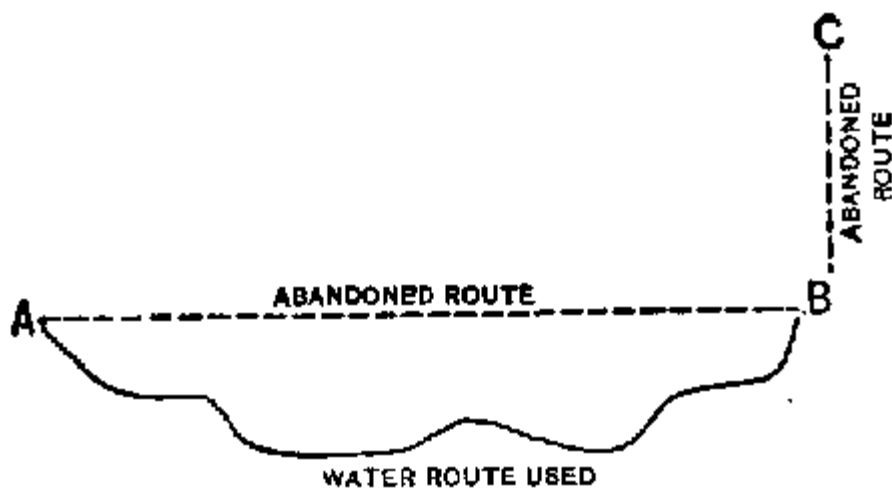
A Typical Instance of Partial Monopoly in Transportation.—We may now trace the development out of a purely competitive condition of a simple instance of what is usually termed monopoly, though in a rigorous use of terms it can hardly be so called. It is a monopoly the power of which is limited. So long as goods made at A are carried to B by some primitive method which insures the presence of competing carriers, the returns for carrying will tend only to cover costs. By a normal adjustment the price of the goods at A only repays the costs of making them, and if these and the carrying charge amount to less than the costs of making the goods at C and transporting them to B, none of them will come to B in this latter way. Makers at A and carriers on the route from there to B will possess the market, and the place value which the goods acquire when taken to B will be fixed directly by the costs of carrying.

It is when there is no effective competition on the route between A and B, while there is free competition in making the goods both at A and at C, and also in carrying them from C to B, that a typical case of a partial monopoly is presented.



The price of the goods at A is a definite amount fixed by competition between producers, and the price at B is also a definite amount fixed by competition between different makers at C and between different carriers between C and B. The difference between these amounts sets the limit of the charge for carrying from A to B; but in that operation there is, for a brief period, no effective competition. For simplicity let us say that this carrying is at first done by a single wagon owned by its driver, and that his charge for the service he renders nearly equals the difference between the cost of making the goods at A and that of obtaining them at B from some alternative source. This lone and honest driver is thus illustrating the practice of the modern railroad, in that he is "charging what the traffic will bear." The goods he transports have one natural value at A and another at B. These two values are determined separately and in ways that are quite independent of the carrier and his policy. When he begins to do his work, he charges an amount which about equals the difference between the two values.

The Impossibility of Long-continued Profits in the Case of Primitive Carriers.—With the growth of traffic direct competition will soon appear. A second wagon will be put on the route and then more, and the strife for freight will bring down the charges to the level of cost. For a brief season a favored drayman was able to get nearly the entire difference between the value of the goods at the point where they are made and their value at the point where they are used, as *these two values were determined by independent causes with which he had nothing to do*. Now, he and his rivals can, indeed, get the difference between the value of the goods at the one point and their value at the other; but this difference is now directly determined by the carrying charge. That charge, again, is determined by the cost of rendering the service. There was a brief interval when the value of the service and the cost of it were different amounts; but now they coincide. We shall see that the essential difference between carrying by primitive means and carrying by railroad is in the fact that in the latter case the period when value and cost are different is greatly prolonged.



The Appearance of a More Efficient Competitor.—With the growth of traffic a sailing vessel comes into use on a route connecting A with B, and the cost of thus conveying goods is less than that of conveying them over the roadway. The charge made by the sailing vessel is lower than that made by the teamsters, and the goods are thus delivered at B cheaply enough both to attract to the water route all carrying from A and to put an end to all carrying from C. The former carriers between B and C lose their business, and the makers at C lose some part of theirs, in the same way that any producer loses the traffic when he is underbid by rivals. The public is the gainer to the extent of the reduction which takes place in the cost of the goods as delivered to consumers in the market at B; nevertheless, the situation still involves a limited monopoly. The sailing vessel now has no effective rival, and can charge "what the traffic will bear," and that is very nearly the cost of conveying the goods by wagons. The advent of the vessel has benefited the public; yet it is regarded as constituting a new monopoly, and the benefit which the public gets is less than it will get when a really effective competitor of the sailing craft makes its appearance.

A Principle governing Charges by Unequal Competitors.—The principle which, in this instance, governs the freight charges is one which is active in all departments of production. We have seen that a maker of goods who has just acquired a monopoly of a superior method may, for a time, charge what the goods cost as made by inferior processes. If the manufacturer has some patented machinery which effects a great economy, he is not at once obliged to govern his prices by what the goods cost in his own mill, but may charge about what they would cost if they were made by the inferior machinery which he formerly used. This is what they still cost in the mills of certain rivals, and it thus appears that competition of a sort fixes his price for the goods he creates, but it is the competition of less capable producers and fails to benefit the public as the rivalry of equals would do. If there is evil in such a monopoly as this, it is not because the public is injured by the advent of the cheaper method. The improvement usually begins to confer benefit on consumers at the moment of its arrival, through the effort of the efficient producer to secure traffic. It causes the prices to go down, though the fall is at first only a slight one, and the consumer's case against the monopoly of method is on the ground of his failure to receive a further benefit. He will get that further benefit whenever a producer who can compete on even terms with the one who now commands the field shall make his appearance.

Unequal Competition Typical of Carriers.—Our recent illustration represents a similar condition in carrying. The public gets a slight gain from the advent of a sailing vessel; but it fails to get the further benefit that the advent of a second vessel will ultimately bring. For a time the freight charge stands nearly at what teamsters have charged. For cheaper rates the public must wait for the advent of another vessel.

The Cause of the Partial Monopoly in Carrying.—There is nothing to prevent a second schooner from being put on this route, if the returns to be expected should warrant it. At the outset the new vessel would get only about a half of the amount of traffic enjoyed by the first, and the rates would probably be reduced by the competition between the two. Until the returns of the first vessel

become large it has no rivalry to fear, but it is clear that its monopoly is held by a very precarious tenure. It is not likely long to enjoy the benefit of any charges which yield much profit. The growth of traffic will in due time bring the competing vessel, and the rule of returns that only cover costs will again assert itself. The owner of the first sailing craft has been able for a time to charge "the value of the service" he has rendered, as that value was determined independently of his own action; but now this value itself depends on his action and that of rival carriers using the same route, and it adjusts itself at the level of cost.

The Effect of partly Unused Vessels for Carrying.—The case illustrates another principle which is equally general. The *entrepreneur* whose capacity for producing is only partially utilized may often take some orders at less than it costs to fill them, as cost is usually understood, and he will still be the gainer. In manufacturing as well as in carrying there are "fixed charges"; there are costs which stand at a definite amount which is independent of the volume of traffic, while other costs increase as the volume grows. These are the "variable costs," and they have to be further classified, since some of them do not increase as rapidly as the business grows, while others increase with the same rapidity as does the business. The makers of sewing machines, typewriters, reapers, and mowers, and indeed machinery generally, can usually increase their product without correspondingly increasing their outlay. They can make goods and sell them in a foreign market at rates which would injure and might even ruin them if they were applied to the sales made in their own country. This fact is most obvious when the manufacturer's machinery is not all kept running or when it all runs only a part of the time. Increasing the output is then a particularly cheap operation. When a carrier's facilities are partially unused—when a ship carries a cargo in one direction and returns in ballast, or when it sails on both trips with its hold only half full—it is ready to carry additional goods at a low rate provided that this policy will not demoralize its existing business. In our illustration we have assumed that some merchandise is made at A and consumed at B, but it may well be that goods of some sort are produced at B and consumed at A. There may be stone quarries at B and there may be need of stone for paving or building at A, and the vessel may carry a return cargo of this kind at any rate which does not greatly exceed the mere cost of loading and unloading it and be better off for so doing. If the entire difference between the cost of the stone at B and the cost of producing it at A from some other source is a very slight one, the amount of it still represents all that the ship can get for carrying the stone. The utmost that the traffic will bear is this difference in costs; and yet the business will be accepted, for the return exceeds the merely variable costs which it entails. The fixed charges, the interest on the cost of the vessel, and the outlay for maintaining it do not need to be paid in any part from the returns of this extra business. They are already provided for.

If instead of returning from B with a hold quite empty, the vessel made both voyages with a hold only half full, the result would be similar. It would then be in a position to make a low bid for further freight in both directions. If this entails no cutting of the rates for carrying the original goods, the vessel can take further goods with advantage at any rate above the merely variable costs.

Production which is Advantageous though it does not repay all Costs.—There are two general conditions under which it is advantageous, both in making goods and in carrying them, to extend production, though the further returns which are in this way gained do not cover all costs. First, the producer must have an unused capacity for making or carrying goods. In such a case it is possible to make or carry an *increment* of goods without entailing on himself an increment of cost that is proportionate to the amount carried. In his bookkeeping his original business is charged with costs amounting to a certain sum per unit of goods produced or carried. His further business is charged with a smaller outlay per unit.

Secondly, it must be possible to demand separate and independent returns for the different increments of goods, so that cutting the rate charged for one part of the traffic does not entail cutting the rate charged for the other. In the case of a manufacturer this is secured, either by carrying some goods to a remote and entirely independent market, or by producing some new kind of goods the low price of which will have no effect on the sales or the prices of the other kinds. In the case of the carrier it is accomplished in a variety of similar ways. He can take return cargoes at

a low rate. If he stops at different ports along his route he can charge less for goods landed at certain ports than for those landed at others. He can classify his freight and carry some of it at a rate at which he could not afford to carry the whole. With the growth of traffic, however, this condition tends to disappear. Its existence requires that the carrier should have facilities only partially used. As the ship acquires fuller and fuller cargoes, it ceases to be advantageous to fill the hold with goods which pay lower rates than others; just as a mill, which may have run for a time partly on goods that yield a large return and partly on those which yield a small one, gradually discards the making of the cheaper goods as the demand for the dearer kind increases. The vessel which can get full cargoes of profitable merchandise will cease to devote any space to what is less profitable. In the end the ship in our illustration will be transporting in both directions all the first-class freight it can take, and will accept neither the stone nor the merchandise consigned to ports to which it can be carried only at the cheap rates.

Result of Effective Competition throughout the Carrier's Route. —The condition just described—that of full cargoes of profitable goods—inevitably attracts a rival vessel, and the ordinary effects of competition then begin to show themselves. The vessels pursue the same route, cater to the same traffic, and if they try to get business from each other, bring down their charges. The warfare may even bring them to reduce the rates to the level at which only variable costs are covered—a policy that, if persisted in, would bankrupt them both; and here, as well as in the case of railroads, there is a powerful motive for combining and ending the war. It usually causes a merely tacit agreement to "live and let live"—a concurrent refraining from the fatal extreme of competition. The reductions, as made, have to be general and to apply to all parts of the traffic, and unless each part of the freight carried earns a *pro rata* share of the fixed charges incurred in the business, the traffic is carried at a loss. On the supposition which we have made—that the special and comparatively unprofitable increment of carrying was discontinued as soon as the first vessel could use its entire cargo space in transporting goods of a high class—the arrival of the second vessel may cause the less profitable carrying to be resumed, since there will not be enough of the better sort to afford two full cargoes. Moreover, a normal kind of competition will stop short of the warfare which drives both rivals into bankruptcy, and will leave the rates at a level at which the receipts of each carrier cover all his outlays.^[2]

FOOTNOTES

[1] For a case in which a railroad can get the entire difference between the cost of goods at the point from which it carries them and their cost at the place of delivery, but voluntarily refrains from doing so, see the note at the end of this chapter.

[2] A full discussion of the limits of freight charges would take account of the fact that "what the traffic will bear" is an elastic amount. An infant industry will bear less than a mature one; and moreover, a rate that it will bear without being taxed out of existence may be sufficient to stunt its growth. A railroad may be interested in hastening its growth. When goods have one cost at A and another at B, a railroad company may carry them from the one point to the other for less than the difference between the costs because it wishes the industry at A to grow and furnish freight. Farmers who are introducing a new crop in a section of country remote from a market may be encouraged by a rate for carrying which leaves them a margin of profit. It is when a branch of production has more nearly reached its natural dimensions that the charge for carrying its product tends to approach its highest limit.

CHAPTER XXIV

THE FOREGOING PRINCIPLES APPLIED TO THE RAILROAD PROBLEM

Simple Cases of Charging "What the Traffic will Bear."—The value of a study of primitive carriers and their policy lies in the fact that it illustrates principles which apply to transportation by a complicated system of railroads, although in this latter case they are not easily discerned. Imperfect competition is what exists in the department of carrying. So long as a railroad is without any rival it may, in some cases, charge for moving goods from one point to another about as much as the cost of making them at the latter point exceeds the cost at the former. This is the simplest case of charging what the traffic will bear. Or, again, the situation may be dominated by producers at a third point who can make goods and get them carried to the place we may term the market for less than the cost of making them directly in this latter place. In such a case the road may demand nearly the amount by which the cost of making the goods at an accessible third point and moving them to the one which is their market exceeds the cost of making them in the place first named; and this is a slightly less simple case of charging what the traffic will bear. It is appropriating the difference between two natural values neither of which the railroad itself fixes.

Charges based on Various Kinds of Cost.—The charges of the railroad may be limited by the competition of inferior carriers who use its own route, such as teamsters whose wagons use a public highway running parallel to its own track. Here charges are based on costs, but not on those which the railroad incurs. They are the costs which the teamsters incur; and if the railroad has much business, its own costs are less and it makes a profit. The charges may be based on costs incurred by more economical carriers, like owners of ships, and in such a case the rate which the railroad can get may be less than its own costs, if these are figured in the simple way of dividing a total outlay by a total number of units of freight transported. The rate is based on the shipowners' costs, and these are so low as to bankrupt the railroad if it should reduce all its charges to such a level. It reduces them thus only on the particular route where competition by water is encountered, and keeps them elsewhere at the higher level. In the case of shipments by rail over such routes "what the traffic will bear" is determined by the low charges established by the ships; and this means that it is determined by a certain definite cost of carrying goods between the very points which the railroad connects.

The Exceptional Importance of Fixed Charges in the Case of Railroads.—The railroad, in the case just noticed, carries its rates below costs, as these are computed in a simple way, but keeps the lowest of them somewhat above the variable costs which we have defined; and there appears the important fact that the fixed costs incurred by the railroad form an unprecedentedly large part of its total expenses. The interest on the outlay it makes for roadbed, track, bridges, tunnels, terminals, etc., is something for which there is no fair parallel in the case of wagons or ships. This is the first unique fact concerning railroads and their policy; and the second is that they continue very long in that intermediate state which we have illustrated by the ship which had only a partial cargo and was impelled to take some traffic at a special and low rate. For many years the railroad only partially utilizes its plant; and so long as that is the case its natural policy is one of drastic discrimination between different portions of its business. A third great point of difference between the railroad and other carriers appears if, while its capacity is still only partially utilized, it encounters the direct rivalry of other railroads that are eager for business; competition then takes a shape which impels the participants irresistibly into some kind of combination. The union may be tacit or formal, and it may depend on personal relations or on some merging of corporations; but toward something that will make the rival lines act concurrently and with mutual toleration the situation impels them with unique force.

The general features of railroad rates, then, are—

(1) Some charges based on the difference between the natural value of merchandise at the point of

origin and its value at the point of delivery, as this latter value is determined by causes independent of the rates charged for transportation between the two points;

(2) The adjustment of other charges according to costs incurred by independent carriers operating between the same points;

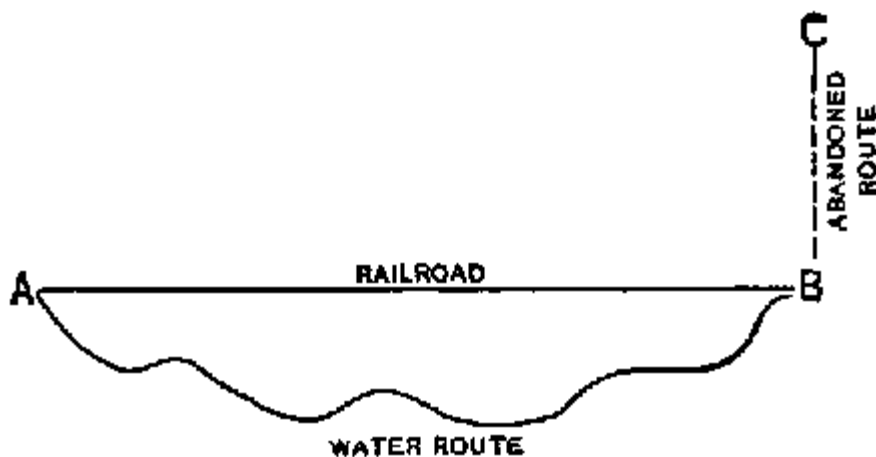
(3) The exceptional importance of the railroad's "fixed costs" and the drastically discriminating rates to which this leads;

(4) The irresistible motive for combination where direct competition appears between railroads connecting the same points.

We speak of the condition of railroads as an intermediate state because it is one out of which a natural development takes other carriers when their capacity for service is fully utilized. The same cause—a complete utilization of the plants—would have a like effect in the case of railroads; but the cause is so slow in coming into full operation that few persons think of it as affecting the problem at all. The problem of freight charges on railroads is usually regarded as if the intermediate state were destined to be perpetual. It is, however, entirely true that a full utilization of the plants of railroads would tend to take them out of this state. If the increase of business came after a combination had been effected, it would tend to put a stop to the sharp discriminations to which the eager quest for traffic has led. Different shippers could more easily secure equally favorable treatment. Freight of a low grade would be less desired, since the space it would require might otherwise be available for business of a more profitable kind, and the rates on such freight would rise. The increased traffic would make it possible to earn large dividends without increasing charges on the lower grades of freight, and while greatly reducing the charges on the higher grades; but no economic force would be available for securing this adjustment. The state, by positive regulation, might secure it and might bring the earnings and the charges of the railroads more or less nearly to the normal standards which prevail where competition rules; but if competition were here to begin, it would result quite otherwise. It would restore the old condition of partially utilized cars, track, etc., and cause a new strife for traffic, which would cause some freight to be taken at very low rates, but would lead to inevitable consolidation and higher charges.

In general industry competition tends so to adjust prices as to yield interest on capital, wages for all varieties of labor, including labor of management, and nothing more, and this is the outcome elsewhere demanded by a growth of business coupled with a theoretically normal and perfect action of competition; but the peculiarities of competition between railways do not bring about the evolution which would give this result. Combination is effected long before the returns from the total traffic are made normal and before the returns from different parts of it are brought into their legitimate relation to each other. After the union of rival companies, railroads continue to be in that intermediate state in which the effect of an unused capacity for carrying has its natural effect in charges which discriminate widely between different localities and between different kinds of freight. The railroad traffic does, indeed, begin to follow the course which we have illustrated in the case of transportation by water. It takes a few steps in that direction, but further progress is then stopped by combinations.

The fundamental laws of economics still apply. The static standard of freight charges exists, and one can form some idea of what actual charges would be if the forces which elsewhere tend to bring prices to their theoretical standards could here operate unhindered. The hindrances, however, are such as definitely to preclude such a result. The rates do not become in a true sense normal. Even under such active competition as at times exists they do not become so, while without competition they never tend to become so. It would, however, be a gross mistake to assume that static standards have no application whatever to railway transportation. The whole subject is most easily understood when those standards are first defined and the baffling influences which prevent actual rates from conforming to them are then separately studied. There are influences which bring the various charges of railroads within a certain definable distance of normal standards.



The situation of railroads we take as we find it—one of complete consolidation in case of many roads, and of harmonious action, or quasi-consolidation, in the case of others. In general their charges are fixed by the place value they create, as that value is established by influences other than the charges themselves. It might seem that the charge for carrying fixes the place value. Whatever a railroad demands for carrying goods from A to B measures the enhanced value which they get in the moving; but if they would have possessed at B the same value that they now have, even though the railroad had not existed at all, it is evident that it is this value minus the value of the goods at A which fixes the charges for carrying, rather than that these charges fix the place value. We have seen in very simple and general cases how this principle works, and have now very briefly to trace the working of it in the case of a system of railroads. The special method of reckoning costs to which we have referred is an important element in the process.

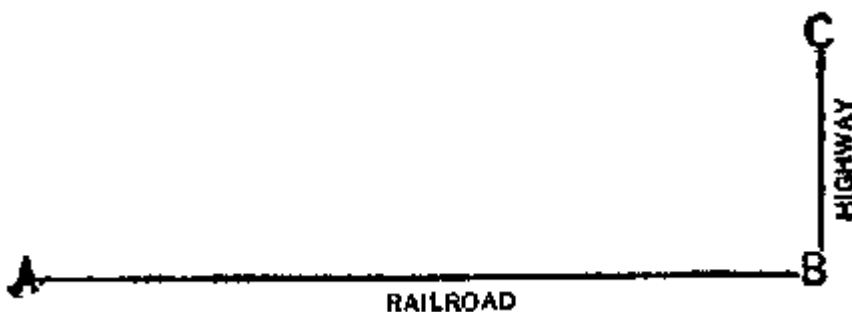
"Costing" comparatively Simple in the Bookkeeping of Competing Producers.—In the study of ordinary industries we have encountered conditions which render the bookkeeping of a producer simple and cause him to charge all his costs, in a *pro rata* fashion, to his entire product. If his goods and those of his rivals are of one kind and are sold in a single market, a cut in the price of any one portion of the product involves a corresponding cut on the entire output. It is not possible to single out any particular increment for a reduction of price and leave the rate unchanged on the remainder. Where products are of different kinds it is possible to make a classification of them so as to get a large profit on some, a small one on others, and none at all on still others. When competition has not done its full work, something of this kind happens in many departments of business. A condition of unequal gain from different portions of an output lingers long after some effects of competition have been realized. In the end, however, it must yield if competition itself does its complete work, and whenever we adhere heroically to the hypothesis of the static state, we preclude this inequality of charges. Rivals who contend with each other for profitable business bring the prices of the goods which afford the most gain to such a level that a mill which makes this type of goods will pay no more in proportion to its capital than one which makes other types. The total cost of production, fixed and variable alike, would at that time, as we have seen, be barely covered, and might correctly be apportioned in a *pro rata* manner among all parts of the product.

The Effect of Increasing Business on Comparative Charges.—Competition of this perfect kind does not exist in manufacturing and is far from existing in the department of carrying, and it is important to know whether with growing business and greatly tempered rivalry there is any tendency toward the equalization of charges and the simplifying of the mode of reckoning costs. When a mill has more orders than it can fill, those it wishes to be rid of are the ones which yield the smallest profit. They encumber the mill and prevent the filling of more profitable orders; and the natural mode of reducing the amount of this undesirable part of the output is to raise the charges on it. This comes about without much aid from competition, for when all producers find their capacity overtaxed, they have no motive for contending sharply for business. Underbidding has for its purpose attracting business from rivals and is an irrational operation when all have orders enough and to spare. Competition is largely in abeyance when the business any one can have is overabundant.

These Principles Applicable to Carrying.—What we here assert concerning goods manufactured by independent mills would be true of goods carried by independent vessels, if they plied between the same two ports with no intermediate stops. If their capacity should at any time be overtaxed, they would not reduce the charges on higher grades, but they would raise them on the lower grades, and the classification of freight would lose some of its significance. The lowering of the charges on the high grades of freight would come when the profits of the business should attract new carriers, who would naturally seek for the traffic that paid the best, till all kinds paid about alike. The mode of reckoning costs might then become simple—a *pro rata* division of total outlays among all parts of the business.

The Condition of Uniform Costing never realized upon Railroads.—Not a single one of the essential conditions of equalized charges and uniform costing is now realized upon railroads, and there is only one of them that is approximated. Separate markets for different parts of the traffic are provided by the nature of the business. Every point to which goods are conveyed furnishes such a distinct market, and the service of carrying goods to it is paid for by a distinct set of customers. It follows, therefore, that some rates can be cut without affecting others, and they regularly are so. The second condition, that of bringing the carrying capacity of railroads into the fullest possible use, is attainable, but it is very remote. At times there is a congestion of freight and, in general, the capacity of existing plants is more nearly used than it heretofore has been; but by an addition to the rolling stock they could carry more than they do and the additional traffic would cost far less than the portion already carried. Moreover, with no addition to the rolling stock, very considerable enlargements of traffic could at many points be made. Thirdly, competition between railroads is not at present effective enough to bring about a reduction of the higher charges and make returns and costs simple. Combination takes place long before the discriminating charges are abandoned. Low-grade freight continues to be carried side by side with the high-grade which pays better. Charges to terminal points continue to be low, while charges to intermediate points are high. In a sense one may say that a tendency to discontinue these practices exists, but it is a tendency that is so effectually resisted that its natural results are only in small part realized. If a dam is built across a reservoir, holding the waters on one side ten feet above those on the other, one may say that the waters have a tendency to reach a uniform level, since the power of gravity is exercised in that direction; but the dam baffles the tendency. And so in railroad operations something interferes which checks the force of competition or removes it altogether, long before the discriminations in freight charges are removed or very much reduced.

An Intermediate State made relatively Permanent.—As we have said, the condition of traffic on railroads is analogous to what in the case of manufacturers and primitive carriers would be regarded as a transitional state soon to be left behind; but in the case of railroads it is relatively permanent. It is the condition in which certain natural economic forces are working vigorously, and, if they were not counteracted by other forces, would end by making natural adjustments and establishing normal rates for the carrier as well as the manufacturer. In this intermediate state the natural forces are counteracted and the adjustments are never made, and what we have to study is the degree in which they are approximated.



A Simple Case of Special Costing Applied to Certain Traffic.—We will suppose A and B are connected by a railroad, while C and B are connected by a highway over which transportation proceeds by the primitive means of horses and wagons. It is like one of the cases we have already

stated, with the exception of the fact that the carrier over the longer route is a railroad. The limit of what the railroad can get is the natural difference between the cost of making the goods at A and the combined costs of making them at C and carrying them to B. This definitely limits the railroad charges. Whatever difference of cost there is the railroad can get if it chooses, and barring any deduction it may make in order to induce production at A and make traffic for itself, it will get it. The rate which is fixed for the railroad may be sufficient to cover the total costs chargeable to this portion of its traffic on the simple and *pro rata* plan of costing, or on the other hand, it may cover only a portion of the fixed costs or no portion at all. This means that the standard which is set by the differing values of the goods at A and at B may or may not yield a profit to the railroad. If it is so slight as not to cover even the variable costs of carrying the goods, the railroad will not carry them, and the supply will be allowed to come from C rather than from A. If it covers more than these variable costs, the road will accept and carry the goods. If the traffic affords any appreciable margin above the variable costs, it will be the policy of the railroad to make its charges low enough to attract the traffic, and this will slightly reduce the place value of the goods at B and bring it below the cost of procuring them from C. The railroad will thus secure the whole traffic to the exclusion of that which came from C. If the costs of making the goods at A and C are alike, then the charge for carrying from A to B will be just enough below the total costs of carrying in wagons from C to B to stop the carrying over this shorter route and appropriate the whole business; but this charge may not cover total costs of carrying from A. It may yield only a slight margin above the variable costs attaching to this part of the railroad's business. It thus appears that this carrier can with advantage accept the freight at a rate that by a perfectly normal bookkeeping is below cost, while the teamsters on the road from C cannot do this.

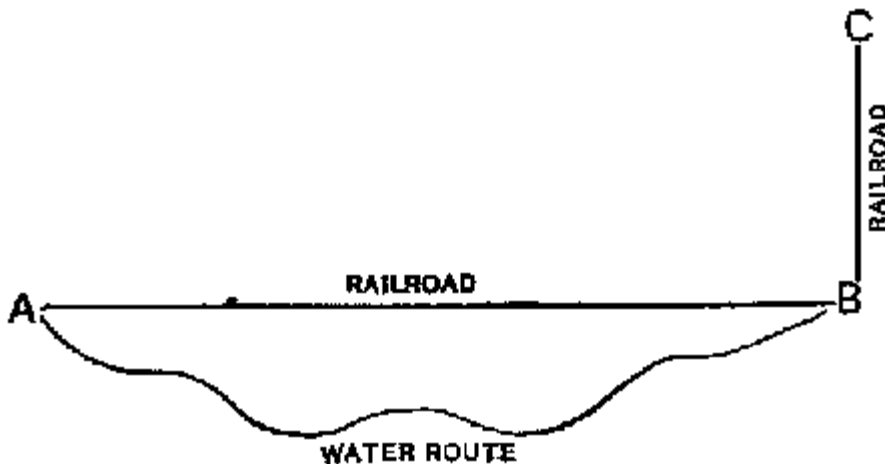


A Second Case in which Carrying is done for Any Amount above Variable Cost.—Let us now suppose there is a railroad from C to B as well as one from A to B. There is now competition between makers at A and carriers from A to B, on the one hand, and makers at C and carriers from C to B, on the other hand; and whichever of these quasi-partnerships delivers the goods at B at the cheaper rate gets the whole traffic. By the terms of our supposition the makers in both places are offering goods at cost, and any cutting of rates that is to be done must be done by the carriers. To reduce the prices of the goods at the mills in either locality would put some of them out of business. We will assume that there is no consolidation and no other means of concurrent action between the railroads, and that the whole traffic will thus go to the route over which the lower rates are made. For simplicity we will still adhere to the supposition of equal costs for manufacturing and of unequal costs for carrying. As the charge for carrying goes down, one or the other of the railroads will reach the point where the variable costs of this traffic are barely covered, while on the other line they are more than covered. Where rivalry is not tempered in any way whatever, the charge made by competing roads falls to a level at which returns only cover the variable costs incurred by one of the competitors, though it may return somewhat more in the case of the other.

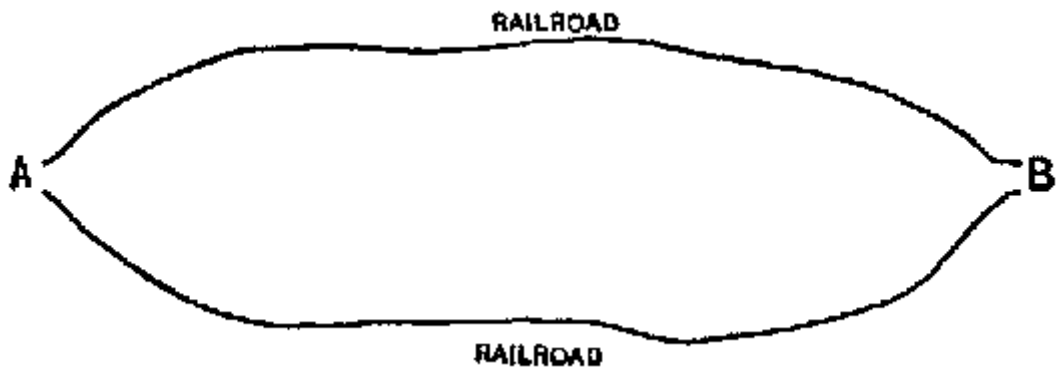
How Fixed Costs are Met.—This implies, indeed, that the fixed charges of both roads must somehow be met by the returns from other traffic; and this supposition is in accordance with the facts. A freight war may temporarily carry rates to a level where some traffic does not cover variable costs and where total traffic falls short of covering total costs. Such a situation cannot long continue, and the natural adjustment, under active competition, is one at which rates on the traffic for which the two lines are contending are just below the variable costs incurred by one line but

above those incurred by the other. There is nothing to prevent the stronger railroad from thus reducing its rates, attracting to itself the whole of the traffic, and putting an end to the rivalry of the other line. This would mean bankruptcy for that line unless it had other sources of income.

The Effects of Bankruptcy on Costs.—Bankruptcy means a scaling down of the fixed charges of the railroad to such a point that the total traffic can meet them; but it does not enable the company to reacquire business that will not yield enough to cover variable costs. Adhering to the supposition that there is no mutual understanding, no pool, and no other approach to consolidation between the rival lines, we may safely say that the general rule which elsewhere governs rates holds true here. Two roads actively competing for identically the same traffic tend to bring charges to a level at which the variable charges entailed by this traffic on the one route are not quite met and the traffic passes to the other line.^[1]



A Principle governing Competition between Railroads and Carriers by Sea.—In a third case there may be between A and B a railroad and a water route also, while between C and B there is a railroad only. On the supposition we have made,—that competition between carriers by water has done its full work,—the charge for carrying anything by water from A to B must be sufficient to cover a *pro rata* part of the total costs. That may be sufficient to cover the merely variable costs entailed on the railroad, or it may not. If it does not, the railroad will not take any portion of the business except what it may take by reason of the greater speed with which it can transport the goods. If, however, the total costs of carrying by water exceed by a tolerable margin the merely variable costs of carrying by land, the railroad will be able to take the traffic. If this traffic goes to the water route, the charge made by the railroad from C to B is adjusted by a simple rule. This railroad can get the natural difference between the cost of the goods at C and the cost of similar ones made at A and carried by water to B. If the railroad gets the traffic between A and B, and the water route is abandoned, the case becomes the same as that which we have already considered,—the transporting is done at a rate which prevents one of the lines from covering its merely variable costs and secures all the traffic for the other line. The carrying from A to B goes by land or by water according as the variable costs, in the one case, or the *pro rata* share of total costs, in the other, are the less; and nothing can be carried from C to B unless it can be delivered at B at a price as low as that of goods made at A and transported at the rate just described. If the costs of making at A and C are equal and there are the three carriers seeking traffic, as assumed, the result naturally is to give all the business to the one who will bid the lowest for it. Either railroad will bid as low as the variable costs which the traffic occasions; while the owners of ships will bid no lower than the rate which covers costs of both kinds.^[2]



The Case of Railroads having Common Terminal Points.—In the fourth case there are, besides the other carriers, two railroads between A and B which compete for the traffic at these terminal points, but not at intermediate ones. Their facilities for through traffic are alike. The local traffic on the different lines is unlike, since it is affected by the character of the regions through which the railroads pass; but the charges made for local traffic are governed by the comparatively simple principles which we first stated. In contending for freight to way stations we may say that the railroad has to compete with wagons upon the highway, but with nothing more efficient. The charges for local freight may therefore be extremely high, while, if the railroads are really competing as vigorously as pure theory requires, and if the normal results of competition are completely realized, the rate which can be maintained between A and B for any articles carried will be no higher than those which cover the variable costs entailed on the route which is the less economical of the two. The line to which this test assigns the traffic between A and B must then stand the further tests we have described—those involved in contending for business with carriers using respectively the water route and the railroad from C to B.

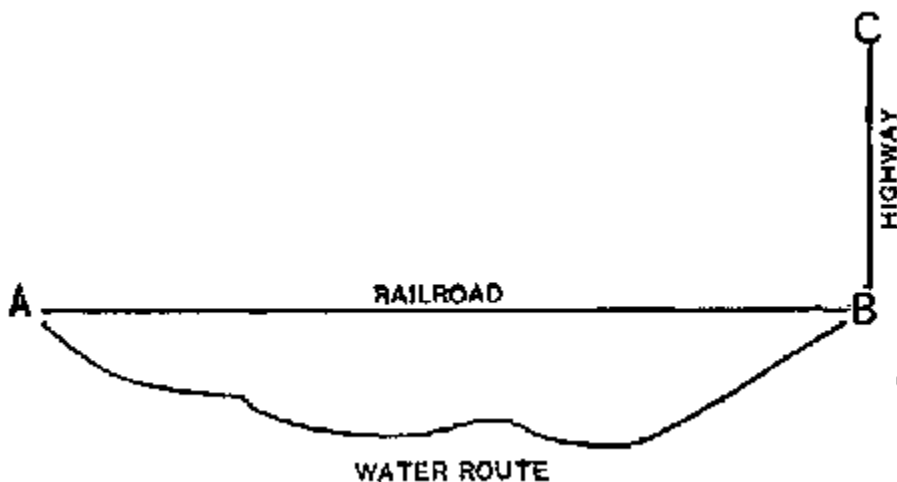
A Condition leading to a Reduction of Fixed Costs.—It is safe to assume that one of the two railroads from A to B has more local traffic than the other. It may be that even with this advantage its total returns of all kinds may fall short of covering its total outlays. In that case the total returns of any less favorable route must fall still further short of the amount necessary for covering all outlays; and if we adhere to the assumption that neither consolidation nor anything resembling it takes place, we have a case in which both railroads must undergo reorganization. The fixed charges of the better route must be scaled down and the creditors of this railroad must accept the loss, while on the other route the fixed charges must be reduced still more and the creditors must suffer a larger loss. It goes without saying that the prospect of such a calamity means consolidation. It is evident what alternative competitors face in cases in which heroic competition goes on to the bitter end. As a rule this is an unrealized alternative. The mere prospect of the calamity connected with it is bad enough to put an end to the independent action of the different railroads. With the facilities for combination which now exist a far smaller inducement suffices to bring this about.



The Case of Railroads whose Entire Routes are Parallel.—We have to consider only one more typical case in order to have before us a sufficient number to establish the general principles which govern the charges for the carrying of freight by railroads. Variations innumerable might be stated; and, indeed, the experience of the railroad system of this country affords the variations and reveals the results which follow from the conditions they create. The railroads may be strictly parallel lines, pursuing the same route and competing for local traffic as well as for through traffic. If the case we lately examined insures consolidation,—and indeed all of the cases we have stated impel the companies powerfully toward it,—this last case makes assurance doubly sure. Strictly parallel

railroads competing for traffic over their entire routes and neither uniting nor showing any of the approaches to union would be an impossibility. Persistent competition would then mean reducing all charges to the level fixed by variable costs, which would leave no revenue whatever to cover fixed costs, and would send the companies into a bankruptcy from which even reorganizations could not relieve them, since they could not annihilate all the fixed costs.

A Case of Arrested Development.—It is clear that, in the entire policy of railroads, the fact that their capacity has never been fully used plays a highly important part. It makes the distinction between fixed costs and variable ones a leading element in the adjustment of charges. With the capacity of railroads completely used, as is that of a ship which carries a full cargo at every voyage, the distinction would lose most of its importance. More business would then require an addition to every part of the plant and would thus entail new fixed costs which would have to be charged against the new business. As the traffic of any railroad grows toward its maximum, the cost which each separate addition to it entails grows larger and larger. When cars are few and are only half filled, an increment of traffic entails a very small increment of expense. When the cars are filled and new freight requires the purchase of more of them, the cost of this addition to the traffic becomes greater. When further additions to the freight carried require additions to trackage, yard room, storage room, etc., they cost far more than the earlier additions; and new increments of freight come, in the end, to cost very nearly as much per unit as the general body of the previous traffic when all outlays were charged against it. The railroad approaches the condition of the full ships referred to, in which further cargoes require further ships, with all the outlays which this implies. The distinction between different kinds of costing is gradually obliterated, and railroads steadily draw nearer to that ultimate state which other carriers more quickly approach, in which each part of the freight carried must bear its share of the total costs entailed. Long before that state is reached, however, combination ensues, and the movement of freight charges toward their static standard is arrested.



The Standard of Freight Charges under a Régime of Monopoly.—A consolidation so complete that it would merge all rival lines under a single board of control and pool all their earnings would restore the early condition described in connection with one of our illustrations—that of the single railroad between A and B, having only sailing vessels and wagons as rivals. It is able to charge what the traffic will bear in a simple and literal sense. The consolidated lines can, if they choose, get for each bit of carrying the difference between the value of goods at the point where they are taken and their value at the point where they are delivered. These values are approximately what they would be if no railroad existed. The carrying done by the railroad itself does not enter into the making of them. The natural value of a commodity at A is what it costs to make it there, and the value at B is either the cost of making it at B, or that of making it at C and carrying it in wagons to B, or that of making it at A and carrying it by water to B. In any case there is a natural and simple process of fixing the costs both at A and at B, and the difference between them is the limit up to which the railroad can push its charges if it will. Where the business which furnishes the freight is not fully developed, the railroad may moderate its charges for the sake of letting it grow larger. The

hope of increased traffic in the future may cause a reduction of demands in the present. We shall see what other influences may keep the charges below their possible level; but the natural difference between two local values of goods is the basis of the charge for carrying them from one point to the other. Consolidated lines, if they had as perfect a monopoly of carrying by railroad as has the single line in our illustration, would base their charges on this simple principle, though for a number of reasons they might not take all that the principle would allow.

How Imperfect Consolidation Works.—Imperfect consolidation, when it follows a period of sharp competition, has to deal with obstacles which prevent a complete carrying out of this policy. Many rates have become far lower than the rule of monopoly would make them, and there are difficulties in the way of raising them. A weak combination of parallel lines may keep its charges within bounds, partly from a fear that larger ones may afford too great an incentive to secret rate cutting and may so break up the union, and partly from a respect for what the people may do if the exactions of the railroads become too great. The more complete forms of consolidation have not the former of these dangers to fear; and if, without being restrained by the state, their charges continue moderate, it is mainly due to the fact that other lines less firmly consolidated are unable safely to make a radical advance of rates, and that this often prevents such a course in the case of lines which would otherwise be able to take it.

Limits on the Charges of a System of strongly Consolidated Lines.—This means that where a great system of railroads occupying the whole of a vast territory is so firmly consolidated as to have a complete monopoly of carrying by rail within the area, it is still affected in indirect ways by the possible rivalry of lines altogether outside of its territory. An excessive charge on freight from Chicago to New York might induce carrying by rail from Chicago to Norfolk and thence by water to New York. It might cause grain, flour, etc., to be shipped to Europe from Southern ports rather than from those on the Atlantic coast. These cases and others do not fall under principles essentially different from those already stated, but they call for the application of the same principles in complex conditions which our study is too brief to cover. There is a supposable case in which nearly all that could be secured by any railroad connecting Chicago with the Atlantic coast, even though every line in the territory between them were the property of one corporation, would be the variable cost of carrying goods over a line running to a port on the Gulf of Mexico. Reflection will easily show how the principles already stated apply to this case and others.

Effects of a General and Strong Consolidation.—With all the lines in this country and Canada in a strong consolidation, the advance of rates to, or well toward, the limit set by the principle of natural place value created would inevitably come unless the power of the state should in some way prevent it. The railroads would be able to get the difference between the cost of goods at A, in the illustrative case, and the cost of making or procuring them at B without using the connecting line of railroad. When the appeal to the state is only imminent,—when the power of the government is not yet exercised, but impends over every railroad that establishes unreasonable charges,—the rates may be held in a fair degree of restraint. A wholesome respect for the *possibilities* of lawmaking here takes the place of actual statutes. A respect for the law appears in advance of its enactment and may amount to submitting rates in an imperfect and irregular way to the approval of the state. This effect, when it is realized, is to be credited in part to laws which will never be enacted. The merely potential law—that which the people will probably demand if they are greatly provoked, but not otherwise—may be a stronger deterrent than the prospect of more moderate legislation. In general a considerable part of the economic lawmaking of the future will undoubtedly be called out by demands for action that is too violent to be taken except under great provocation. The dread of the extreme penalty insures a cautious policy in increasing charges which have been established under a transient régime of competition. Partial monopolies adhering to rates many of which were established under the pressure of competition—such are the railroad systems of America. The existing condition shows some of the effects of competition which has ceased and of legislation which has not taken place. As the combinations shall become greater and stronger, the situation everywhere will become more and more akin to that which existed in a local way when a single line of railroad had no effective competition, and the charges which the traffic would bear were fixed in

the way we have described and absorbed the place value which the carrying created. It is a method which exposes the public to an extortion which, though not unlimited, is unendurably great. Consolidation, therefore, means the control of rates by the state; but it is essential that this control be exercised with due regard for the economic principles which rule in this department of industry. Thus only can there be secured the results of a natural system unperturbed by monopoly.

The principles which a study of simple cases suffices to establish are as follows:—

1. Freight charges are essentially a variety of price. They express the exchange value of place utility.
2. The static standards or norms toward which these prices tend are fixed in the same way as are other static standards of value,—by a rule of cost,—though in the case of railroads the working of this rule is exceptional.
3. When carrying is done by simple means and by competing carriers, the ultimate basis of charges is the cost of the carrying; and this is estimated in the simple way in which, under perfectly free competition, the cost of making commodities is estimated. The total outlay is charged against the total product.
4. A single railroad between one point and another, when it is not affected by the rivalry of any other railroad, can get for its service the difference between the cost of goods at the place where they are made and the cost at the point of delivery, on the supposition that they would either be made at this point or carried thither by more primitive means. Under such a partial monopoly the costs incurred by the railroad itself do not directly set the standard of its charges, but other costs do so.
5. In this case the so-called variable costs incurred by the railroad furnish a minimum limit below which its charges cannot go, but to which they tend to go in the case of traffic which cannot otherwise be secured.
6. This place value which the railroad can confer on the goods is small (1) when the cost of making the goods at their place of departure is not much less than that of making them at their place of destination, or (2) when it is not much less than the cost of obtaining them from a third point, or (3) when it is possible to carry them from the place of their origin to their destination by water or by any other cheap means of transportation.
7. Variable costs are positive additions to the total outlays previously incurred by a railroad, and they result from adding a definite amount to its previous traffic. They are less than proportionate parts of total costs, including interest, some part of operating expenses, cost of maintenance of roadway, etc.
8. The comparative smallness of the variable costs is chiefly due to the fact that the carrying capacity of railroads is only partially used. These costs become relatively larger as traffic increases, and would practically coincide with proportionate shares of total costs if the traffic should reach its absolute maximum.
9. If the place value above defined is large enough to cover the variable costs attaching to certain traffic and afford any surplus whatever, the railroad usually takes this traffic.
10. On the business which it gets the charges vary widely and, as it appears, capriciously, but they are at bottom governed by the economic principle stated—that of place value as established in ways in which the charges of the railroad itself do not figure.
11. Competing railroads tend to bring rates downward toward a minimum which is fixed by the merely variable costs of the carrying as done by one or more of the railroads themselves.
12. The competition between railroads is arrested while they are not using their full capacity, while the merely variable costs of an increment of traffic are still abnormally low, and while many rates

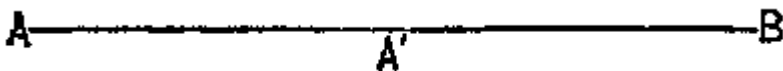
are so.

13. Railroads which compete for freight between terminal points are strongly impelled toward consolidation; and those which compete along their entire lines are forced to resort to it.

14. Consolidation in its more imperfect forms tends to establish rates that are abnormally high, but this tendency is somewhat checked by the danger that the combination may be broken by a desire to foster business in a section of country and by the indirect influence of lines outside of the territory controlled by the consolidated roads.

15. In its stronger and more extended forms consolidation leaves the people with no adequate safeguard against extortionate charges except as this is furnished by the intervention of the state; and this needs to be effected with an intelligent regard for the natural forces which are at work amid the seemingly capricious irregularities in the present system of charges.

The Aim of Regulation by the State.—An aim of a government, in all of its economic policy, is to insure the best use of the national resources, and this can often be done by keeping alive free competition. Where the rivalry of producers is active, a law of survival guarantees that the more economical method of producing an article shall displace the inferior one. When the choice lies between using a quantity of free and disposable labor in making goods in a certain market and using it in making them elsewhere and carrying them to the market, the alternative which gives society the most that it can get by any use of its productive resources is the one that is spontaneously selected.



How an Extortionate Local Charge may sometimes be reduced without Injury to a Railroad. —A low charge for freight carried from A to B coupled with an extortionate one from A' to B might preclude making the goods at A', though they can be made there at excellent advantage and the interests of society will soon require that they be so. This situation can exist only so long as traffic is slight between A and A' and greater between A' and B. The growth of traffic over the former section of the route will make it desirable for the railroad to raise its rate over that portion. If, under compulsion or otherwise, it reduces the rate from A' to B sufficiently to permit the production of the goods at A', it will gain a profitable traffic between A' and B at the cost of giving up a relatively unprofitable one between A and B.

Variable Costs a Proper Basis for Some Charges.—It makes for general economy to pay respect to the distinction between fixed and variable costs and let much freight be carried for anything it will yield above the variable ones. If ten units of labor are required for making an article at B and only five at A, and if a railroad between these points, whose capacity is not fully utilized, can carry the article from A to B with an expenditure of two additional units of labor, then society can best get the goods for use at B by spending these seven units in the making and carrying. It would take ten units to make them at B, and to society itself there is a saving of three units from making them at A and carrying them at a special rate to B. Till the railroad is more fully used for other purposes this source of economy will continue. Though the rates charged for this freight would bankrupt the railroad if they were applied to its entire traffic, it is best for the railroad to take this special bit of carrying at any rate exceeding the wages of the two units of labor; and for the time being this is the best way to use some of the social resources, since it gives at the point of delivery and use more goods for a given outlay than could have been had in any other way.

Why Consumers may suffer while Particular Producers may be Favored.—It will be seen that this principle affords an inducement for making a special classification of certain goods and carrying them for less than merchandise of a generally similar kind is carried for. It is a policy of "making traffic" which costs little and is worth more than it costs both to the carrier and to society. This incentive for reducing charges does not operate as strongly in the case of goods carried to

consumers who are forced to live on the route. They are held there by the general causes mentioned at the beginning of the preceding chapter, and must pay the tax which the railroad imposes on them. The only limit on this tax is the possibility of otherwise procuring the goods or of moving out of the territory. The ultimate possibility that population may not grow under a régime of extortion and that both freight traffic and passenger traffic may be held within small limits imposes some check on the railroad's exactions. The company may find it worth while to foster to some extent the growth of population; and to favor producers of certain goods in order to induce them to locate their establishments on its line, and the result of this may be good for society; but there is no way of securing a general good from the heavy tax on the rest of the traffic unless this has been necessary to insure the existence of the railroad itself. In that case there may be a temporary necessity for it, which will disappear as traffic grows.

The Policy of the State in Dealing with Low Charges based on Variable Costs.—The interest of railroads which have a monopoly of their routes is to advance the rates on through traffic. We have noticed a possible case in which some equalization of charges by occasional reductions of local rates takes place. An increase of charges over long routes not made necessary by any pressure of business which overtaxes the railroad's carrying power would of course be injurious. Moreover, carrying full loads does not constitute such an overtaxing as calls for the higher rates. There are times when present supplies of cars and engines may not be able to move more freight than they do; but in that case more of them are called for. Only when the point is reached at which providing for this through traffic in addition to the local freight entails additions to the permanent plant and involves costs that exceed the return from the through business, is it justifiable, in the interest of social efficiency, to advance such charges. In preventing such an advance under other conditions a government helps to secure an approach to a natural economy and a maximum of production.

When, in the Interest of General Productivity, a Reduction of Local Charges is called for. —We saw that carriers of a primitive kind competing with each other would put every charge, local or otherwise, on a basis of its proportionate share of total costs. The traffic as a whole would return enough to cover all the outlays, and each part of it would yield its share. This is the ideal of effectiveness for railroads, as well as for ships and wagons. The attainment of the ideal without a regulation of charges by the state is never to be expected. One feature of this normal condition is that, where no special improvements have recently been made, total returns should just equal total costs, in the sense in which terms are used in static theory—that sense in which all interest charges and all expenses of management figure among the costs. No net profit for the *entrepreneur*, but full interest for the capitalist and full wages for all varieties of labor, is the rule that gives the static measure of normal returns. If a state shall slowly reduce the charges for local freight, while holding unchanged those for through traffic,—all the while allowing the total returns of the railroads to cover what we have defined as total costs,—it will do all it can toward securing an approximation to the condition which affords the largest product of social industry. It will help to make the resources of the people do their utmost in yielding an income. Total returns covering all costs, a reduction of those charges on local traffic which have prevented industries from springing up at intermediate points between favored centers, a gradual increase of local production without any positive repression of production elsewhere—such are some features of the general change which the future should bring and which only the power of the state can make it bring.

How the State may secure what Competition secures in Other Fields.—In general industry the rivalry of entrepreneurs carries prices to a level fixed by costs, but in transportation the rivalry has so largely disappeared as to prevent such an outcome. The state cannot restore much of the vanished rivalry and would cause an unnatural condition if it did so. We have seen toward what an abnormal level of costs a sharp "freight war" carries rates. What the state can do is something which an instinctive judgment of the people is impelling it to do; namely, to adjust rates directly and bring them gradually toward the standard to which competition, if it were working as it elsewhere works, would automatically bring them, namely, that at which wages and interest are fully covered. A surplus above these outlays could always be temporarily secured wherever a special economy had been effected, and the source of legitimate profit would be open to carriers as it is to producers

generally. How much should be reckoned as interest depends on the question how the capital itself is estimated, and here again the instinct of the people has been correct. It will not accept as a measure of true capital the market value of all the stocks and bonds the railroad has issued. The quotations of the market make the total values of the stocks and bonds equal a capitalization of its total earnings, and these may include a profit due to monopoly. If a state were to figure the capital in this way, and then so adjust rates as to allow ordinary interest on the sum thus computed, it would merely leave total returns as they are. It might change comparative charges, but not the sum total of all of them.

How Capital should be Estimated.—In that static condition in which, as we have shown, capital is as productive in one subgroup as in another, the capital is first measured by the cost of the goods that, in the inception of the industry, embody it, and in static studies this cost is regarded as constant. Returns from different outlays are equalized, and a dollar invested in one kind of business then yields as much in a year as a dollar in any other. In a dynamic state the cost standard still prevails, and as the tools of production become cheaper, in terms of labor, it takes more of them to represent the same amount of capital that was originally invested. What it would at any time cost to duplicate every item in the equipment of a business measures the capital it uses. Nothing but a failure of competition in the case of railroads prevents the application of this standard to them. Monopoly makes earnings more or less independent of sums invested and causes purchasers to buy stock at rates that are independent of costs of plant and equipment and are fixed by earnings themselves.

The Process of Estimating Capital on the Basis of Cost.—If we undertake here to do by public authority what competition elsewhere tends to do, we shall have to restore the standard based, not on the original cost of the railroad's substantial property, but on the cost of getting another that would be equal to it in working efficiency. The plant is worth what it would naturally cost to duplicate it; and an average rate of interest on that sum is the natural return from it. There are ethical claims which are entitled to respect and which preclude any sudden reduction of the value of a railroad's properties; and, moreover, the end in view can be attained in a way that will not necessarily take anything from the absolute amount which they are now worth. If the amount of dividends remains fixed, the increase in the actual value of the plant itself will bring these dividends into the proper ratio to it. The land that the companies use is becoming more valuable. Measured by what it would cost to duplicate it, it represents a larger and larger amount on the companies' inventories. If the equipment also is enlarged as traffic grows, the entire sum on which interest and dividends are computed becomes continually larger. If the interest and dividends earned by the plants now in existence remain fixed in absolute amount, they will become a smaller and smaller percentage of the real capital of the companies. Merely letting railroads earn the amount that they do at present would bring the net incomes after some years to the same rate—the same percentage of invested capital—that the income from other capital represents. New plants and enlargements of old ones should be allowed to earn enough to furnish an incentive for providing them as fast as the needs of the public require it.

How Insuring a Fixed Amount of Total Earnings would affect the Rates charged for Freight.—It goes without saying that the general increase of traffic, while the freight charges remain the same, increases the net earnings of the carrying companies. Therefore the policy of keeping the net earnings at a fixed total amount would mean a reduction of rates for freight and passenger service. We do not here raise the question how much reduction will be required for the purpose in view—that of transferring to the people at large whatever now constitutes a genuine monopoly profit. In the case of some lines there is, it is safe to say, no such profit, and it will be impossible to tell how much of it elsewhere exists till some careful appraisal of plants and equipments, on the basis of the cost of duplicating them, shall have been made. What we need to know is that, by the aid of such an appraisal, the state can, if it will, secure in the department of carrying the result which is automatically secured elsewhere, namely, the prevalence of charges which afford normal returns on invested capital as well as wages for every kind of labor.

Elements of the Problem not included in a merely Economic Study.—It will not fail to occur to any

reader that in making the present study of railroads a very general and purely economic one we leave out of account some facts of great importance. We take no account of corruption within the corporations which do the carrying, nor of corruption in the relation between them and the officials of the state. Stockholders within the corporation are likely to have their interests betrayed by those who are appointed to take charge of them, and citizens of the state are likely to have their greater interests betrayed, in a like manner, by their appointed custodians. We cannot here discuss the various plans by which directors plunder their own corporations, nor the ways in which public officials betray the people. All of these abuses are disturbing influences in the economic system; and all of them interfere with the adjustment which gives the highest productive efficiency, and contribute a full share toward putting the social order in danger. All are, however, so obviously criminal, if they are judged by the spirit of the law,—not to say by the letter of it,—that it is better to leave the discussion of the mode of suppressing them to legal and political science.

A Practical Mode of Insuring an Approach to Normal Rates for Transportation.—When competition rules, it enlarges the supply of a dear article till the price of it is normal, and it increases the capital in a profitable business till its earnings become so. In the case of railroads this does not automatically take place, but the result of it all—adequate service and normal charges for it—can be directly secured by the state. Charges that have been made reasonable by competition may be left as they are, and those that are disproportionately high may be gradually lowered. The growth of traffic may be trusted to keep the total earnings of the companies' present plants at the amount at which they now stand, in spite of these reductions of rates; and enlargements of the plants may be permitted to earn further sums which will attract capital and keep the service abreast of the public need. All this will require expert skill of a very high order. For the purpose of the present work it is enough to say that such a course as this is the only one which will insure in transportation the results which competition elsewhere yields. It will secure both rates and service which the civil law calls "reasonable" and economic law calls "natural."

FOOTNOTES

[1] If we wish to vary our supposition that the cost of making the goods at A and at C is the same, we have a modification of the case we have stated. If it is much cheaper to make them at A, the railroad that carries these goods from there to B may charge more for carrying than does the one that delivers the goods made at C. It is possible that the difference between the costs of making at the different points may tell decisively in favor of the longer route, and it may be the railroad from C to B that first reaches, in its charges, the level of variable costs and sees its traffic handed over to its rival.

[2] If carriers by water are in that intermediate state in which their capacity is only partially used, they also may offer to take some traffic for an amount which only covers variable costs; but this condition does not naturally become in their case semipermanent, as it does in the case of railroads.

CHAPTER XXV

ORGANIZATION OF LABOR

What an economist wishes first to know concerning the organization of labor is whether it is a natural phenomenon which should be welcomed and left to itself. Does it help to establish wages on the basis of the productivity of labor, and does it do it without much reducing that productivity? We shall find that it works both well and ill in these particulars and needs close study and careful regulation.

What laborers themselves ask concerning the organization of men of their class is simply what power it has to raise their own wages; and we shall shortly find that it has a certain power when it does not invoke the principle of monopoly and a much larger power when it does so. We shall find that the benefit from mere organization may be extended to the great majority of laborers, while that which depends on monopoly is confined to relatively few and involves an injury to the remainder.

The Static Standard of Wages of Unorganized Labor.—In that static state toward which society is always tending, and in which the normal standard of wages is completely realized, men are supposed to get all that they produce. The law of marginal productivity of labor works, as it were, *in vacuo*, and gives an ideally perfect result. Every unit of labor receives what a marginal unit produces.

Actual Pay of Unorganized Labor.—A static assumption excludes enforced idleness on the part of able-bodied men. The changes which throw such men out of employment are not taking place, and there is no reserve of efficient but idle labor. In the actual state, which is highly dynamic, such a supply of unemployed labor is always at hand, and it is neither possible nor normal that it should be altogether absent. The well-being of workers requires that progress should go on, and it cannot do so without causing some temporary displacements of laborers. Though no individual were long out of employment,—though a particular man were in this condition only briefly and during the period occupied by a transit from one occupation to another,—there would always be in the general market some unemployed men. If we throw out of account those who are idle because of personal disabilities, it will remain true that really efficient men can nearly always be had, if only a few are at one time needed. The presence of even a few men able to do good work and not able to get employment is often sufficient to make individual bargaining work unfairly to the laborer. When the employing of one man is in question, the employer has other alternatives, and the man may not have them. The employer may much more readily set men bidding against each other for a vacant place than any of the men can set employers bidding against each other for an idle man. This strategic inequality between the parties in the wage contract becomes greater as the supply of unemployed men becomes larger. At some times and places it may force the pay of many workmen downward toward a minimum set by what the unemployed will consent to take.

The Effect of Local Organization.—Organization means collective bargaining and tends to equalize the strategic positions of men and employers. Where an entire force of workers must be dealt with at a time, the employer has not the alternative ready to his hand which he would have if he had only to employ a single one. If his employees strike, he cannot at once secure another force large and efficient enough to meet his needs. If his men allow their places one by one to be filled, the strike will be disastrous to them, indeed, but it will also be a misfortune for the employer. His new force will be inferior to his old one, first, because many of the new men will be personally inferior to the old ones, and secondly, because as a body they lack effective training and will not work together as efficiently as did the old force. He can afford to pay for the disciplined workers the amount that the new force will produce with two plus marks attached—one representing the superior personal quality of the former employees and the other representing the value of discipline. In other words, he can afford to make two distinct additions to the amount that

unemployed men are worth to him in order to retain his old employees. This is on the supposition that it is possible to gather from the force of idle men enough to operate a single establishment. Without organization and by means of individual bargaining, wages are drawn downward toward the level set by what idle men will accept, which may be less than they will produce after they receive employment and will surely be less than they will produce after they have developed their full efficiency. With organization which is local only, and with collective bargaining that goes only to the extent of adjusting the pay of men in one establishment, this pay comes nearer to the standard set by the productivity of labor than it would if bargains were individually made. The employer balances in his mind the value of a new and raw force and the value of a selected and disciplined force, measures the difference between these values, and will often pay a rate that is between the two amounts and under average conditions is likely to approach the larger of them.

Wages as adjusted by a General Organization of Labor in a Subgroup.—Where organization goes to the length of uniting all the employees in a particular industry or subgroup, the situation is unlike the foregoing in an important particular. No quick filling of the places which the men may vacate with altogether new workers is possible. The employers are not so situated that they can compare the old force with a new one, measure the difference in their values, and govern their conduct accordingly. The training of an entirely new force is indeed a remote possibility, if the business can wait for it, but it can seldom do this; and a strike that runs through a subgroup presents to employers the alternative of winning the workers by concessions or allowing their business to stop. If it stops, it becomes a question of endurance between the employer and the employees, in which the employer has the advantage so long as the public does not interfere. We shall recur to this condition when we study the effectiveness of strikes and boycotts under various conditions. Under all three of the conditions we have just described, the static standard of wages—the final productivity of social labor—still exists; and the actual pay of labor tends toward it, but differs from it by varying amounts, according as labor is unorganized, locally organized, or organized throughout a subgroup. In the first case the worker may get materially less than the standard amount; in the second case he may get something closely approaching it; and in the third case, for reasons to which we shall later give attention, he may be able to get the full amount and somewhat more. A particular employment which is strongly organized and which makes the utmost use of its organization is often able to carry the pay of its employees to a level that is distinctly above that set by the productive power of *marginal social* labor. Nevertheless, the amount of this overplus which the favored worker gets is limited, and the standard fixed by marginal productivity is one on which the pay of these workers and of all others depends, though it may not coincide with it.

The Power of a Universal Organization of Labor.—In the days when the wages fund theory held sway it was believed that organization could not materially advance the interests of labor as a whole, since it could not add anything to the fund which was destined in any case to be divided among the laborers. Now that another theory of wages is generally held, it is still clear that what organization can do for the entire working class is limited. By no possibility can it insure a rate of pay that will permanently exceed the product of labor, since employers would then be interested in reducing the number of their workmen and so raising their product *per capita* to the level of their pay. This would result in a large force of idle laborers, whose competition would have its depressing effect on the labor market. Up to the natural limit set by the specific product of labor a universal organization might successfully carry its demands. Moreover, this result would require no use of force—no "slugging" of non-unionists, since there would be none to be slugged. The mere fact of a universal organization maintaining discipline and preventing breaks within its own ranks would suffice for the end in view—the maintenance of pay that should conform to its natural standard. The supposition of a universal organization of labor has at present only a theoretical interest. What society has to deal with is an organization that includes a small minority of workers and is composed of separate unions which are endeavoring each to promote the interests of the men of its own craft. It is a type of organization which, instead of uniting all workers, makes the sharpest division between those in the unions and those outside of them, and creates a lesser opposition between the different unions themselves.

Organized Labor and Monopoly.—Actual trade unions do not always rely upon mere collective bargaining. They sometimes aim to secure a partial monopoly of their fields of labor; and as it is impossible to do this if unemployed men or men from other fields of employment are free to enter their territory, they must be kept out of it. They can only be kept out by some use of force, and coercion applied by the workers in a well-paid field to the men who seek to enter it during a strike is a part of the strategy of trade unions.

The Ground on which the Use of Force is Justified.—Organized laborers claim a right of tenure of their positions; they claim to own them much as a man, by right of prior occupation, owns a homestead. They claim the same right to repel intruders from their field of employment that a man has to drive interlopers from his grounds. "Thou shalt not take another man's job" is a recognized commandment on which they claim the right to act.

The Mode of Justifying the Use of the Force in Guarding Vacated Positions.—Coercion is a comprehensive term and does not always involve personal assault. What it inflicts on the recalcitrant may range all the way from social opprobrium and boycotting to literal striking, maiming, or killing. In every case it involves some injury and is contrary to the spirit of the law, unless the right of tenure can be fully established. If the employer has no right to turn off his men and take new ones, and if the new ones have no right to come at his invitation, there is a rude analogy between the effort of the non-union men to get the places and an effort to get away a man's farm. It is a matter of course that the employer may rightfully discharge men who prove worthless and fail to render the service which is contracted for. The question is whether he has the right to dismiss them when they will render the service only on what seem to him exorbitant terms. On this point the verdict of his own reason is extremely clear. To offer to render the service only on exorbitant terms has the same effect as to offer an inferior service on the original terms, and the right of tenure which the workingmen claim, if it exists at all, is contingent on the rendering of effective service on reasonable terms. On the supposition that they have owned their places at all they seem to their employer to have forfeited them when they have insisted on too high wages. On this point, however, the men's reason may give an opposite verdict, though it is based on the same principle. To them the terms they insist on may appear reasonable, and they then think that, because they are so, their ownership of their positions is valid and that other claimants are usurpers. Both parties in the dispute base their contentions on the supposed reasonableness of the terms they demand.

The Necessity for Knowing what Terms are Reasonable.—A momentous question both for society and for the working people is whether there is any way of ascertaining what terms are reasonable and securing conformity to them. What we shall find is that it is possible to keep in view the natural standard of wages, as in an early chapter we have defined it, and that it is possible, in the midst of the struggle of massed capital with massed labor, to secure a certain degree of conformity to this standard. It is possible so to shape the system that a wide difference between actual pay and standard pay will not exist, and that wages will everywhere tend toward their natural levels, as they did under that earlier régime before either the capital or the labor of a subgroup acted collectively.

The Attitude of the Community toward Striking Laborers.—So long as a local community sympathizes with the worker's dread of competition and tolerates his claim of ownership of his position, it does not utterly condemn and repress every use of force in asserting his claim. The local public is partly composed of friends or neighbors of the striking worker and is reluctant to interfere with the worker's effort to defend what he considers his property—that is, his right of employment in a business to which he is accustomed. The community sympathizes with his fear of the hardship which may result when employers freely utilize idle labor as a means of defeating strikes. On the other hand, even a local community realizes that much toleration of force means anarchy. If the violence is not resisted or repressed, the strikers acquire a monopoly that is not dependent on the justice of their claims. The whole question of reasonableness in the terms demanded is forcibly set aside, and the pay that is established becomes, not whatever a calm verdict of disinterested persons would approve, but what workers by brute force can get. Even a local public is unwilling to see the social order completely subverted and mob rule substituted, and

it usually interferes when violence goes to that length; but in its unwillingness completely to repress disorder, on the one hand, or to leave it wholly unopposed, on the other, a local government pursues a wavering policy, now repressing anarchy and again leaving it to gather headway. It seldom affords full protection to the non-union men who work during a strike. Moreover, it is the habit of state governments not to interfere with local affairs until the public peace is endangered, and therefore not until the coercion of free laborers has gone to great lengths. The federal government only intervenes in great emergencies. Non-union men working during a strike are left largely in the hands of the local community, which often tolerates enough of violence to give to strikers a measure of monopolistic power. The wavering policy of the local community in regard to preserving the peace expresses a corresponding mental wavering. The public obeys no clear principle of action in this connection and merely allows some "slugging" when it sympathizes with strikers, but not, as a rule, when it does not. We have to see whether this rule has in it any germ of a legitimate policy.

The Sole Mode of Escape.—The sympathy in the case depends, as we have seen, on the off-hand impression of the people as to the reasonableness of the strikers' demands; and for such an impression there may or may not be an adequate ground. It is evident that no authoritative verdict has in these cases been pronounced. The only escape from the intolerable situation which is thus created is by testing the equity of the laborer's demands and adjudicating his claim to a tenure of his position. The possible method of doing this we will presently examine. It is clear in advance that what is to be done is to determine what pay is reasonable. The worker cannot rightfully retain the ownership of his job if he does not work properly; and he cannot so retain it if he works properly and claims exorbitant pay. Fair dealing between employer and employed must be attained if his tenure is even tacitly recognized. The worker who accepts a rate of pay that is pronounced reasonable may safely be confirmed in his place and protected from any persecution on the part of his employers. The worker who refuses a rate which some competent authority has pronounced reasonable thereby forfeits his right of tenure in a definitive way. His place is clearly the property of whoever will take it, and the state is bound so completely to preserve order as to make a new worker perfectly secure from injury. This means that it must do intelligently and thoroughly what a local community weakly tries to do when it lets strikers guard their positions if it sympathizes with their cause, and represses such attempts when it does not. The sympathy needs to be crystallized into a clear verdict as to the rightfulness or wrongfulness of the rate of pay demanded, and the local toleration of violence in cases where the men's demands appear just needs to become an open and frank assertion of their right to employment on the terms demanded; while the tardy repression of the violence in cases in which the demands seem unjust needs to become a prompt and complete repression of it.

The Preservation of the Mobility of Labor Indispensable.—Any use of force, anything, however slight, that deprives labor of its mobility, destroys the condition on which the law of wages is predicated. A perfectly free flow of labor from point to point in the industrial system is essential to a static state, and to any approximate conformity of actual wages to the static standard in a dynamic state. The plan which divides labor into sections and arrays one part of the force against another makes realization of natural wages impossible. While all differences of pay which correspond to differences of productive power are normal, those which are based on a monopolizing of fields of labor by some and the exclusion of others are abnormal. They cause the rich fields to be surrounded by impassable walls and force the bulk of the population to work on the outer and poorer areas.

The Wide Range of Difference between the Pay of Different Classes of Laborers under Trade Unions.—The possible range of the rise of pay which monopoly may insure for certain laborers is far greater than that which any action can secure for labor as a whole. Mere collective bargaining makes some difference, indeed, but where there is no attempt to exclude from a favored field workers of the poorly paid class, the range of difference is not great. To double the pay of laborers of every class would require more than the entire income of society, and yet it is possible for a few workers to make as large a gain as this. Some organizations without monopoly may keep the

actual pay of labor somewhat near to its theoretical standard. With monopoly they may carry it far above the standard set by the marginal productivity of social labor.

The Differing Efficiency of Organization as used against Different Classes of Employers.—When employers are acting independently, a trade union which deals with them one at a time may very easily bring the pay of its members up to a certain average standard. A strike against a single producer may be very disastrous for him, since it may cause him to lose his customers. If the general state of business is good, he will pay all that he can rather than see business drift away from him, but what he can pay is somewhat strictly limited. He cannot safely give more than what is given by most of his competitors. Organization in such a case is a good equalizer of pay, and as its power is used against different employers successively, it suffices to raise general pay toward or to a standard set by the productivity of the labor. Moreover, as a rule, it can accomplish this without any appeal to violence. A modest and reasonable demand enforced by a wholly peaceable strike is likely to be conceded.

The Power of a Strike against All Entrepreneurs in a Subgroup.—A strike against employers in an entire subgroup may gain more for the workmen, but the more ambitious effort encounters stronger resistance. The employers, we assume, are competing still and have not the power which a monopoly would give them to raise the prices of their products. Nevertheless, they can concede somewhat more when they act together than one of them could concede separately. A concurrent raising of prices is entirely possible without any positive combination of the producers who follow such a course. Moreover, the strike itself, if it continues for any length of time, creates a scarcity of the products and a rise of prices. Though the employers in the end may concede what their workers demand, or some part of it, the settlement may not cost them anything, since the advance in prices may enable them to take all that they give their men out of the pockets of the public. The strike by a trade union against competing employers has as one ground of early success the employers' distrust of each other. The danger is that as soon as prices become at all firm, one or another of the employers may quickly make terms with his men in order to seize the opportunity for new business. For this very reason, however, the range of possible gains from a strike running through a whole subgroup is smaller than it would be if the employers were organized, so that all of them could safely wait for a larger rise of prices before making terms with their men. The possible increase of pay without a combination on the employers' side is distinctly larger than any which a strike against a single employer can usually secure.

The Power of a Strike against a Union of Employers.—Still keeping the supposition that there is no coercion invoked and that strikes are quite orderly, we find that they may gain more when employers are consolidated than when they are not so, but that they are likely to encounter still greater resistance. The demand—"Pay us more and charge it to the public"—may be conceded, and probably will be so if the employers dread the hostility of their own men and the action of the state in enforcing a resumption of business. If they have no such dread, their power to resist a strike is much greater by reason of consolidation. They can safely hold out long if the public will let them do it. No one of them is in any danger of seeing others take his customers. Their hold upon their constituency is secure, and their power to tax the constituency and make it pay for whatever a strike may cost is very great. A strike under such circumstances may win much for the men or it may win nothing whatever, and the difference between these results is mainly determined by the attitude of the people. If the government will hold its hands and let the producers work their will, they may (1) allow the strike to run for a time, concede something to their men, and raise prices enough to recoup themselves with a surplus; or else (2) they may let the strike run longer, till the men are tired out, take them back without concessions, and still put the same tax on the public as in the other case.

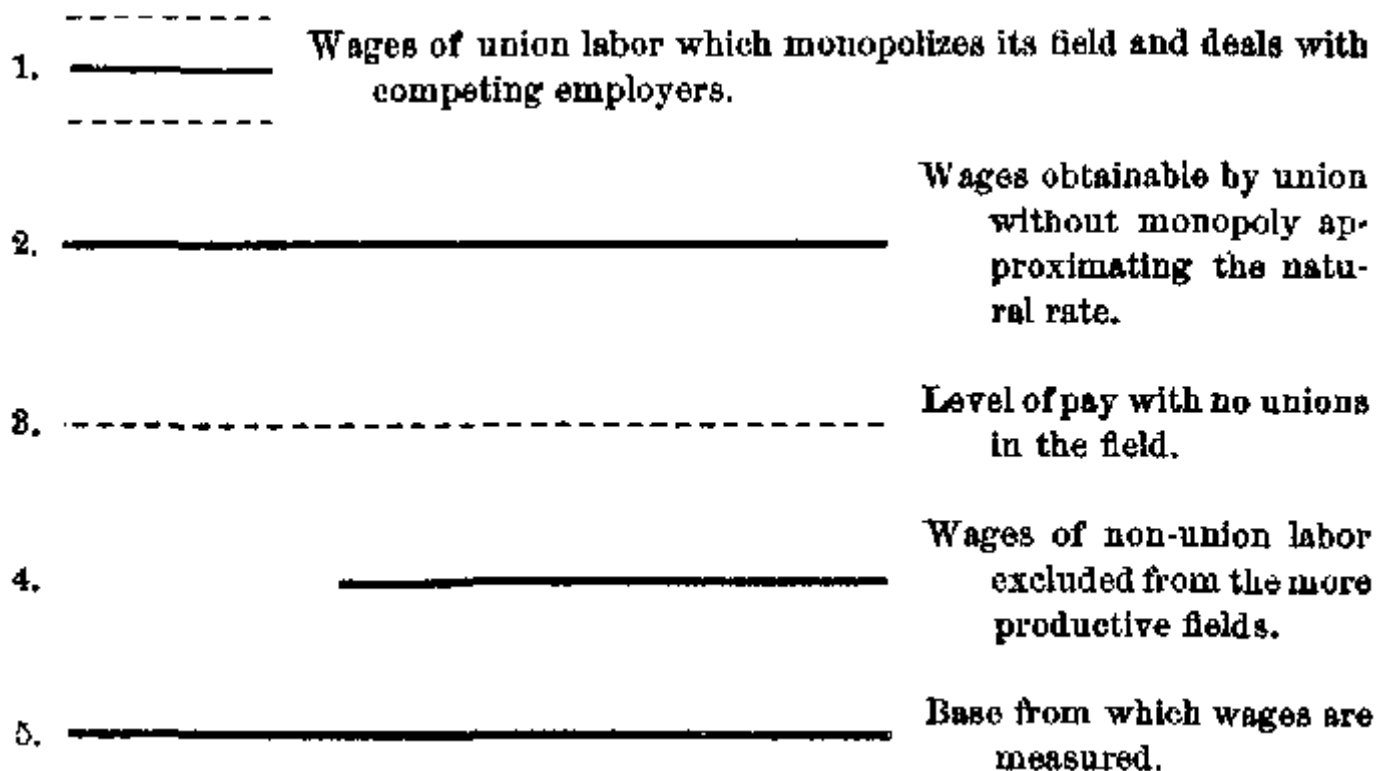
Effectiveness of Coercion as used against Non-union Men.—As a peaceful strike has different possibilities according as it is used against a single producer, a body of competing producers, or a consolidation of producers, so coercion employed against independent workers has correspondingly different effects in the three cases. When it is used in the case of a strike of the first class, it enables the men to carry their point more quickly, but does not materially increase the

amount they can gain. If the independent producer is unable to run his mill till he makes terms with his original workers, he will be in greater haste to make terms, but the amount he can yield is limited almost as closely as before by the prevailing rate of pay.

In the case of a strike of the second class which runs through a subgroup in which producers are still without union, coercion adds greatly to what the men may gain. It may fix and enforce a rate of pay which all employers must give, and circumstances will compel them to charge it to the public in whole or in part. The marginal producers who have no net profits must charge the whole advance to the public or go out of business, and the result may be that some of them may go out. The advance in the rate of pay conceded by others may come partly out of their own profits and partly out of consumers' pockets.

With employers in a great consolidation the possible advance of wages is at its maximum. The employers are in a position to charge to the public all that they give to the men, and more. If the state allows them to do it, they may thrive by repeated strikes. Whether their men thrive or not depends on their power to bar other labor from their field and to live without work long enough to induce their employers to yield.

The effect of coercion on the wages of non-union laborers means a lowering of their pay. It confines them to the less productive field which is open to them.



The height of lines 1, 2, 3, and 4, above the base line 5, measures wages, and the length of the lines rudely indicates the numbers of workmen in different classes. The dotted lines above and below line 1 represent what union labor which maintains by force a monopoly of its field may be able to get from employers who are in a combination. It may be more than competing employers would give or it may be less.

For men in strong unions who have *carte blanche* to defend their fields, the policy of leaving other labor to its fate is overwhelmingly the more profitable. With a choice between gaining a hundred per cent in wages for ourselves or ten per cent for working humanity, self-interest speaks decisively in favor of the former alternative.

In connection with the actual dealings of workmen with their employers the following are the principal facts:—

1. When labor makes its bargain with employers without organization on its own side, the parties in the transaction are not on equal terms and wages are unduly depressed. The individual laborer offers what he is forced to sell, and the employer is not forced to buy. Delay may mean privation for the one party and no great inconvenience or loss for the other. If there are within reach a body of necessitous men out of employment and available for filling the positions for which individual laborers are applying, the applicants are at a fatal disadvantage.

2. Collective bargaining is a partial remedy for this disability and brings the pay of labor closer to its normal standard than, under individual bargaining, it could possibly be, but does not, of itself, enable one class of laborers to raise themselves to a position which is very much above that of a majority of the others. It gives to no class of workers any monopoly of their field or any power to tax the public or oppress men who are unorganized. It is a normal and democratic measure.

3. Many actual trade unions do not depend upon mere collective bargaining, but aim to secure a special gain through a partial monopoly of their several fields of labor. Their policy is exclusive in that it tries to limit the number of men who are admitted to the unions and to prevent non-union men from working at the craft.

4. In the establishing of such control of fields of labor some force is employed in order to bar from the fields men who would gladly enter them. "Slugging" is a frequent part of the strategy used when strikes are pending, and this elastic term covers a wide range of deterrent arguments. Whatever goes beyond a verbal demand or insult to the man or his family and involves any use of physical force is included in the meaning of the term, and the action ranges from small injuries to the clubbings which maim and kill. Moreover, social ostracism is to be rated as tantamount to force as a means of preventing a free movement of labor.

5. When the resort to force is defended, it is on the ground that the organized laborers have a right of tenure of their positions and that they may vacate them and still hold them as quasi-property. One man should not "take another man's job" even after the other man has left it. Acting on this claim, union laborers treat men who attempt to occupy the vacated places much as a man would treat intruders on his land or in his house. It is, as is claimed, a case in which a man must be his own policeman and protect his property.

6. The public sympathizes with the worker's dread of the competition which he encounters when unemployed men are gathered from near and far and set working in strikers' positions. It even tolerates, in a way, his claim of quasi-ownership of his position, and though it condemns the violence with which he enforces the claim, it does not summarily repress the violence. It is without a well-defined policy and often weakly permits disorders to grow into anarchy which only troops can quell. Local governments are often reluctant to lay vigorous hands on "sluggers," even when to do so would forestall the necessity for severer measures. This is due to an instinctive feeling that hardship and injustice may result from allowing employers to utilize a reserve of idle labor as a means of depressing their employees' wages and defeating strikes.

7. It is realized, on the other hand, that giving to violence a free rein means an amount of anarchy which no state can tolerate, that non-union laborers have, under the law, a claim to protection, and that allowing strikers to drive them from the field is permitting a monopoly to be established by crime.

8. The reluctance promptly to repress violence, on the one hand, or to leave it unopposed, on the other, expresses a mental wavering, since the state perceives and follows no clear principle in this connection. It has neither defined the nature and extent of laborers' rights nor provided for any orderly process for securing them.

9. The only escape from this situation is by arbitration. It is necessary to adjudicate the laborer's demand for wages and to legalize his tenure of place on condition that he shall accept a just rate of pay. The state is bound to ascertain and declare what rate is just, to confirm the workers in their positions when they accept it, and to cause them to forfeit their right of tenure if they refuse it. If the

workers thus forfeit their claim, their positions are clearly open to whoever will take them, and the state is bound to protect the men who do this. Such appears to be the present situation, and an essential feature of it is the need of ascertaining on what principle a court of arbitration should proceed in determining what rate of pay is just.

CHAPTER XXVI

THE BASIS OF WAGES AS FIXED BY ARBITRATION

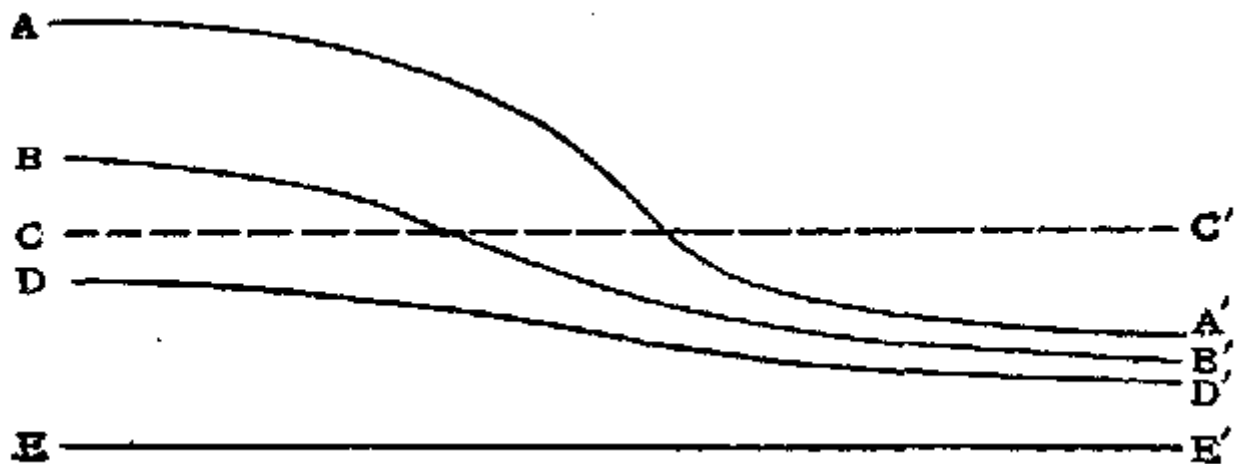
The state needs an authoritative mode of determining what rate of pay is "reasonable." This duty is often imposed on boards of arbitration, for whose guidance no definite principle of justice has as yet been prescribed. Such a board has to depend on its own intuitions. It approaches its difficult work, having no legal rule for reaching a decision, and yet compelled, if possible, to reach one which will actually settle the dispute referred to it and enable production to go on. It must try, in the verdict it pronounces, to satisfy its own sense of equity. What such a tribunal has, in most cases, actually done has been to make compromises, and this has measurably accomplished both of these ends. A verdict that "splits the difference" between the men's demand and their employers' is most likely to cause work to be resumed; and on the ground that each party is probably claiming too much, and that justice lies between the claims, it insures a rude approach to fairness. This action has caused unfavorable criticism of the whole system of arbitration, on the ground that it abandons the effort to reach absolute justice and tries chiefly to end the quarrel on any terms, and also that by giving strikers a part of what they demand, it encourages them to strike again and secure more. We have to see whether a court can do better than this and whether such a crude procedure has tended at all toward putting wages on a normal basis.

Why a Court cannot reduce Wages in Favored Fields to the Rate prevailing at the Margin of Employment.—A tribunal of arbitration, which has to deal with consolidated capital and organized labor, acts in a field where both profits and wages are higher than they are in most departments of industry. Should a court then take as its standard of just wages what unorganized labor gets when it works for independent employers? That would usually level the pay of the class of laborers it is dealing with to the standard set by a much more poorly paid class.

Should the court, on the other hand, take as the just rate the one that generally prevails where employers are organized in trusts and workmen in exclusive unions? That would be legalizing the result of monopoly. The court, in such a case, knows that the profits of the business are increased by the employers' monopoly and wages by the workmen's; and yet it will not pull down the rate of pay to the level prevailing where no combinations exist. On the other hand, to legalize any high rate of wages, which is made possible only by a double monopoly, would seem to be equally unjust.

The Power of Monopolistic Trade Unions under Different Conditions.—Arbitrators have to deal with trade unions which appeal to some kind of force in defending their right of possession of a field of labor. They make their own demands, strike, and compel rivals to stay out of the positions they vacate. When this policy is tolerated, they secure an exceptionally high rate of pay.

We may represent the product of labor and its pay in the different occupations by the accompanying diagram.



The heavy line AA' represents, by its height at different points above the base line EE' , the product that is specifically imputable to labor in different employments. The part of the figure where the line is far above EE' represents the condition where, on the employers' side, monopolies are established; while on the right of the figure, where the line has descended and is slowly approaching the base, the condition is represented in which employers are competing with each other, and many of them are selling their products at prices that only cover the cost of creating them. A unit of labor working for a monopoly creates as large a physical product as it does elsewhere. It turns out as many tons of steel or cases of cloth, etc., as though no monopoly existed, and the price of the goods is high because less labor is employed than would be employed under competition and fewer goods are produced. The actual product of the unit of labor, as measured in dollars, is enhanced by the employers' monopoly. BB' represents, by its varying distance above EE' , what organized labor can get under the different conditions. On the left it forces the trusts to share gains with it, and gets a high rate of pay; while on the right, where employers are not in combination and there are no such great gains to draw on, it gets less, although at the extreme right it gets all that it produces. DD' represents what unorganized labor can get under the different conditions, and it is usually somewhat more where trusts employ it than it is elsewhere. The dotted line CC' represents the product of labor as it would be if it were equalized in the different fields.

The Parties interested in a Dispute in which Both Labor and Capital are Organized.—We can best deal with the problem of the adjustment of wages by arbitration if we approach it in a region where organization is strong, both on the side of labor and on that of capital, and disturbances of the natural system are greatest. The struggle that here goes on is, in a way, triangular. Organized labor contends against its own employers, on the one hand, and against unorganized labor, on the other; and the part which develops the greatest bitterness of feeling and the most violence is the strife between labor and labor—between the trade unionists who strike and the men who attempt to occupy their positions. The union is more tolerant of the employer's action in driving a hard bargain than it is of the "scab's" action in "taking another man's job."

The Public a Fourth Party in the Case.—The three parties just named—employers, organized employees, and applicants for places—are not the only parties whom the dispute affects. The public has a vital relation to it, and in a true sense its interest and rights are supreme. The public has a right to demand that production should not be interrupted, and that the supply of necessary articles should not be cut off; and it is in line with this demand that arbitrators seek first for an award that the contending parties will be willing to accept.

Two Issues needing Settlement.—In the immediate contest over the adjustment of pay, the three parties first named are the ones primarily involved. In discharging its duty as the preserver of justice, the court finds two issues which need to be settled rightly. The dispute between *entrepreneurs* and workmen must be rightly adjusted, and the issue between the workmen and other labor must be so. The power of the state cannot properly be used (1) to force from employers

more than they can afford to give, or (2) to exclude from any field of employment free laborers who are able and willing to do the required work. Arbitrators make their awards with an eye to conditions within the business and to the state of the labor market. Instinctively an arbitrator, in trying to satisfy his sense of justice, thinks first of the amount that the business yields. The men must not take the whole income from the business, leaving to the *entrepreneur* nothing wherewith to meet the claim for interest. Without doing this, however, they may ask for much more than other laborers will accept, and the question arises whether this should be conceded to them. In merely putting the relation of workmen to employers on a proper footing, the tribunal may leave the relation of the strikers to other workmen as unsatisfactory as it has been. It appears that the tribunal of arbitration cannot by one act settle the two issues that are presented to it. If it gives to the men what seems like a fair share of the product of the business which employs them, it gives more than most workers get and more than the law of final productivity of labor would afford. Yet without a ruthless cutting down of the pay of favored laborers it cannot apply the standard of final social productivity of labor. If it applies this standard and cuts down the men's actual pay, they will refuse to abide by the decision; and if it tries to obtain a power of compulsion and make the men accept its decisions, they will try—probably successfully—to defeat the attempt. A system of compulsory arbitration that should go to the length of forcibly equalizing the wages paid to men of like ability in different occupations, would not be tolerated in a democratic community.

The Difficulty of Applying the Test of Final Productivity.—The law of final productivity works most efficiently when it works automatically, as it does when competing employers make the best bargains they can with locally organized laborers. The results, then, approach the theoretical standard, though they do not entirely coincide with it. The law, however, cannot be rigorously applied by a tribunal which is fixing a rate of pay by its own conscious act. How can the judges directly ascertain how much a final increment of social labor produces?

Employers, indeed, do make such tests. An estimate of how much a few additional laborers would add to the product of a business often has, in some way, to be made, and employers manage to make it; but subsequent experience is necessary for verifying their judgment. A rule of pay, governed by marginal productivity, results from the action spontaneously taken by a myriad of employers, who enlarge their working forces when they find that they gain thereby, and reduce them when they lose. Of course no court could do anything of this kind. No department of industry will turn itself into a laboratory for testing the productive power of labor. It is clear that the procedure must be much simpler and cruder; and a vital question is whether a board of arbitration, proceeding as it must do, is under any influence that impels it to render decisions which, in any degree, conform to the theoretical standard of pay. Does the economic law of wages operate at all when civil law steps in to the extent of creating any tribunal of arbitration? We shall see.

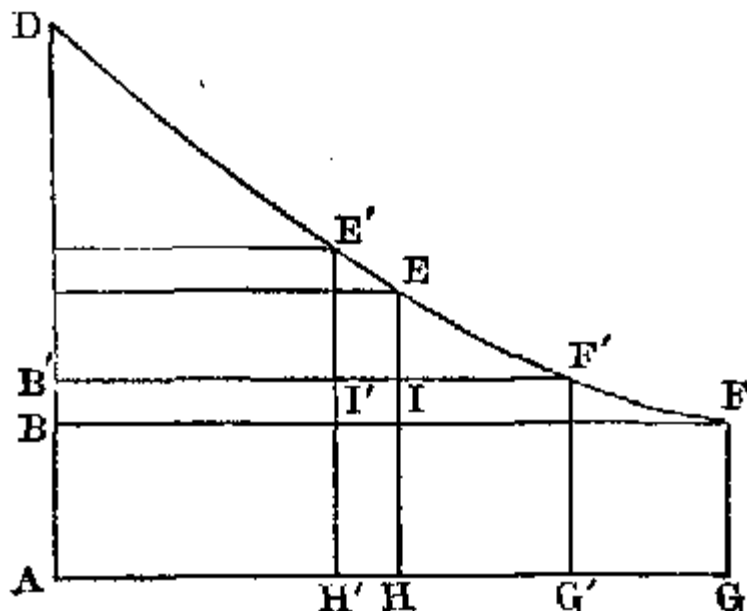
The Necessity for Some Standard on which Arbitrators may base Awards.—When a board of arbitration tries to do anything more than to end a quarrel, it must seek for some principle of justice. If it is dealing with a favored class of laborers, it finds two extreme limits between which its awards must fall, namely (1) the product which the business yields in excess of simple interest on the capital, and (2) the wages that unorganized laborers may offer to accept. It is possible that the workmen may demand the former amount and the employers may offer the latter; and if so, compromising is a rule-of-thumb mode of doing justice. In the case of a strong union and a highly profitable business the employers may offer more than the minimum amount, and the award that is a compromise between the terms of the contending parties will then be well above that which is a fair mean between the possible extremes; yet it does not appear that it really conforms to any ethical principle.

Average Wages as a Standard.—Another possible basis of an award is the average rate of wages prevailing; but it has no claim as a standard of exact justice and is very far from being workable. Wages vary from a very high rate to a very low one; and the highest rate is that which prevails where a trade union which is strong enough to keep men out of its field of employment deals with a trust which is strong enough to keep rival producers out of its field of business. Under such conditions shall a court average this rate and a very low one, and reason that a mean thus arrived

at is a legitimate standard of pay or one that would be realized if no monopolies existed? There is no evidence that this is the accurate fact, and there is every evidence that a verdict attained in this way would be rejected. It would cut down the pay that the favored workers have been getting, not to mention denying them the increase they are striking for. On the other hand, the lowest rates prevail where no permanent organizations exist; and if a strike should arise here, should the tribunal take an average rate of pay as its standard? That would greatly increase the rate that prevails in the region where it is acting, and would give the men more than most of their employers could afford. It would discard the necessary rule of keeping within the limit of what an industry can pay without seeing many of its shops and mills closed. Yet a court which refused to raise the pay of the lowest class at all would seem to accept the bad results of monopoly; for it would ratify the hard arrangements which workers who are excluded from the better fields are forced to accept.

A Court of Arbitration not the Agency for Rectifying General Evils due to Monopoly. —It will be seen that the difficulty we discover in the way of a wholly satisfactory action by the court is caused by a tacit demand that it shall undo the results of monopoly itself. We instinctively say to ourselves that the court must insist on doing ultimate justice, and that all rates perverted by monopoly are unjust. The arbitrators should pull down the high rates, raise the low ones, and create such an approach to uniformity as would be realized if labor were as perfectly mobile as a static assumption requires. To do this would give some laborers much less than their employers can afford to pay and less than they often do pay; while it would be giving to others more than their employers can pay without bankrupting themselves. If such levelling is to be done, it must be done by some other agency than a board of arbitration.

The Attitude of the Public toward a Strike by Employees of a Monopoly. —If we turn from a formal tribunal to the court of public opinion, we find a like state of affairs. There is no danger whatever that the public will justify cutting down the wages now received by men in the employment of a monopoly to a much lower level. That in itself would not right the wrongs of the poorly paid workers or those of the public itself. The employer would go on getting high prices for his products and would pocket the new gain which the reduction of wages gave him. If a great corporation is now taxing the public, even those who suffer would rather see the proceeds of the grab shared with the men than see it all held by the employing corporation. It is, indeed, true that if a tribunal were to give the men an *increased* share of what the monopoly is getting, the employing company would try to recoup itself from the public by raising prices still higher; and, if it were to give a reduced share, the company might enlarge its business and make its prices a shade lower. Giving to the men a share of the grab made by their employer does indirectly cause a certain increase of the injury done to others, and withdrawing a share might slightly lessen the injury. The public would rather see the higher wages paid, and take some chance of this minor and indirect injury, than see the employing company pocket all that it exacts from the public.



Monopoly Prices as affected by an Increase of Wages.—Arbitration often authorizes a rate of pay based on the profits of an employers' monopoly; and yet a tribunal of this kind must not, and will not, make itself the accomplice of any monopoly by making its position more secure. The policy of every public institution must, and will, be designed to help make an end of every such outlaw that now has a foothold in the field of business. Yet any plan which would force a monopolistic employer to give to his men an increased share of the "grab" which he makes from the pockets of consumers tends to increase the amount of the grab if the employer is entirely secure in his position. A monopoly that is thus safe from interference tries to put the price of each of its products at the point where the largest net revenue is afforded. If distance along the line AG measures the supply of a commodity and vertical distance from it measures price, DF will be the price curve of a commodity, as it is offered in increasing amounts. AD will be the price when one unit is offered, and GF will be the price when the full amount represented by the line AG is produced. The price will then stand at the cost of producing the article. When a monopoly is firmly established, it will seek to get the largest net profit that can be had, and a consistent execution of the plan would reduce the output from the amount measured by AG to that measured by AH . The price would then become HE and the net profit the amount of the area EB . If wages are so raised that the cost becomes $G'F'$, the net profit becomes $E'B'$. This profit can be increased by further reducing the product to the amount AH' , putting the price at $H'E'$, and the net profit $E'B'$, which is larger than EB . If an independent producer can employ non-union labor and create the goods at the cost GF , and market them without reducing the price much below the level indicated by $H'E'$, he can make on each unit of product a profit nearly equal to $I'E'$. This fact makes the monopoly cautious about raising its price to the level $H'E'$. A tribunal of arbitration may somewhat raise wages without fearing such an increase of prices. By a crude and instinctive judgment the court will hit upon some level of wages which falls well within the limit of what the monopoly can pay and is above the amount which marginal social labor gets.

The Probable Result of a Strike as a Standard for an Award.—Let us see what would happen if a board of arbitration should abandon all effort to level out the general inequalities in wages, and try chiefly to end quarrels and avert long-continued strikes. With this in view it might aim to give the men whatever they would be likely to gain by means of the strike. In a true sense this mode of procedure is more nearly scientific than either of the others. Any tribunal of voluntary arbitration will aim to content both parties sufficiently to prevent an interruption of business. The men may consent to take somewhat less than they hope to get by a successful strike; and the employers may be willing to pay somewhat more than they would at the end of a successful lockout. The probable outcome of the struggle may be differently estimated by the contending parties, and if so, an actual

struggle will end by making employers pay more and the workmen take less than they had severally expected to do. If this amount can be awarded at the outset and the struggle precluded, all parties will be gainers by the continuance of business, unless the employers desire a strike for the sake of making their products scarce and dear.

When the Probable Results of a Strike afford an Unfair Standard of Wages.—Where monopolies exist and trade unions rely on violence in carrying their point, it would not be fair to establish a permanent rule of wages based on the amounts that strikes so conducted secure. Such strikes depend for success on the violent exclusion of non-union men; and actually to give permanence to rates so gained would be to fasten on the majority of workers the disabilities under which they now labor, and to perpetuate the gains of a two-fold monopoly. On the other hand, if the court should make its award conform to the probable result of a strike which should be general in the trade, but should not resort to any violence, the procedure would be natural and would base itself, in an unconscious way, on the true standard of wages. Such a general strike, by its mere magnitude, would preclude the possibility of any immediate filling of the vacated places by men at the time out of employment; and yet the fact that non-union men were not forcibly kept out of the trade would be an all-important feature of the situation. If, when no strikes were pending, men could gain admission to this field, there would be no true monopoly on the men's side. The rule of giving, by arbitration, what a strike would secure would remove the chance of cutting down the rate to that which prevails in the more ill-paid employments, and would insure to the men the rate that marginal workers in actual employment get plus the two additional amounts spoken of at the beginning of the preceding chapter. The marginal product of labor plus an amount for personal superiority plus an amount for good organization would be the standard to which wages in favored employments would conform; and it is as nearly normal as any practicable standard would be. A free application of it would reduce the wages of unions that thrive by the use of force and would be opposed by such unions. If it were adopted, there is a prospect that the awards would be rejected by the men until hard experience should teach them to relinquish gains secured by violence. Yet a tribunal that should adopt this standard would allow workmen to retain every advantage that organization can afford without a violation of the criminal law. Its guide in making awards would be the pay which the best unions lawfully get in trades akin to the one in whose case they were acting.

In dealing with a union which is not a true monopoly and does not depend on force, arbitrators may safely award what an actual strike would probably secure, and the simple plan of compromising gives an approximation to this amount. What the men will accept and the employers will give is about what a strike would extort. Where a monopoly of the field of labor exists and force is used to protect it, a compromise which anticipates the probable result of a strike concedes what could not otherwise be lawfully secured, and we have to see whether this is a plan that a board of arbitration can properly adopt.

Arbitration as affected by Employers' Monopolies.—We confine our attention, for the present, to arbitration that has no power of coercion behind it. A board may be formed which is compelled by statute to investigate quarrels and announce fair terms of settlement, but the contending parties may be allowed to do as they please about accepting the awards. The most difficult case with which such a tribunal would have to deal is that in which the employer has a monopoly of a department of production, and a trade union has an exclusive possession of its field of labor. The mere removal of the employer's monopoly would so greatly simplify the situation as to leave no ground for serious difficulty. With that out of the way,—with potential competition doing the perfect work that under good laws and good policing it ought to do,—the pay of laborers in other employments would be somewhat higher, and extortionate profits would be altogether absent. Profits based on special economy would exist, as they should, but those which are filched unjustly from any one's pocket would not exist. There would be likely to be, in most of the subgroups, independent employers efficient enough to hold their positions, but without any means of getting abnormal gains. These would be marginal employers in their several subgroups, and their returns would range about that static level at which the wages of labor and the interest on capital would absorb them all. An award based on what such employers could pay would express what other

employers would naturally pay, and it would be all that the subgroup as a whole could concede without ruining some of its members, but it would allow others to make something by special economies in production. Productivity profits they would get and no others, and these it is in every way expedient that they should be allowed to enjoy. Suppressing employers' monopolies would remove much of the difficulty connected with arbitration, and putting an end to violence on the men's part would remove almost all the remainder.

With monopolies in the field it is quite otherwise. Their gains are not of the kind that it is for the interest of the public to let them keep. The public claims these sums on grounds of equity and expediency. It is a perverted distribution that gives them to their present recipients; and this fact threatens to involve more and more the processes of production themselves. Centralization, without monopoly, increases the product of industry; but the monopolistic feature that often attends it partially paralyzes the producing forces, and must be gotten rid of before there can be a normal income to divide and a normal way of dividing it. *The court of arbitration itself cannot get rid of it*, and it would do harm if it should try to do so. Drastically to cut down wages that have been raised by the power of monopoly would injure some workmen without materially helping others, and it would benefit chiefly the monopolistic employers. Such a policy would bring the entire system of arbitration to an end; for it is partly a fear that arbitration would not leave to favorably situated unions as much as they can now get by strikes and boycotts that prevents the system from coming into vogue. The state can end the monopoly, but it must do it by other measures than installing courts of arbitration. In the interim—long or short, as the case may be—before these measures will have their effect, it is necessary to proceed on a plan of securing by awards something like what would result from actual trials of strength. The effects of adjudication will not, in this interim, be ideal, but it is necessary to accept this fact and struggle the harder to obtain conditions that will improve them.

Abnormal Conditions which Arbitrators must Accept.—Crude force of one sort or another would sometimes give to organized labor twice or thrice as much as free labor can earn at the social margin of production, and the public approaches the problem of adjustment while this condition exists. It may be that a trust has crushed competition, made large gains for itself, and made it possible to pay employees at a high rate; while, on the other hand, a trade union has made itself strong, put pressure on the employers, excluded free laborers, and secured a share of the monopolistic spoils. Arbitrators, then, whenever a strike is pending, may divide the spoils as a strike would do, between masters and men. This will leave a few workers in possession of a rich field and many hungry ones outside of it; and we have asserted that the board should confirm the workmen's tenure of place on the sole condition that they accept a rate of pay which it shall authorize. In this case the arbitrators authorize a high rate, while needy men stand ready to take a lower one. They confirm wages based on the profits of monopoly, but look to the state as the power which will get them out of their anomalous position, by making an end of monopoly.

Why Sharing a "Grab" already made is not an Aggravation of the Evil. —While plunder is to be had, it is at least by one point fairer that workers should have a share of it than that employers should have it all. We have said that the court of arbitration finds two issues needing settlement, namely, the relation of employers and employed within the business, and that of laborers outside of this department of industry to those within it. Only one of these issues is it capable of settling, and it is by a true instinct and not merely from expediency that arbitrators permit workmen to share in some degree the gains of the monopoly that employs them. This is legitimate, however, only on the condition that, by further measures, the gains of monopoly be reduced.

How Arbitration will be facilitated by the Suppression of Monopolies.—In studying monopolies we discovered that the prices of their goods do not entirely part company with their natural standards, even when governments do not at all interfere with them. Potential competition keeps these prices from rising above the standard of cost by more than a certain margin. We shall see that if governments do nothing in the way of controlling the contests over wages, the rates that these yield will not be wholly unnatural. They will be held within a certain distance from the standards. If too high wages are exacted, the barriers will be broken down and competing laborers will come into

the favored fields. The potential competition of idle men hangs as a menace over the heads of the too exacting trade unionists, and enforces a measure of prudence in the wages demanded. If the unions ask too much and strike in order to get it, the competition which is now latent will become active, other men will take the vacated places, and the struggle of force will begin. Slugging may ensue and may go to the limit of a weak government's toleration. The more complete is the exclusion of free labor, the higher is the rate which organized labor secures; but this rate always falls within a certain distance of the normal one, as that is fixed by the final productivity of social labor. Even the pay secured by violent strikes is, as we have already shown, *governed by* the law of final productivity, though it does not *coincide with* that rate. Actual pay and standard pay are like a vessel and a tug attached to each other by a hawser, which allows one to drift far from the other but does not let them part company. In the long run the tug takes the tow with it. Even the wages which a trust gives to a fighting union—wages paid by a monopoly to a monopoly—are governed by the law of final productivity, since there is a limit on what the trust can extort from the public, and there is a limit on what the union can extort from the trust. Potential competition, by limiting both the producing corporation and the trade union, vindicates the natural law of wages, though its results are made inexact by monopoly.

How Potential Competition affects Organized Labor.—We have seen that potential competition keeps within limits the prices of goods made by trusts. If they become too high, new mills are built. In a like way potential competition puts a check on the wages a strong union can secure; for if these are too far above the level of non-union men's pay, such men will find their way into the business. Open shops will be established, either by the present employers or by new ones. There will be much to be gained by an independent shop manned by non-union labor, and the danger of this makes a trade union more conservative than it would otherwise be. The chief potentiality in the case is that of the new and independent shop, and if the way is open for this to appear, the range of difference between the pay of favored laborers and that of others is greatly reduced. The trade union may be able to carry its point and keep free labor from its field, so long as it has only its own employers to deal with; but if new employers will appear whenever there is an inducement to do so, the case is quite otherwise. The new mills make the greater gains if they are manned by non-union men.

With the field open for all producers, the danger of free shops with free men will impend always over the union that demands too much for its members. This is now true even where consolidated companies exist, and it would be doubly true if there were no such companies. The rivalries which would then appear would keep wages, as well as prices, near to their natural standards.

In the absence of monopolies on the part of employers, and of "slugging" on the part of workmen, arbitrators may accept as standards what the actual dealings of employers and employed yield. In most cases they will ratify no wrong by doing so. The court may act as it now does and announce a rate based on a mere compromise or on the probable result of a strike. If the men accept the award, let them keep their places; but if not, let the positions be open to whoever will take them, and let the state repress every form of violence that would interfere with their doing so. The sentiment of even a local community will sustain such a maintenance of order.

The Case of Trades not affected by the Potential Competition of Non-union Men with New Employers.—Building trades are peculiarly situated in that their products have to be made in the locality where they will stay, and no competition from labor living at a distance is to be feared. If the local unions can protect their field by force, they can establish a high rate of pay, even though the employers have no unions. Arbitration that merely gives what a strike will yield will here deviate greatly from the natural standard of wages.

Labor in mining is somewhat similarly situated, and so is labor in transportation. In these, and in some other fields, new men do not weaken the position of strikers unless they are brought to the places where the strikers have been working; and that exposes them to assault. It is in the making of portable goods for a general market that the new and independent shop manned by non-union laborers is an important factor.

It is easy to answer the question whether, in such fields, the board of arbitration should confirm the workmen's tenure of place while his pay is sustained by force. All slugging is inherently criminal and should be always and everywhere repressed. In the cases that we first examined, a safe course would be to hold it in repression, announce a rate of pay based on what a strike would then yield, and trust to other measures for destroying monopoly on the capitalist's side. The chief danger of violence begins when the men reject the award and others take their places, and at this point the fact of arbitration will make the duty of the state easier though hardly clearer.

The case of such trades as building and mining differs from the others only in the fact that there is not present the check that is elsewhere afforded by the danger of new mills, and the pay secured by crude force is high. To announce a rate based on the result of a strike, *if slugging is to be permitted during the strike*, is to accept, for the moment, what violence will secure; and nothing will remove this feature of the adjudication but a manful assertion of sovereignty by the state and a complete ending of the tolerance now accorded to anarchy. By no means, however, does this deprive union men of the advantage that organization gives them. They may be secured in the possession of every advantage which collective bargaining, without violence, can secure. Great numbers enlisted in a union will give to it a prospect of success in enforcing any reasonable demand. Voluntary arbitration, that aims to preclude a strike, will have to respect this fact of organization and give the men about what a legitimate strike would yield. As a rule, this will result in compromises of opposing claims, and if violence is not in sight as a resource, the compromises will fall near to the natural standard of wages.

Why Conciliation is preferred to Arbitration.—Both among organized laborers and corporate employers there is a dread of state action for the positive adjustment of wages. There is a preference for conciliation over any kind of arbitration, and there is a preference for voluntary arbitration over that which has any trace of authority behind it. For tribunals which have full coercive power, most employers and strongly organized laborers have an insurmountable repugnance. If such tribunals were introduced, it would be against their strongest opposition, which is saying that a measure designed to secure industrial peace would have to be put into operation while the parties directly interested in it opposed it with might and main.

The reasons for this attitude are not difficult to discover. Conciliation aims solely to secure internal peace in a department of industry. To avert strikes or reduce their duration is all that it can do and all that the parties directly interested wish to have it do. From the point of view of employers and employed in a highly profitable industry, the averting of strikes is enough to aim at, and even the public sometimes accepts this easy-going view and thinks that everything desirable is gained merely by averting strife or ending it when it occurs. Uninterrupted production—the saving of the great wastes that strikes entail—does, indeed, promote the public welfare. When conciliation does this, it indirectly does something for the public. The essential thing about conciliation, then, is that it does not consciously try to do anything but to make the two parties in the dispute over wages contented enough to go on producing. A board which aims only to do this is careful not to introduce any one who represents an outside interest. The procedure must be kept "within the family." As is often said, "those who understand the business" must settle disputes within it. What is really desired is that only those who are *interested in* the business should have anything to say about it, and there is a dread of giving representation, either to the general public or to independent labor. Moreover, when the defects of conciliation are spoken of, what is mentioned is the uncertainty as to its working, the probability that in many cases it will not bring the disputants to an agreement and cause production to go on. There is no dread of the rates of pay that it yields. There is practically no dread on any one's part of what happens when employers and employed are contented because they jointly thrive at the expense of the public. Rather than have production stopped, the public is often willing to let a dispute be settled on almost any terms, though the result may be to let some men thrive at the expense of consumers and of other laborers. There is a monopolistic grab the sharing of which makes both parties better off than are men of their class elsewhere. Singular as it may seem, even this attitude of the public is justifiable. It is entirely right not only to welcome conciliation where it can be made to work, but to try it as often as possible before resorting to

arbitration.

Rates resulting from Conciliation not Unlike those resulting from Strikes.—The results of collective bargaining, with conciliation in cases of dispute, come within a certain distance of those which would be gained by a perfectly natural adjustment of wages. All that we have said about the relation of wages adjusted by strikes to their natural standards applies here; potential competition generally keeps the actual rate within a certain distance of the natural one, though a monopoly may make the distance unduly great. If potential competition works feebly on the employers' side,—if independent producers are slow to appear even when the price of a product is very high,—there is a large profit in the industry for some one; and if potential competition works feebly on the side of labor,—if workmen can safely strike with little fear that independent laborers will dare to take their places,—the men can secure a fair-sized share of this profit. A strong trade union working for a strong monopoly gets wages that exceed the standard rate by the largest obtainable margin; and yet, as we have said, even this excess has limits, and adjusting disputes by conciliation does not alter those limits. The rates agreed upon are still governed by the standard rate to the same extent as under the régime of strikes. The strike and the lockout become potential, but they impend as possibilities and do their work. The board of conciliation knows that they will occur unless their probable results are anticipated and forestalled by the decision. The board cannot do otherwise, therefore, than to restrict the actual strikes. Wages then become the natural rate with a plus mark, and may be said to be adjusted in a way that at the bottom is natural, though it works under vitiating influences.

Why Voluntary Arbitration does more than Conciliation.—Voluntary arbitration is an advance over mere conciliation in point of effectiveness. It departs somewhat from the plan of confining the action to the family, since it introduces some other parties as arbitrators and thus invites some recognition of outside interests. Nevertheless its actual working involves little change in principle, and its results do not greatly vary from those attained by conciliation. When we speak of arbitration as voluntary, what we usually mean is that acceptance of the award is in no way enforced. Either party may accept it or refuse it, but it may be that both parties acting together cannot prevent the investigation; and the economic law of wages acts best when this is the case. How such voluntary arbitration is provided for,—whether it is established by free contract between employers and employed, or by statute,—is not in this connection of importance. The one thing that is important is that no compulsion is applied to either party to force him to accept the award.

A Moral Compulsion due to Voluntary Arbitration.—A certain moral force is, indeed, necessarily behind the award of such a tribunal. It informs the public what fair-minded men regard as a reasonable adjustment of the dispute, and forces any one who refuses to accept such a decision to go on record as claiming more than is presumably just. This tends to alienate public sympathy, and to forfeit the aid which sympathy insures. Moreover, where voluntary arbitration is established by a contract between parties,—where, for example, masters and men agree that during a term of years disputes that cannot otherwise be settled shall be referred to a tribunal constituted in some prescribed way,—the decision of the tribunal is made by the contract to be especially binding.

Why Mere Compromises lead to Fair Results.—A merely compromising policy, such as the one which has often been sharply criticised, involves an approximation to what strikes would yield; and this, as we have seen, gives results which, in a rude way, are controlled by economic law. A fact of the greatest importance is that the awards made by boards of arbitration with merely voluntary power are not compromises between mere demands of the two parties; they are between *genuine ultimata*. When the court is called in, the employer has offered a rate of pay and stands ready to close his mill if it is not accepted; and the men have offered to take a certain rate and are ready to strike if the rate is not given. The essential fact in the case is that neither of these rates usually varies by more than a certain amount from the natural level of wages. There is every difference between a demand put forward for strategic purposes and a real ultimatum. If workmen knew that a court would simply make an even division between their own demand and their employer's offer, then men who were getting two dollars a day might ask for four in the hope that the arbitrators might give them three. Even if no such expectations were entertained, it is certain that both parties

would exaggerate their claims; workers would demand more and employers offer less than they expected in the end to agree upon. When, however, the demands are not made in this way for the sake of impressing the tribunal, but are known to be genuine ultimatums, the case is quite different. The workers will actually go on a strike if their demands are not conceded, and they will certainly have to do this if they make their figures extravagant. The employer will close his mill if his offer is not accepted, and he will have to do it if his offer is absurdly low. Very much is involved in the fact that an actual severing of the relation between employers and employed impends over them as a possibility.

The Chief Advantage of Arbitration over Conciliation.—We are now in a position to measure the real difference between conciliation and voluntary arbitration. If a strike comes after nothing has been tried except conciliation, there is often nothing to prevent the strikers from resorting to all the devices which are available for guarding their tenure of place—in other words, for keeping "scabs" out of the field. The local community is in its usual position of uncertainty as to the equities of the case, and is likely to show its usual hesitancy in giving to the new laborers the complete protection which the laws enjoin. There is the customary dread of the effect of letting a strike-breaking force have full sway and the opportunity for disciplining the former workmen into submission. The chance that the resulting rate of pay may be too low to do justice to the laborers remains before the eyes of the local community, and has the effect to which we have earlier called attention—that of taking much of the vigor out of the official arm when violence occurs.

How is it when a tribunal of arbitration has studied the case and announced a decision? Though the workmen may be as free to strike as ever, such an action would put them at a fatal disadvantage. The arbitration has given to the public a basis for a judgment as to the equities of the dispute. If the tribunal is one which commands respect, a refusal to abide by its decision puts the men *prima facie* in the wrong. If they strike now, they reject a rate which is authoritatively pronounced just. Even this they have the privilege of doing if they so desire; but if they go farther and forcibly prevent other men from accepting the equitable rate and doing the work, they forfeit their right of tenure; and it would be a strangely constituted public which, under such circumstances, would let them use fists, missiles, or clubs in defending it.

There may be an agreement between employers and employed to submit to impartial arbitration such disputes as are not otherwise settled; and when this has been actually done and a decision has been reached, it is made by the contract to be too binding to be lightly disregarded. If it is still disregarded and if violence is resorted to, the forfeiture of public sympathy is so complete that there is little danger that violence will be winked at. The action of such a tribunal may be nearly as effective as that of one which has full coercive power.

Why Compulsory Arbitration is less Certain to give a Just Award.—Arbitration by a court that has full compulsion behind it does not theoretically need to satisfy the contending parties. If it can fine or otherwise coerce the party that refuses to accept its mandate, and thus insure a forced compliance with its orders, it is conceivable that it might announce rates of pay entirely at variance with prevailing ones. It might announce arbitrary rates or make a bold effort to discover and introduce those which should coincide with the ultimate natural standards—which would mean a relentless reducing of some rates and a raising of others. In a democratic country, however, such a court would have to satisfy the contestants and the public or forfeit its existence, and the only mode of insuring its continuance would be a more conservative policy and a respecting of the *status quo*. It might appeal to the probable result of violent contests somewhat less than a purely voluntary tribunal might do, since it might venture to give offense to employers or to workmen, and trust to the support of the general public; but in the main it would have to let the existing rates of wages continue with no radical change. Even though it were able by some statistical test to discover the natural rates of wages, it could not be bold enough rigorously to apply them without forfeiting its existence. Under any system, then, whether it be crude contention, conciliation, voluntary arbitration, or compulsory arbitration, the rates fixed by the present half-savage process would be allowed to rule till the process itself should be freed from the perversion that monopoly causes. Inequalities of pay would be tempered in different degrees by the various tribunals, but the

existing rates in each employment would continue to furnish a basis of adjustment.

The Most Available Plan of Arbitration.—Since there is little prospect that compulsory arbitration will give rates of wages which will differ materially from those secured by arbitration of the voluntary sort, the latter kind has the preference, so long as it is able actually to prevent the strikes and lockouts which, at present, are so wasteful and disorganizing. To accomplish this, there is available a kind of arbitration which is voluntary, but has behind it enough authority to make actual strikes very rare. By this plan the state recognizes for an interim the laborers' tenure of place, on condition that they continue working during the time occupied by the adjustment. If they stop working before a decision is announced, they forfeit their tenure of positions. When the tribunal announces a decision as to the terms on which labor shall go on, the force already working has the option of retaining the positions or abandoning them; but if they elect to leave them, it must be with the understanding that their departure is definitive and their right to tenure surrendered. The state then uses its utmost power in protecting men who may occupy the vacated places. The mere prospect of this outcome will be enough, and the shifting of the force will not have actually to be made, since the right of tenure is too valuable to be forfeited. The system requires that prompt action be had whenever a strike or a lockout is impending, but it enforces decisions only by imposing on workmen who choose to be recalcitrant the penalty of forfeiting the right of ownership of positions, the claim to which they esteem so highly that they are ready literally to fight in defense of it.

A Mode of Dealing with Rebellious Employers.—An employer might refuse to accept the result of an arbitration. In view of the strong pressure that public opinion would exert after the decision should have been rendered, frequent refusals are not probable. If, however, the employer should reject an award, the logic of the case would require that he lose his tenure of place as the men do for a like offense; and the only way to accomplish this is to throw him out of his business connections. The tenure which an *entrepreneur* most values consists in his relation to his customers; and if the state should see to it that the goods he makes could always be had from some other source, the *entrepreneur* would be unlikely to close his mills. How the state shall keep the sources of supply open will become an important question if it shall appear that producers do defy the public opinion and reject the court's awards.^[1]

The Practical Working of the Arbitration Proposed.—Let us see how such a system of arbitration as is here described would work in the case in which, as we have supposed, a strong trade union is dealing with a monopolistic employer. At the outset all violence on the men's side is ruled out. No assaulting, maiming, or killing of so-called "scabs" is tolerated, and, moreover, the first temptation to this is removed by the act of the state in recognizing for an interval the men's tenure of place. There are no strike breakers to be attacked. While proceedings of arbitration are pending, the obnoxious class is out of sight, and all the places are transiently reserved for their original holders. The court has submitted to it two possible rates of pay, one demanded by the men and the other offered by the employers. It may confirm either of these rates or any rate that is intermediate between them, and it is likely to pursue the latter course. In any case, it announces a rate, the one which to it appears to be fair and is more likely to be so than the one claimed by either of the parties. "This is a just rate," declares the tribunal to the men; "you may take it or leave it, but if you leave it a certain thing will happen,—workmen who refuse it will forfeit all claim upon their positions." Workmen will not often refuse the award, and the pressure of public opinion makes it improbable that the employer will do so. Coupled with arbitration and an essential part of the system is a policy which shall remove the danger of monopoly. In its perfectly secure form monopoly as yet scarcely exists, but what does exist is a great number of partial monopolies able to handle competitors roughly and extort profits from the people. Directly connected with the adjustment of wages is the disarming of such monopolies. The preventing of strikes may often be accomplished without this, but the insuring of just wages requires it. With a solution of the problem of monopoly in view, all other needs of the situation might well be met by arbitration without compulsory power.

We may now tabulate our conclusions.

1. In the making of the wages contract the individual laborer is at a disadvantage. He has something which he must sell and which his employer is not obliged to take, since he can reject single men with impunity.
2. A period of idleness may increase this disability to any extent. The vender of anything which must be sold at once is like a starving man pawning his coat—he must take whatever is offered.
3. Collective bargaining enables men to withhold, for a time, something which is of importance to an employer. He cannot let them all go with impunity.
4. A strike is a contest of endurance; and if it continues until the men are exhausted, they are collectively in the position of the hungry individual seller, who is at the buyer's mercy. The wages they then take may be far below the natural standard.
5. If their places are filled at once by men who are already thus necessitous, the resulting rate may be equally below the natural standard.
6. The power of the union often depends on its use of force in keeping the needy out of its field.
7. The rate of pay gained where compulsion is freely and successfully practiced is above the normal rate.
8. Conciliation does little in the way of changing the results which are realized without it, but it lessens the frequency of strikes.
9. Arbitration by a court, which must make a decision but cannot enforce it—by a court which confirms the workmen's tenure of place while action is pending and declares it forfeited if the men reject its decree,—such arbitration would secure a closer conformity to the normal standard of wages than any other action. It would establish rates which give the workmen the benefit of every legitimate advantage from collective bargaining.
10. Arbitration by a court which is compelled to act, and can enforce its decision, may deviate in a particular case from the rate of pay which strikes would yield; but if the deviation is frequent and great, it will induce a rebellion against the system of compulsory arbitration. The rate under this system cannot differ greatly from the result secured with no arbitration at all. The chief value of all the foregoing modes of settling disputes lies in their prevention of costly interruptions of business. They may reduce the number of strikes and prevent much waste and suffering.
11. A mode of procedure which aims chiefly to end strikes usually depends on making compromises between opposing claims. This secures an approach to a reasonable adjustment, as between employers and employed, but does not affect the differences between the wages of different classes of laborers.
12. In order that any mode of adjusting wages may give fair comparative rates, monopolies must be repressed; and this can only be accomplished by measures which are independent of tribunals of arbitration.

FOOTNOTES

- [1] If the employer were a corporation possessing a monopoly of its department of production, it would be difficult quickly to open such new sources of supply as would be requisite; but a temporary reduction of import duties would often go far in this direction. And a measure which would insure the running of the plant under a temporary receivership would, of course, do it.

CHAPTER XXVII

BOYCOTTS AND THE LIMITING OF PRODUCTS

When free from the taint of monopoly, trade unions, as has been shown, help rather than hinder the natural forces of distribution. Collective bargaining is normal, but barring men from a field of employment is not so. Connected with this undemocratic policy are certain practices which aim to benefit some laborers at the cost of others, and thus tend to pervert the distributive process.

Restrictions on the Number of Members in a Trade Union.—If a trade union were altogether a private organization, it might properly control the number of its own members. Before it is formed all members of the craft it represents are, of course, non-union workers, and the aim of the founders is to "unionize the trade"—that is, to enlist, in the membership of the body, as large a proportion as is possible of the men already working in the subgroup which the union represents. From that time on it can fix its own standard of admission, and allow its membership to increase slowly or rapidly as its interests may seem to dictate.

How a too Narrow Policy defeats its Own End.—Very narrow restrictions, while they keep men out of the union, attract them to the trade itself. An extreme scarcity of union labor and the high pay it signifies causes the establishment of new mills or shops run altogether by non-union men. If these mills and shops are successful, the union may later admit their employees to membership; and a series of successful efforts to produce goods by the aid of unorganized labor thus interferes with the exclusive policy of unions. The number of their members grows in spite of efforts to the contrary.

Free Admission to a Trade Equivalent to Free Admission to a Union.—We may recognize as one of the principles in the case that free admission to the craft itself involves free admission to the union. When once men are successfully practicing the trade, the union is eager to include them, though it enlarges its own membership by the process.

How a Government might prevent a Monopoly of Labor.—It is entirely possible that a government might require trade unions to incorporate themselves, and might include in the charter a clause requiring the free admission of qualified members, subject only to such dues as the reasonable needs of the union might require. That is not an immediate probability, but the end in view can be attained by making membership in the trade itself practically free—which means protecting from violence the men who practice it without joining the union. This is not difficult where a mill in an isolated place is run altogether by independent labor, and it is natural that the unions should endeavor, in other ways than the crudely illegal ones, to prevent the successful running of such mills. If they run with success, their employees will have to be attracted into the unions. A measure designed to impede the running of non-union mills is the boycott. It is a measure which does not involve force and which is yet of not a little value to workers.

The Nature and Varieties of the Boycott.—A boycott is a concurrent refusal to use or handle certain articles. In its original or negative form, the boycott enjoins upon workers that they shall let certain specified articles alone. If they are completed goods, they must not buy them for consumption; and if they are raw materials, or goods in the making, they must not do any work upon them or upon any product into which they enter. They may thus boycott the mantels of a dwelling house and refuse to put them in position, or, in case they have been put in position by other workmen, they may, as an extreme measure, refuse to do further work on the house until they are taken out. A producers' boycott, such as this, falls in quite a different category from the direct consumers' boycott, or the refusal to use a completed article. When a raw material is put under the ban, workers strike if an employer insists on using it. If the cause of the boycott is some disagreement between the maker of the raw material and his workmen, the measure amounts to the threat of a sympathetic strike in aid of the aggrieved workers. If the cause is the fact that the materials were

made in a non-union shop, the men who thus made them have no grievance, but the union in the trade to which these men belong has one. It consists in the mere fact that the non-union men are working at the trade at all and that their employer is finding a market for their product. Workers in other trades are called on to aid this union by a sympathetic strike, either threatened or actually put into effect. Such a boycott as this may therefore be described as amounting to a potential or actual sympathetic strike somewhat strategically planned. If the strike actually comes, it may assist the men in whose cause it is undertaken; and the principles which govern such a boycott are those which govern strikes of the sympathetic kind.

Direct Consumers' Boycotts economically Legitimate.—The other type of boycott is a concurrent refusal to buy and use certain consumers' goods. Legally it has been treated as a conspiracy to injure a business, but the prohibition has lost its effectiveness, as legal requirements generally do when they are not in harmony with economic principles. Of late there has been little disposition to enforce the law against boycotting, and none whatever to enforce the law when the boycott carries its point by taking a positive instead of a negative form. The trade-label movement enjoins on men to bestow their patronage altogether on employers included within a certain list, and this involves withdrawing it from others; but the terms of the actual agreement between the workers involve the direct bestowing of a benefit and only inferentially the inflicting of an injury. The men do not, in terms, conspire to injure a particular person's business, but do band themselves together to help certain other persons' business. Economic theory has little use for this technical distinction. It is favorable rather than otherwise to every sort of direct consumers' boycott, and is particularly favorable to the trade-label movement. This movement may powerfully assist workers in obtaining normal rates of pay, and it will not help them to get much more.

The Ground of the Legitimacy of the Boycott.—An individual has a right to bestow his patronage where he pleases, and it is essential to the action of economic law that he should freely use this right. The whole fabric of economic society, the action of demand and supply, the laws of price, wages, etc., rest on this basis. Modern conditions require that large bodies of individuals should be able concurrently to exercise a similar right,—that organized labor should bestow its collective patronage where it wishes. This can be done, of course, only by controlling individual members, for the trade union does not buy consumers' goods collectively. If it can thus control its members, it can use in promoting its cause the extensive patronage at its disposal.

Unfavorable Features of the Indirect Boycott. —The boycott we have thus far had in view is a direct confining of union laborers' patronage to union-made goods. Why this is a thing to be encouraged we shall presently see. What we have said in favor of it does not apply to boycotting merchants on all their traffic because they deal in certain goods. If a brand of soap is proscribed, the workers are justified in concurrently refusing to use that variety; but it is not equally legitimate to prevent a merchant, whose function it is to serve the public, from selling this soap to the customers who want it. To refuse to buy anything whatsoever from a merchant because he keeps in his stock a prohibited article, and sells it to a different set of customers, is interfering, in an unwarranted way, with the freedom of the merchant and of the other customers. Indirect consumers' boycotts have little to commend them, but those of the direct kind have very much.

The Merits of the Trade-label Movement.—This appears most clearly in connection with the trade-label movement. As a result of this movement union laborers will, as is hoped, buy only union-made goods. The existence of such a movement in itself implies that there are goods of the same sort to be had which are not made by union labor. The shop that is run by the aid of independent labor is the cause of the existence of the union label. If all the labor in a group were organized, the label would have no significance. At present the trade unions offer to an employer a certain amount of patronage as a return for limiting himself to union men, and so long as the cost of making his goods is not much increased, the inducement may be sufficient to make him do it.

The Movement as affected by Extravagant Demands on Employers. —Unduly high wages mean, of course, unduly high prices. Without here taking account of the "ca'-canny" policy, which aims to make labor inefficient, extravagant wages for efficient labor increase the cost of goods. This opens

the way, as we have seen, for the free shop and the labor which is willing to sell its product at a cheaper rate. If union labor then firmly resolves to buy only the goods with the label, it proposes a heroic measure of self-taxation.

Trade Labels and the Quality of Goods.—The experience of the trade-label movement thus far has been, that in some instances the label vouches for prices which are high, if quality be considered, or for a quality which is poor if the prices are the current ones. Instead of telling the purchaser that the shoes, hats, cigars, etc., which bear the label are surely the best that can be had for the money, the labels are more apt to tell him that the goods are poorer than others which can be had. In some instances this is not the case, and the union-made articles are as good and as cheap as others. When the label stands for a high price or a poor quality, the union fails to control its members and especially its members' wives. Having the meager pay of a week to invest, the wife needs to use it where it will do the most for the family. There is so strong an inducement to buy goods which are really cheap and good that the trade-label movement fails whenever loyalty to it means very much of self-taxation.

The Object Lesson of the Consumers' Boycott.—Organized labor gives itself a costly and impressive object lesson when it tries to force all men of its class to buy the dearer of two similar articles. What this shows is that the demands of unions must be limited, and that for the highest success they must be so limited that there shall be no decisive advantage given to an employer who has a non-union shop. A marked difference in costs of production will cause the free shop to grow and the union shop to shrink. A certain moderate difference in wages there may be, provided always that the union labor is highly efficient; but more than such a difference there cannot safely be. If the trade-label movement should be generally successful, that fact would prove that the demands of trade unions were kept within reasonable limits.

The Policy of Restricting the Product of Labor.—It is a part of the policy of trade unions to limit the intensity of labor. The term "ca'-canny" means working at an easy-going pace, which is one of the methods adopted in order to make work for an excessive number of men. For some of this the motive is to avoid an undue strain on the workers. If the employer selects "pacemakers," who have exceptional ability and endurance, and tries to bring other laborers to their standard, then the rule of the trade union, which forbids doing more than a certain amount of work in a day, becomes a remedy for a real evil—the excessive nervous wear of too strenuous labor. This, however, by no means proves that the policy as carried out is a good one. Beyond the relief that comes when undue speeding of machinery and driving of workers is repressed, it will be impossible to prove that in the long run there is any good whatsoever in it, and the evil in it is obvious and deplorable.

"Making Work" as related to Technical Progress. —The policy reverses the effects of progress. That which has caused the return to labor to grow steadily larger is labor saving or product multiplying, and labor making and product reducing are the antithesis of this. Enlarging the product of labor has caused the standard of pay to go steadily upward and the actual rate to follow it; and the prospect of a future and perpetual rise in the laborers' standard of living depends almost entirely on a continuance of this product-multiplying process. A single man maintaining himself in isolation would gain by everything that made his efforts fruitful, and society, as a whole, is like such an isolated man. It gains by means of every effective tool that is devised and by every bit of added efficiency in the hands that wield it.

Reversing the Effect of Progress.—It follows that undoing such an improvement and going back to earlier and less productive methods would reverse the effect of the improvement, which is higher pay for all; it is restoring the condition in which the product of labor and its pay were lower. The "ca'-canny" policy—the arbitrary limiting of what a man is allowed to do—has this effect. It aims to secure a reduction of output, not by enforcing the use of inferior tools, but by enforcing the inferior use of the customary tools. The effect, in the long run, is, and must be, to take something out of the laborers' pockets.

The Effect of the Work-making Policy under a Régime of Strong Trade Unions.—It is, of course,

only a strong trade union that can enforce such a policy as this. Making one's own work worth but little offers a large inducement to an employer to hire some one else if he can. Within limits, the powerful union may prevent him from doing this, and if for the time being society is patient and tolerant of anarchy,—if it allows men who are willing to work well in a given field to be forcibly excluded from it by men who are determined to work ill,—the policy may be carried to disastrous lengths.

How Static Law thwarts the Work-making Policy.—Even strong unions, as we have seen, succeed in maintaining only a limited difference of pay between their trade and others. The effort to maintain an excessive premium on labor of any kind defeats itself by inducing free labor to break over the barrier that is erected against it. The same thing happens when we reduce the productive power of organized labor. If, at a time when the premium that union labor bears above the non-union kind is at a maximum, the policy of restricting products is introduced, it so increases the inducement to depend on an independent working force that there is no resisting it. The palisade which union labor has built about its field gives way, and other labor comes freely in. If the ca'-canny policy makes it necessary to pay ten men for doing five men's work, the union itself will have to give place to the independent men. No single good word can be said for the ultimate effect of the policy as carried beyond the moderate limit required by hygiene. Up to the point at which it will avert undue pressure upon workers, stop disastrous driving and the early disabling of men, the effect is so good as amply to justify the reduction of product and pay which the policy occasions. Beyond that there is nothing whatever to be said for it, and if it shall become a general and settled policy of trade unions, it will be a clog upon progress and mean a permanent loss for every class of laborers.

Notwithstanding all this, it must be true that some motive which can appeal to reasonable beings impels workers to this policy. No plan of action, as general as this, can be sustained unless some one, at least transiently, gains by it. Workers have a tremendous stake in the success of any plan of action they adopt, and they have every motive for coming to a right conclusion concerning it. They are in the way of getting object lessons from every mistaken policy, as its pernicious effects become apparent, even though some local and transient good effects also become evident. It is not difficult to see what it has been that has appealed to so many laborers and induced them voluntarily to reduce the value of their labor.

A Common Argument against Product Restricting.—What is commonly said of the policy is that it is based on the idea that there is a definite amount of work of each kind to be done, and that if a man does half as much as he could do, twice as many men will be employed to do the whole amount. Nobody who thinks at all actually believes that the amount of work of a given kind is fixed, no matter how much is charged for it. If workers on buildings charged from five to ten dollars a day, there would be fewer houses erected than would be erected if they charged three dollars; and the same thing is true everywhere. The amount of labor to be done in any field of employment varies constantly with changes of cost, and making labor more costly in a particular department reduces the amount of its product that can be sold.

A trade union often finds that there are too many workers in its field to be constantly employed at the rate of pay it establishes. The result is partially idle labor; the men work intermittently, and though the high wages they get for a part of their time may compensate them for idle days or weeks, the idleness which is the effect of the oversupply is inevitable.

A given number of workers in the group which makes A''' when the wages are three dollars a day becomes an excessive number when the wages are five, and even if the high wages do not attract men from without and make the absolute number of workers greater than before, employment is not constant. The ca'-canny policy is a transient remedy for this. It is an effort to avoid the necessity for partial idleness and for the transferring of laborers to other occupations. All the labor may, for a time, remain in its present field if it will afflict itself with a partial paralysis. For a while the demand for the product of the labor will be sufficient to give more constant employment. Time is required for the full effect of the product-limiting policy to show itself in a falling off of the consumption of the goods whose cost is thus increased. When it comes the evil effect of the policy

will appear. If a union were strong enough to keep a monopoly of its field, in spite of the greater efficiency of laborers that are free to work in a normal way, it would be strong enough to maintain much higher pay for its own members if it limited the number of them and encouraged them to work efficiently. The strongest conceivable union must lose by substituting the plan of paralyzing labor for that of restricting the number of laborers. The union may choose to take the benefit of its monopolistic power by keeping an unnecessarily large number of men in constant employment, rather than by getting high wages for efficient work; but in that case any union but one the strength of which is maintained in some unnatural way is likely to come to grief by the great preference it creates for non-union labor. The independent shop will get the better men at the lower rate of wages, and its products will occupy the market. The popularity of the plan of work making is the effect of looking for benefits which are transient rather than permanent. If it were carried in many trades as far as it already is in some, it would probably neutralize, even for those who resort to it, much of the benefit of organization, and work still greater injury to others.^[1]

The Eight-hour Movement as a Work-making Policy.—The effort to reduce the hours of labor to eight per day has in it so much that is altogether beneficent that it is not to be put in the same category with the Ca'-canny plan of working. And yet one leading argument in favor of this reducing of the number of hours of work is identical with that by which a reduction of the amount accomplished in an hour is defended. The purpose is to make work and secure the employment of more workers. What has been said of the other mode of work making applies here. Reducing the length of the working day cuts down the product that workers create and the amount that they get. In the main the loss of product is probably offset by the gain in rest and enjoyment; but the loss of product, taken by itself alone, is an evil, and nothing can make it otherwise. If the hours were further reduced, the loss would be more apparent and the gain from rest and leisure would be less.

One Sound Argument in Favor of the Greater Productivity of the Eight-hour Day.—There is one reason why the eight-hour day may in a series of generations prove more permanently productive than a longer one. It may preserve the laborers' physical vigor and enable them to keep their employment to a later period in life. The dead line of sixty might be obliterated.

If what we wanted were to get the utmost we could out of a man in a single day, we should do it by making him work for twenty-four hours; after that, for another twenty-four hours, he would be worth very little. If we expected to make him work for a week, we should probably shorten the day to eighteen hours. If we expected to employ him for a month and then to throw him aside, we might possibly get a maximum product by making him work fourteen hours. If we wanted him for a year only, possibly a day of twelve hours would insure the utmost he could do. In a decade he could do more in a ten-hour day, and in a working lifetime he could probably do more in eight. Forty or fifty years of continuous work would tell less on his powers and on the amount and quality of his product.

The Connection between the Restriction of Products and the Trade-label Movement.—Very important is the bearing of these facts concerning the restriction of laborers' products and the trade-label movement. If that movement should become more general and effective, it would bring home to all who should take part in it the effects of the labor-paralyzing policy. The faithful trade unionist would find himself paying a full share of the bill which that policy entails on the public. Ordinary customers can avoid the product whose cost is enhanced by the trade-union rules; but the unionist must take it and must make himself and his class the chief subjects of the tax which enhanced prices impose. It may well be that the pernicious quality of the general work-making policy will become so evident in any case that it will be abandoned; and this would be made sure by a rule that should actually make union labor the chief purchaser of union goods. Ca'-canny would then mean self-taxation on a scale that no arguments could make popular.

FOOTNOTES

[1] It will be seen that whether the policy is successful in giving employment to the partially idle or fails to do so depends on the amount of reduction in the sale of the goods which the increased cost of making them entails; and if the market is highly sensitive to increased cost, the policy may fail in securing even a transient increase of employment.

CHAPTER XXVIII

PROTECTION AND MONOPOLY

The more serious perversions of the economic system which we have encountered have all been traceable to some working of the principle of monopoly, and it is important to know whether any established policy of governments lends force to this evil influence. Import duties were established in America for the purpose of protecting industries as such, and a vital question now is whether they have now begun to protect monopolies within the industries.

A Supposed Conflict between Theory and Practice.—There was a time when theorists and practical men seemed to be in hopeless disagreement concerning the entire subject of protection. In the view of the practical man an economist was a person who, in his study, had reached certain conclusions which were equally unanswerable in themselves and irreconcilable with the facts. The expression most commonly heard in this connection was that "theory and practice do not agree." The doctrinarians were, in those days, unusually harmonious among themselves, for there were comparatively few who made a vigorous defense of protection on grounds of economic principle. The practical world was less harmonious, since the views of different parts of it were colored by differing interests; but the fact that science did not fall into self-contradiction was encouraging. It was possible for the uncompromising free-trader to think and to say that fundamental principles were all on his side, and that the protectionist had nothing in his favor except transient disturbances that interfered with the perfect working of the principles.

Static Theory in Favor of Free Trade.—Now, the business world conceded too much to the free-trader when it said that he had theory altogether in his favor. What he could truthfully claim, and what the world could safely admit, was that he had static theory in his favor. Static theory deals with a world which is free, not only from friction and disturbance, but also from those elements of change and progress which are the marked features of actual life. Stop all the changes that are taking place in the industrial life of the world; put an end to inventions and improvements in business organization; let there be no moving of population to and fro, and no increase of the aggregate population of the world; further, let there be no addition to the wealth of the world and no change in its forms,—and you will have the static state described in the early part of this treatise. Men would go on making things to the end of time, using identically the same methods that are now in vogue and getting identically the same results, and in such an imaginary world there would be no possibility of answering the contention of the general body of economists of a generation ago. Free trade would be the only rational policy, and it could be defended upon the simple ground on which division of labor in the case of individuals is defended. One man has an aptitude for making shoes, another for making watches, another for painting pictures, and so on; and each one of them can gain far more by devoting himself to his specialty and bartering off the product of it than he can by trying to make everything for himself. Nations have their special aptitudes and should follow them, and make all they can out of them; and the nation which has special facilities for producing cotton, or wheat, or petroleum, or gold and silver bullion should devote itself to its specialties, barter off the results, and get all manner of goods in return.

Wastes from Protection reduced by the Fact of Diversified Resources.—It is true, indeed, that a great nation like our own makes a much better jack-of-all-trades than an individual can make. It is far more probable that the nation as a whole can produce without much waste all the things it wants to use than that any individual can do so. If we have all climates from the tropical to the arctic, all soils, and a full list of mineral deposits, why should it pay us to confine ourselves to the making of only a few things in order to barter them off for others? Why should we not, with our wide range of resources, make everything?

Undoubtedly we can make almost everything if we insist upon doing it; but there are still some things that other countries can make and sell to us on such terms that we can do better by buying

them than by producing them ourselves. We can raise tea in the United States, but it pays us better to make something else and barter it off for tea. A day's labor spent in raising cotton to send away in exchange gives us more tea than a day's labor spent in producing the latter article directly. In a static condition we should have found in what fields it is most profitable to employ our energies. We should be directly making things that it would pay us best to make, and we should be indirectly making the other things; that is, we should be producing articles to send off in exchange for those other things. Wherever an indirect way of acquiring a thing had proved most profitable, we should have adopted that method, and we should always adhere to it. Anything that forced us to make directly something which we could secure in greater abundance by bestowing the labor that would make it on making something else, would turn our energies in a comparatively unproductive direction. It would inflict on us a waste and a loss—and there are such wastes and losses inherent in the operation of the principle of protection, and there is no contending against the argument that demonstrates their existence. Protection and a certain distortion of the productive system, a certain misdirection of energy, are synonymous.

The Argument for Protection Dynamic.—Now an intelligent argument in favor of protection begins at this point. It accepts the whole static argument in favor of free trade, and its own assertion begins with a "nevertheless." It claims that in spite of what is thus conceded, protection is justifiable, since, in the end, it will pay, notwithstanding the wastes that attend it. The argument for protection is entirely a dynamic one. It is based on the fact of progress and admits that it could make no case for itself under the conditions of a static state. If every country had certain special facilities for producing particular things, and if its state in this respect were destined to remain forever unchanged, it could, to the end of time, make itself richer by depending for many things on its neighbors than it could by depending for those things immediately on itself. The fact is, however, that a nation like our own abounds in undeveloped and even unknown resources which, when brought to the light, may take precedence of many of those which are known and utilized. If our country from end to end were like Cape Nome, and as rich in gold as the richest part of that remote region, and if it were certain that the deposits of gold would never be exhausted and would employ the whole energy of our people, it is clear that we should have one staple occupation and should depend upon the rest of the world for almost every sort of portable commodity. We should be stopped from manufacturing by the great productivity of labor in placer mining. So long as men could make ten dollars a day by washing out gold from the sands, there would be no use in setting them at work making two dollars a day as weavers or shoemakers or what not. By buying our cloth with gold dust we could get far more of it than we could if we took the men out of the mine and set them to making the stuff itself. But—and here is the proviso that makes the supposition correspond with the fact—if, besides the placers, we had deep mines of other metals than gold, if we had oil and lumber and loam of every variety, and if we had people with undeveloped mechanical aptitudes, it might be that we should do well to develop these latent energies even in a wasteful way. The condition that would fully establish the similarity between the supposed case and the actual one is that the placer deposits should be, as placers are, sure to be exhausted by continued working, and that producing other things than gold should tend to become, with time, a more and more fruitful process. We can justify the attitude of the country that taxes itself at an early date for the sake of testing and developing the latent aptitudes of its land and its people. At the outset it will thereby sustain a loss, because at the outset it can gain more goods by the indirect method of exchange than it can by production; but there may easily come a time when it can gain more by the direct method. If we learn to make things more economically than we could originally make them, if we hit upon cheap sources of motive power and of raw material, and especially if we devise machinery that works rapidly and accurately and greatly multiplies the product of a man's working day, we shall reach a condition in which, instead of a loss incidental to the early years of manufacturing, we shall have an increasing gain that will continue to the end of time. It may be, further, that without protection and the burdensome tax which it did undoubtedly impose upon us, we should have had to wait far too long for this gain to accrue and should have sacrificed the benefits that come from a long interval of diversified and fruitful industry.

In short, the static argument for free trade is unanswerable and the dynamic argument for

protection, when intelligently stated, is equally so. The two arguments do not meet and refute each other, but are mutually consistent. It is possible to ridicule the argument for protection under the name of the "infant industry" argument, and it is possible for the policy it upholds to continue long after this argument has ceased to be valid. The overgrown infant will have sacrificed his claim for coddling, but that will not prove that there was never a time when he needed it.

The Policy demanded in View of Facts Static and Dynamic.—Now, there is an argument for tariff reduction which accepts both the static argument for free trade and the dynamic argument for protection. In fact, it bases itself on the protectionist's modern and intelligent claim. To advance in any form the infant industry argument is to admit that the policy advocated is temporary. Protective duties are, in fact, self-testing. They reveal in their very working whether they were originally justifiable or not. The ground on which they were imposed is that they would develop latent resources—that they would enable labor to produce as much by making a class of articles formerly produced in foreign countries as it could produce by engaging in industries already established and exchanging their products for the former articles. If that time should come, the industry that had to grow up originally under the protection of a duty would become so fruitful that it could dispense with the duty. Taxes of this kind tend to become inoperative, provided always that the latent resources for economical production really exist.

Some years ago a man who had retired from the business of making spool silk remarked that, in his judgment, a duty of three per cent on imported silk of this kind would enable the American mills to hold full possession of their own market. The difference between what it cost the foreigner to make the silk and what it cost the American to make it was, as he thought, not over three per cent. If he was right in his estimate, almost all of the actual duty might have been abolished without crushing the American manufacturer. Americans had developed a sufficient aptitude for making spool silk to be able to get nearly as much of it by turning their labor in that direction as they could by turning their labor in any other direction and exchanging the product for foreign silk. We must originally have lost much by forcing ourselves directly to make the silk, for, at the outset, we could not make it as economically as we could make an article which we could exchange for it. At the time of which we are speaking we could make it with almost no waste, and the case illustrates a general fact with regard to duties upon articles in the making of which we are originally at a disadvantage but are afterward at no disadvantage at all. When our original disadvantage has been quite overcome, the duty becomes inoperative. Whether we keep it or throw it off will make no difference to the American manufacturer or to the American consumer—*provided always that competition is free and active*. If it is not so, there is a very different story to tell.

Importance of Changes in the Relative Productivity of Different Industries.—Instead of getting from the soil gold dust to barter for merchandise, we have been getting a product that is not so greatly unlike it. For grains of gold read kernels of wheat, and the statement will tell what a large portion of our country has produced and exported. The productivity of wheat raising has made it uneconomical, in certain extensive regions, to engage in other occupations; but as the fertility of the wheat lands has declined, and as the productive power of labor in other directions has increased, we have reached a point at which it is just as natural to make things for which we formerly bartered wheat as it is to produce the grain itself. The decline in the fertility of agricultural lands and the increase in the productive power of labor devoted to making steel appear to have made the manufacturer of the latter article as independent as is the raiser of cereals. Originally it was necessary to protect iron and steel industries from competition in order to secure the establishment of them at an early day. Now it is apparently not necessary to continue the protection. Labor in making steel will give us as many tons of it in a year as the same labor would give us if spent in the raising of wheat to be exchanged for foreign steel. The duty on steel, if this is the case, has become inoperative, in the sense that it no longer acts to save from destruction the steel-making industry. It is perniciously operative in another direction, for it is an essential protector of a quasi-monopoly in the industry; and this illustrates what often happens in cases in which the infant industry argument proves to be well grounded. The argument predicts for the newly established industry a great future development and a time of ultimate independence. Protection

undertakes to nurse it through its period of helplessness and dependence into a time when it can stand on its own feet and maintain itself against rivals. If that period comes,—and the history of the United States shows that in many cases it has come,—you can throw off the entire duty, if you will, and, unless the price of the article has been artificially sustained by something besides the duty, our manufacturers will not lose possession of their market.

An essential condition of realizing the happy predictions of the protectionists is that competition among American producers should be unimpeded. If that were so, goods would, as they said, be sold, in the end, at prices fixed by the costs of production, including the normal rate of interest on the capital employed. Manufacturers may originally get large profits, as an offset for such risks as they take in doing pioneer work; but afterward they will get interest on their capital and a good personal return for directing their business, but nothing more. If they sell goods at prices which yield only such returns as this, they will, when the industry is on its feet, sell them as cheaply as the foreigner would do. The high duty, if it still continues, may make it doubly difficult for the foreigner to come into our market; but with goods selling at natural cost or cost prices he would not come into it in any case, and the duty might be abolished with entire impunity.

There are, indeed, some questions which arise as to occasional unloading of extensive stocks in foreign markets, and protection has been called for to prevent the foreigner from making America his "dumping ground." This process works in both ways: the American can dump his surplus products into foreign territory as well as the foreigner can into American territory. Not much attention need be paid to this particular phase of the subject. Conservatism will probably suffice, for a long time, to retain in force a somewhat higher duty than is called for on general grounds. In the main the fact is as stated: if the protected infant has the capacity for growth that was attributed to him when the course of nursing, coddling, training, and patient waiting was entered upon, he will announce that fact after a term of years by showing his inherent strength and proving that these fostering practices are no longer necessary. They are then needed only to aid a *monopolistic power within the industry*.

The Protection of Industries distinguished from the Protection of Monopolies.—It appears, then, that duties have two distinct functions. One is to protect from foreign competition an industry as such—to shield every producer, whether he is working independently or in a pool or trust. The other function is to protect a trust in the industry—to enable a great combination working within the limits of the United States to keep that great field to itself and still charge abnormally high prices for its products. In fact, a distinguishable part of a duty usually performs the former of these functions, and another distinguishable part performs the latter. If the natural price of an article is based on the cost of making it in the United States, and if that is twenty per cent higher than the cost in a foreign country, a duty of twenty per cent will place the American product and the foreign product on an equality. The American maker will not be driven from his market until he begins to charge an abnormally high price. If he does that, the foreigner will come in. Suppose, then, that the duty is forty per cent. Twenty per cent may be needed to enable the American manufacturer to hold his own as against the foreigner. Provided he exacts from consumers of his goods only the natural returns which business yields, year in and year out, he can sell all that his mills produce with no danger that the foreigner will supplant him. The other twenty per cent of duty enables him to add a monopolistic profit to his prices. He can raise them by about that amount above what is natural before the foreigner will begin to make him trouble.

We have seen what ways the trust has of stifling competition within the limits of our own country. There are the favors which it is able to get from the railroads, and there is the practice of selling its goods in some one locality at a cut-throat rate whenever a competitor appears in that locality. There is the so-called factors' agreement, which often forces merchants to buy goods of a certain class exclusively from the trust. By these means and others the trust makes it perilous to build a mill for the purpose of competing with it. If, indeed, it makes its prices very high, some bold adventurer will build such a mill and take the chances that this entails; but if the trust stops short of offering such a tempting lure in the way of high prices, it can keep the field to itself. If the extra duty of twenty per cent—the unnecessary portion of the whole duty of forty per cent—did not exist,

nothing of this sort would be possible. The trust would have to sell at a normal price in order to keep out the foreigner, and so would its independent competitor. Both the combination and its rivals could make their goods and sell them in security. The industry, as such, is protected by the duty of twenty per cent, and it is the additional duty which is the protector of monopoly—the enabling cause of the grab which the trust can make from the pockets of the consuming public.

In practice one would not try to make the figures quite as exact as is implied in the statement that just twenty per cent of duty is needed to protect the industry as such from the foreigner, and that just another twenty per cent acts as a maker of a monopolistic price. It would be impracticable to fix the duty in such a way as exactly to meet the need of protection. Owing to fluctuations in values, the duty might be made slightly higher than is necessary under normal conditions. All these things would have to be considered by a competent tariff commission. The figures we here use are illustrative only; but the principle is as clear as anything in economics. Protecting an industry, as such, is one thing; it means that Americans shall be enabled to hold possession of their market, provided they charge prices for their goods which yield a fair profit only. Protecting a monopoly in the industry is another thing; it means that foreign competition is to be cut off even when the American producer charges unnatural prices. It means that the trust shall be enabled to sell a portion of its goods abroad at one price and the remainder at home at a much higher price. It means that the trust is to be shielded from all competition, except that which may come from audacious rivals at home who are willing to brave the perils of entering the American field provided that the prices which here rule afford profit enough to justify the risk.

A Limit beyond which a Duty becomes a Supporter of Monopolies.—This line of cleavage runs through the greater part of the duties which this country now imposes on foreign articles; and the fact reveals the scientific rule for tariff reduction. Up to a certain point, according to the traditional American view, the duty may do good. It may be protecting an industry that is not quite an infant and yet has not grown to its full stature nor attained to its full competing power. Whatever may be claimed as to what ought to be done with this portion of the duty, there is no doubt what will be done; it will be retained, and the American people will wait with such patience as they may for the coming of the time when the industry will be independent of all such aid. Beyond this point a protective duty becomes a trust builder *par excellence*.

Most Duties Compounds of Good and Evil.—There are some industries which are fully matured. The duties which were imposed to shield them during their infancy are no longer necessary for that purpose. The amount of protection that in these cases is necessary to keep the American market for the American product is *nil*. The sole effect of duties on the products of such industries is to encourage monopoly. At the other extreme there are a few industries which have not gravitated into the control of monopolies and which need much of the protection that they have in order to hold their present fields. If they really are infants and not dwarfs,—if they have the capacity to grow to full stature and independence,—the policy of the people will undoubtedly be to let them keep, for a considerable time, all the protection that they now enjoy. The number of such industries as this is comparatively small. In the case of the great majority of our duties there is one part that protects the industry as such and another part that protects the monopoly within it. Throw off the whole duty, and you expose the independent rivals of the trust, as well as the trust itself, to a foreign competition which they are hardly able to bear; but if you throw off a part of the duty,—the part which serves to create the monopoly,—you do not destroy and probably do not hurt the independent producer. His position now is abnormal and perilous. He may be continuing solely by grace of a power that could crush him any day if it would, and its power to crush him is due to the great gains which its position as a monopoly affords. When it wishes to crush a local rival, it can enter his territory and, within that area, sell goods for less than it costs to make them; and, while pursuing this cut-throat policy, it can still make money, because it is getting high prices in the other parts of its extensive territory. With no such great general returns to draw on as a war fund, the trust would have to compete with its rivals on terms which would be at least more nearly even than they now are. It would still have weapons which it could employ against competitors, and its capacity for fighting unfairly would not be exhausted. Without further action on the part of

lawmakers the position of a small rival of a trust might be unnaturally dangerous; but an essential point is that one means which the trust adopts in order to crush him depends on the existence of great profits in most of its territory; and these would not exist if it were not for the unnecessary and abnormal part of the duty.

The trust wants its duty, and it wants the whole of it. It is the perennial defender of the policy which is termed "standing pat." It values the monopoly-making part according to the measure of the profits which that part brings into its coffers. The trust is powerful, as we do not need to be told, and it will find ways of thwarting tariff reduction as it does other anti-trust legislation. Drastic laws forced through legislatures or Congress during ebullitions of popular wrath—laws which demand so much in the way of trust breaking that they will never be enforced and never ought to be—have not, thus far, been prevented. Such "bulls against the comet" have been issued frequently enough, but serious legislation, based on sound principles, will encounter graver difficulties. There are difficulties before our people even where they see clearly what they want and are trying to get it; but where they do not see what they want, the case is hopeless. The trust-making part of protective duties has an effect about which there is no uncertainty, and if the American people discover this fact, they will not have reached their goal, but the laborious route that leads to it will at least lie distinctly before them.

The Policy demanded in the Interest of Progress.—The general facts which have here been cited call for the abolition of a certain part of the existing duties and the retention of another part, and they make the division between the two parts clear at least in principle. We want to keep one part of a duty whenever it protects an industry which is not yet mature but is on its way toward maturity. We want the industry because it is progressive in its wealth-creating power and will, one day, make an important addition to our national income. It is a dynamic agent—a factor in the progress we are making toward the unrealized goal of universal comfort. We do not want the other part of the duty, first, because we do not want monopoly. Any feature of our industrial system which is convicted of being simply a monopoly-building element is condemned by that fact to extinction, if the power of the people suffices to destroy it. Does this mean that the consolidations themselves are thus condemned? Do we not want great corporations with vast capitals? Assuredly we want them, for the sake of their economy and of their capacity for greater economy. With the element of monopoly taken out of them, they will become dynamic agents and contributors to general progress. The part of the protective tariff which we need to get rid of is the part that helps decisively to put the element of monopoly into them; and in that connection the worst charge that has to be brought against this part of the duties remains to be stated.

Protection and Progress.—Monopoly acts squarely against the continuance of that very progress which the tariff was designed to create. The entire defense of protection has rested on the dynamic argument, and the sole justification of the tax which protection originally imposed is the fact that it has given us industries which have, in themselves, the power to become more and more productive. It would be hard to deny that much of this increase in productive power, which the originators of the protective system anticipated, has been practically realized. The manufactures which have been carried through a period of weakness have actually developed competing strength. We have acquired the power to make things far more cheaply than any one could formerly make them, and the cheapening process still goes on. Our manufacturing centers are alive with machinery, much of which is of our own devising. Thanks to the progressive character of these industries, the waste which attended the introduction of them has been largely atoned for. On dynamic grounds, and solely on those grounds, has the policy of protection fairly well vindicated itself. And now we have come to the point where that saving element in the protective system is in danger of vanishing. Indeed, the excessive part of the protective tariff now acts positively to check the progress that it once initiated, for monopoly is hostile to that progress. The whole force of the argument based on mechanical invention and the development of latent aptitudes in our people now holds as against the monopoly-building part of the tariff. Keep that portion of a duty which is not needed to save an independent producer from foreign competition, which is needed only to enable the trust to charge an abnormal price and still keep the foreigner out of our markets, and

you build up a monopoly which is unfavorable to continued improvement in the productive arts.

Competition is the assured guarantee of all such progress. It causes a race of improvement in which eager rivals strive with each other to see who can get the best result from a day's labor. It puts the producer where he must be enterprising or drop out of the race. He must invent machines and processes, or adopt them as others discover them. He must organize, explore markets, and study consumers' wants. He must keep abreast of a rapidly moving procession if he expects to continue long to be a producer at all.

The Effect on Progress of Consolidation without Monopoly.—Does a monopoly live under any such forward pressure? Certainly not. It may make some improvements, for it can gain wealth by so doing; but it is not forced to make them or perish. Here we encounter a wide distinction that is in danger of being overlooked. A vast corporation that is not a true monopoly may be eminently progressive. If it still has to fear rivals, actual or potential, it is under the same kind of pressure that acts upon the independent producer—pressure to economize labor. It may be able to make even greater progress than a smaller corporation could make, for it may be able to hire ingenious men to devise new appliances, and it may be able to test them without greatly trenching on its income by such experiments. When it gets a successful machine, it may introduce it at once into many mills. Consolidation without monopoly is favorable to progress. With the element of monopoly infused into it, a great consolidation frees itself from the necessity for progress, and both experience and *a priori* reasoning are against the conclusion that, under such a régime, actual progress will be rapid. The secure monopoly may stagnate with impunity, and the reason why many corporations which have looked like monopolies have not actually stagnated is that their positions have not been thus secure. They have had some actual rivals and many potential ones. The part of the protective system which tends to make them more secure in their monopolistic position strikes at the most vital part of the industrial system, the progress within it, the element which adds daily to man's power to create wealth and enables the world to sustain an increasing population in an increasing degree of comfort. True monopoly means stagnation, oppression, and what has been called a new feudalism, while consolidation without monopoly means progress, freedom, and a constant approach to industrial democracy. One of the essential means of securing this latter result is the retention of so much protection as is needed to keep American ingenuity and organizing power alive and active, while abolishing that excess of it which fosters monopoly and does away with the necessity for exercising these traits. There will be disagreement as to the point at which the dividing line should, in particular cases, be drawn; a protected interest will claim a duty of fifty per cent where twenty would amply suffice and where every excess above this would be pernicious. There should, however, be no serious disagreement as to what we want—progress and the repression of monopoly which bars progress; and there should be little disagreement as to the principle to be followed in making a protective system contribute to these ends. It must assuredly not bar out the foreigner when the American trust has put its prices at an extortionate level and is using its power to crush all rivalry at home. The good effect and the evil effect of an excessive duty are quite distinct in principle, and the task that is before us is to make them so in practice. It is to abolish the monopoly-building part of the protective system.

The whole question of the relation of the tariff to monopoly presents debatable points, some of which cannot here be discussed. It is by no means claimed that an unnaturally high tariff is the sole means of sustaining monopolies, or that the reduction of it would leave nothing more to be done. A great corporation, as has already been said, possesses special means of waging a predatory war against local rivals, and its monopolistic power depends on these as well as on the tariff. With the foreigner forced off the field the trust can use with terrible effect these means of attack on local rivals. It is true, as we have seen, that its monopolistic power might be greatly reduced, without touching the tariff, by taking from it its command of freight rates and thus destroying its power to undersell rivals by means of the special rebates which it now receives; and its power for evil might be reduced still more by taking from it its privilege of cutting prices on its own goods in one locality while charging elsewhere the high prices which the exclusion of the foreigner enables it to get. Regulating trusts by these means only and without any change in the protective system would

require, on the part of the people, a long and hard struggle. It would require heroic persistence in a course of difficult administration. Success will come more quickly and easily if, while keeping a normal amount of protection, we abolish the abnormal part of it. The other measures for controlling trusts harmonize with this one and will work more effectively if they are used in combination with it. Together with this one they remove a barrier against progress and set in action a force that promotes it.

Without going into any intricacies one can see that, with the tariff at a normal level, the success of the trust in making money will depend on its efficiency as a producer; and the same will be true of its independent rivals. Again and again it will then happen that new rivals will appear, whose mills are far more efficient than many which the trust operates. They may even be more efficient than the best of the mills of the great combination. American producers and foreigners will be in eager rivalry with each other in seeking out means of reducing costs or—what is the same thing—increasing the product of a day's labor. Under the conditions here supposed, the trust will not be able to exterminate a really efficient competitor, and it will feel the stimulus of his rivalry in a way that will force it to be alert and enterprising in seeking and using new devices for economical production. The trust and its American competitor will alike feel the stimulus of the foreigner's efforts to surpass them both in methods of efficient production; and the outcome of it all will be a greater degree of progress—a more dynamic industrial world—than there is any hope of realizing while foreigners are excluded from our markets even when prices are there extortionate. Prices will be extortionate so long as the trusts are checked only by local rivals and are allowed to club these rivals into submissiveness. Keeping the foreigner away by competing fairly with him is what we should desire; but barring him forcibly out, even when prices mount to extravagant levels, helps to fasten on this country the various evils which are included under the ill-omened term *monopoly*; and among the worst of these evils are a weakening of dynamic energy and a reduction of progress.

CHAPTER XXIX

LEADING FACTS CONCERNING MONEY

Dynamic Qualities of Money.—The question concerning money which, for the purposes of the present treatise, it is most important to answer is whether general prosperity can be increased or impaired by manipulating the volume of it. Is money a dynamic agent, and can it be so regulated as to induce economic progress? These questions require careful answers.

Accepted Facts concerning Money.—We may accept without argument the conclusion that both theory and experience have reached concerning the superiority of gold and silver over other materials of which a currency can be made. They possess the universally recognized utility which makes them everywhere in demand. They have the "imperishability," the "portability," and the "divisibility" which are needed, and when made into coins, they have the "cognizability" by which they can, more readily than many other things, be identified and distinguished from cheap imitations. There remain to be settled the questions whether an expanding volume of currency is necessary for prosperity, and whether the expansion can better be secured by using two metals than it can by using one.

Effects of Free Coinage.—It is evident that when a government coins without charge all the gold and silver that are brought to it for that purpose, either metal will be worth about as much in the form of bullion as it is in the form of coin. If, for uses in the arts, an ounce of gold is worth more than the number of dollars that can be made of it, the coining of this metal will temporarily cease and some coins already made will be melted. Moreover, where both of the precious metals are used as money, neither of them can long be worth in a coin much more than is the bullion contained in the less valuable of the two. If a gold dollar will buy more silver than is needed to make a silver dollar, because of the higher value of the bullion in the former coin, silver will be bought and taken to the mint for coinage, while gold dollars will be melted. The gold will go farther in the way of paying debts when it is in this way exchanged for silver money.

The Effects of Inflation of Currency on Prices.—We are citing a further accepted fact when we say that, other things being equal, enlarging the volume of currency in use raises the prices of goods. By what particular mechanism this is brought about we do not here inquire. Not everything that is claimed under the head of a "quantity theory of money" is generally believed, but there will be little disposition anywhere to deny that, if no other dynamic movement should take place, adding fifty per cent to the volume of metallic money in circulation would make prices higher than they were before the addition.

Rising Prices and Business Profits.—If we assert, further, that permanently rising prices mean prosperity,—profits for the *entrepreneur* and a brisk demand for labor and capital,—we assert what, in the practical world, is too generally accepted. Sound theory and current belief are at variance on this point, and the current opinion appears at first glance to have the facts on its side. Periods of rising prices have actually been periods of prosperity. It is considered hard for either a merchant or a manufacturer "to do business on a falling market," and easy to make money on a rising one. This impression is entirely correct in so far as it concerns those fluctuations of price which occur suddenly and continue only briefly. What it is of great importance to know is whether a steady rise of prices which should continue permanently would mean permanent profits for the *entrepreneur*, and it can be asserted without hesitation that it would not do so if the final productivity theory of interest is sound, that is, if capital commands in the market a rate of interest which corresponds to the amount that the marginal increment of it will actually produce.

The Rate of Expansion of Currency distinguished from the Absolute Amount of Increase.—The extent to which any currency is capable of raising prices by a continued expansion depends, not on the absolute amount of that expansion, but on the percentage of enlargement that takes place

within a given time. Moreover, a given percentage of increase *per annum* may be maintained as well by one metal as by two. If the gold and the silver money of the world were each increased by one per cent a year, prices would have the same trend under a currency made of one metal as under a currency made of both. If, on the other hand, all the currencies were based on gold only, a change to a bimetallic system would at once make a single great enlargement of the volume of money; but after this the rate of enlargement would be no greater than it was under the single standard. *In the transition* from a gold to a bimetallic currency, we should get rapidly rising prices; after the change had been completed, we should have a currency expanding as before at the one per cent rate. If the volume of business were to increase at the rate of two per cent a year, while other influences affecting prices were to remain unchanged, the currency would not expand as rapidly as the demand for it, and prices would not only fall, but would fall at the same rate as if only one metal had been used. Use ten metals instead of two,—make coins of tin, platinum, copper, nickel, etc.,—and if the grand composite still insures the one per cent rate of general increase of metallic money, prices will vary as they would have varied with a currency of gold alone. Wholly transitional, under such circumstances, is the rise in prices secured by the adoption of bimetallism. It is gained by adding to the stock of gold now used for ultimate payments an existing stock of silver.

Why Metallic Currency of Any Kind gains, in the Long Run, in Purchasing Power.—In the long run, almost any metallic coin of a fixed weight will gain in its purchasing power. Silver would do this as well as gold; and so would a composite coinage made of ten metals. The law of diminishing returns applies to mining as well as to agriculture. The more silver you want, the deeper you must dig for it, and the more refractory ores you must smelt. The transmuting of a raw metal into finished articles becomes a cheaper and cheaper process; but the extracting of the metal itself becomes dearer. A larger and larger fraction of the labor that is spent in making wares of silver, of gold, of copper, or of tin must be spent in getting the crude material out of the earth. There are improvements in mining, as there are in other industries, and there are large improvements in smelting; but in spite of this the continual working of more difficult mines and of more difficult ores makes the getting of the crude material, in the long run, relatively costly. Since a coin consists chiefly of raw metal, we may therefore count on having before us a régime of falling prices, whatever metallic currency we adopt. The rate of the fall and the degree of steadiness in it will be greater with some metals than with others. The variations in the value of gold are, on the whole, comparatively steady. This metal fluctuates in amount and in cost, but the changes are less sudden than in the case of most others.

The Steadiness of the Change in the Purchasing Power of Money the Important Fact.—A second fact to be noted is that the best currency is one the purchasing power of which shall change, if at all, at a comparatively uniform rate. This fact is of paramount consequence, and the verification of it will repay any amount of study. It is not the rapidity with which gold gains in purchasing power, but the steadiness of the gain from year to year that determines whether it is the best money that can be had by the business world. A *change in the rate* of increase in the purchasing power of the coinage metal has a really disturbing effect; a steady and calculable appreciation does not. There exists in some acute minds what I venture to call a delusion about the effect on business classes of an advance in the purchasing power of gold that proceeds for a long time at a uniform rate. Conceding the prospect of a decided gain in the value of this metal, we may deny absolutely that, if *it is steady*, it plays into the hands of creditors, burdens the *entrepreneur*, blights enterprise, or has any of the effects that certain men whom we are bound to respect have claimed for it. Irregular changes of value would, indeed, produce these results. Let gold gain three per cent in value this year, one per cent next year, and four per cent in the year following, and injurious things will happen; but let it gain even as much as three per cent each year for a century, and at the test points in business life there will ensue the essential effects that would have followed if it had not gained at all.

This means that with a steadily appreciating currency the things will happen that make for prosperity. The debtor will get justice, enterprise will be safe, and wages will gain while industry

gains. The *entrepreneur*, in whose behalf bad counsel has lately been given, will best do his strategic work, not with that currency which varies in value the least, but with that which varies most uniformly. If it appears that gold is likely to appreciate more than silver, and to appreciate more steadily, it is decidedly the better metal. It is not inflation on which the *entrepreneur* permanently thrives, nor is it contraction through which, in the long run, he suffers; it is changes in the rate of inflation or of contraction that produce marked and damaging effects at the critical points of business life.

Loan Interest as related to the Increase of Real Capital.—How does a slow and steady appreciation of any metallic currency affect the relations of business classes? Does it rob borrowers and enrich lenders? Does it favor the consumers by giving falling prices, and hurt producers in the same degree? Does it tax enterprise and paralyze the nerves of business? The answer is an emphatic *No*. Steadiness in the rate of appreciation of money is the salvation of business. Not by one iota can such a slow and steady movement, in itself alone, rob the borrowing class. This is a sweeping claim; let us examine it.

It has been shown that true interest is governed by the marginal productivity of capital. As the utility of the final increment of a commodity fixes the price that a seller can get for his whole supply, so the productive power of the final unit of capital expresses what the owner of capital can get by lending his entire supply. This earning capacity expresses itself in a percentage of the capital itself. If the final unit can create a twentieth of itself in a year, any unit can get for its owner about that amount.

In assuming that capital earns a twentieth of itself in a year, we may use a commodity standard of measurement. A grocer's capital of twenty barrels of sugar may become twenty-one barrels, and his flour and his tea increase in a like proportion. In the simplest illustration that could be given of a capital earning five per cent a year, we should assume that each kind of productive instrument in a man's possession increases in quantity, during the year, by that amount. If he be a manufacturer, his mill becomes a hundred and five feet long, instead of a hundred feet. It contains twenty-one sets of woolen machinery, instead of twenty. The flow of water that furnishes power becomes by five per cent more copious; and the stock of goods, raw, unfinished, and finished, becomes larger by the same amount.

Of course, such a symmetrical enlargement of all kinds of goods could never actually take place, for some things increase in quantity more than others. The illustration shows, however, what fixes the rate of interest: it is the self-increasing power of a miscellany of real capital. If the mill, the machinery, the stock, grow in quantity at the five per cent rate, that is the natural rate of interest on loans of real capital. The lender gives to the borrower twenty units of "commodity" and gets back twenty-one. If marginal social capital, consisting of commodity and measured in some way in units of kind, has the power to add to itself in a year one unit for every twenty, lenders will claim about that amount, and borrowers will pay it.

How the Increase of a Miscellany of Goods has to be Computed.—How does the real earning capacity of capital in concrete forms reveal itself? How does the grocer know that he can make five per cent with the final unit of capital that he borrows? Not by the fact that each lot of twenty barrels of sugar gains one barrel, that each lot of twenty pounds of tea gains one pound, and so on. If there were to be such a symmetrical all-around increase in the commodities in the man's possession, his shelves, counters, bins, tanks, would have to enlarge themselves in the same ratio. In the case of a manufacturer the mill would have to elongate itself by one foot for every twenty, as in the foregoing illustration, and the machinery and all the stock would have to grow in the same proportion. The land and the water power would have to enlarge themselves by the same constant fraction.

Of course, such a thing does not take place. The general amount of capital goods of every kind enlarges; but the enlargement is in practice computed in monetary value, and in no other way. The whole outfit becomes worth more than it was. The increase in monetary value gauges the claims of

the capitalist. If the stock of goods has grown generally larger, and if prices have fallen, the claim of the capitalist will fall short of equaling the actual increase of the merchandise.

The increase in goods of different kinds is, of course, unsymmetrical. If the man is a manufacturer, his mill and his water power have probably not increased. He may have some more machinery, and he has more raw materials and more goods, finished or unfinished, than he had when he took his last inventory. If he has not more goods of these kinds, he has something that represents them; and the effect on his fortunes is as if the mill had stretched itself, and as if the machines and other capital had multiplied, all in the same ratio.

The man figures his gains in real wealth by the use of money. At the end of the year he makes a list of all his goods, attaches prices to them, and sees what the value of the stock has become by the year's business. He compares the total value in money of the goods on hand in January, 1907, with that of the stock of January, 1906. If he has bought and sold for cash only, and if during the year he has drawn for his maintenance only what he has earned by labor, the excess of value on hand at the beginning of the year 1907 informs him what his capital has earned during the preceding twelve months.

The Effect of Changes of Price on the Claims of Capitalists.—If prices have remained stable, the earnings of the capital as expressed in money will accurately correspond with the earnings as computed in commodity. It is as if the five per cent increase of the sugar and the flour of our first illustration, or of the mill and the machinery of the second, had taken place. It could then, by a sale, be converted into a five per cent increase in money. By selling the stock at its market value the merchant could realize five per cent more than the original stock cost him.

If money has gained one per cent in its purchasing power, or if prices at the end of the year are by so much lower, the inventory will show, in terms of money, only a four per cent gain. Now, the real increase of concrete capital is still five per cent, and that, by the law of interest, is what the capitalist can claim in commodities. This claim is met by an actual payment in money of four per cent. Give to the capitalist, in January, 1896, a dollar and four cents for every dollar he has loaned in January, 1895, and you enable him to command a hundred and five units of commodity for every one hundred that he commanded at the earlier date.^[1] You give him by a reduced monetary payment what is equivalent to the real increase of capital.

Practical Differences between Real Interest and the Increase of Real Capital.—It is the increase of capital in kind that fixes the rate of loan interest. Care must be taken not to claim for this part of the adjustment any unerring accuracy; for the marginal productivity law does not work without friction. With real capital creating five and a half per cent, the lender might get only five. When, however, the play of forces that fixes real interest has had its way and has determined that, in commodity, capital shall secure for its owners five per cent a year, that amount is unerringly conveyed to them by the monetary payments that follow. If, by paying four per cent as interest, the merchant, in the illustrative case, makes over to the lender of capital that part of the increase of goods that by the law of interest falls to him, four per cent is the rate that the loan in money will bring. This is on the supposition that the change in the purchasing power of money is perfectly steady. If it is unsteady, effects will follow that are of much consequence.

Changes in the purchasing power of a currency produce an effect on the rate of interest on loans of "money." If, with a currency of perfectly stable value, the interest on loans is five per cent, corresponding to the earnings of real capital, then a gain in the purchasing power of the currency of one per cent a year has the effect of reducing nominal interest practically to four per cent. The debtor then really pays and the creditor really gets the same percentage as before of the actual capital loaned. The borrower, the *entrepreneur* in the case, finds at the end of the year that he has more commodities by five one-hundredths than he had. He must pay the equivalent of this to the lender. With money of stable purchasing power it takes five new dollars for every hundred to do it; but with money that gains in its power to buy goods at the rate of one per cent a year it takes only four. The rate of interest on loans is, in the long run, reduced by an amount that accurately

corresponds with the appreciation of the monetary metal *wherever the appreciation is steady*. This law works with a precision that is unusual in the case of economic laws. Loan interest varies more or less from the marginal earnings of capital; but interest as paid in money accurately expresses interest as determined in kind by the play of economic forces.

Conscious Forecasts not necessary for Insuring the Adjustment of Loan Interest to Changing Prices.—It is possible that, where this subject has been considered, the impression may prevail that this reduction in the nominal rate of interest is the result of foresight on the part of borrower and lender. According to that view, both parties look forward to the time when the loan will be paid. The borrower sees that, although by means of his business he may have at the end of a year five per cent more of commodity in his possession, prices will probably have fallen so as to enable him to realize in money only four per cent. On the other hand, the creditor will see that with four per cent more in money he can, if he will, buy with his principal and interest five per cent more than he virtually loaned in commodity. He is satisfied with this increase; and, moreover, he is forced to adopt it, since the natural increase of real capital will not enable a borrower to pay more. The *entrepreneur* will stop borrowing if more is demanded. The whole adjustment is supposed to rest on a forecast made by the contracting parties and a speculative calculation as to the trend of prices. Now, while men do indeed consider the future, the adjustment that is actually made does not call for foresight. No conscious forward glance is necessarily involved therein. It is made by a process that works more unerringly than any joint calculation about the coming conditions could possibly do.

The interest on a loan that is to run through a period in the near future is based on the rate that capital is now producing. The evidence as to what that rate is must be furnished by the experience of the immediate past. It takes much experience, of course, accurately to determine how much the marginal unit of capital for the year 1895 has been worth to the men who have used it. This, however, has to be ascertained as best it can. It takes strategy on the part of both borrowers and lenders to make the loan rate correspond to the marginal earnings. Here there is a chance for economic friction and for variations from the theoretical standard, and the loan rate will sometimes exceed it; but in the long run the deviations will offset each other. In any case, the experience of 1906 fixes, with or without variations, the loan rate for 1907.

The earnings revealed by the experience of 1906 may be theoretically computed either in money or in commodity. Let us say they have been five per cent in real wealth, but by reason of the fall in prices they have been only four per cent in money. That, then, is the rate for a loan that is to run through 1907. If prices continue to fall at the rate now prevailing, the loan rate in money will correspond to the marginal earnings of capital for the latter year as accurately as it does for the former year. Bargain-making strategy, the "higgling of the market," may yield an imperfect result, and the lender of real or commodity capital may or may not get the exact real earnings of marginal capital of the same kind. *In translating the earnings of real capital for the earlier or test year into terms of money, the appreciation of the coins has unerringly entered as an element.* If the same rate of appreciation is continued through the following year, no deviation of the loan rate from the earnings of capital can result from this cause. Whatever deviation there is results from the other causes just noted.

In commercial terms a man borrows "money," and, by using it in his business, produces "money." He does this, however, by converting the currency into merchandise, and then reconverting this into currency. He gives to the lender approximately what the "marginal" part of the loan produces. If this adjustment is inexact, the lender will get less or more than the actual earnings of such capital. With money gaining in its purchasing power at a uniform rate, the adjustment is as exact as it would have been with money of stable value. The appreciation works unerringly in translating earnings measured in goods into smaller earnings measured in money. The loan rate approximates the earnings.

Effects of Changes in the Rate of Appreciation.—What happens if the rate of appreciation changes? What if gold gains two per cent in value, instead of one, during the second of the

periods? The capitalist will then clearly be a gainer, and the *entrepreneur* will be a loser. Getting five per cent in commodity as before, the business man, by reason of falling prices, will realize only about three per cent in money. His contract, based on the experience of an earlier year, makes him pay four per cent, and he loses one. Every acceleration of the rate of increase in the purchasing power of money plays into the hands of lenders. Every retarding of that rate plays into the hands of borrowers. If in 1907 the *entrepreneur* gets a three per cent rate on what he borrows, as based on the experience of 1906, and if the fall in prices is reduced during that later year to one per cent, the borrower will make a clear gain of one per cent; and this will recoup him for his loss in the earlier period. Moreover, after a long period of steady prices, the beginnings of a downward trend do not instantly affect the loan rate of interest. A period must elapse sufficient to establish the fact of this downward trend, and to enable the struggles of lenders and borrowers to overcome habit in fixing a new rate that will correspond to the new earning power of monetary capital. These facts explain what at times looks like a failure of the loan market fully to take account of the fall of prices during a given interval. What that market really does is to base the interest paid in one interval on the business experience of another.

Opposite Reasons for Favoring Gold as a Basis of Currency.—What, then, is our practical conclusion? Gold has surprised the world by its increase and by the rise in prices by which this change has been attended. The interest on loans has risen as the conditions required that it should do; but the rise in interest has lagged somewhat behind the rise in prices. The enlarged output of the precious metal has been comparatively sudden, and it has been this fact which has played into the hands of *entrepreneurs* and, for a brief interval, entailed some loss on lenders. When the adjustment of loan interest to the rising prices shall be fully made, neither of these parties will gain at the other's expense so long as the rise shall continue at the prevalent rate; but if the rise should cease as quickly as it began, it would be *entrepreneurs* who would lose and lenders who would gain. Loans running at rates fixed when prices were rising would be paid by an amount of money which would buy more commodity than the business would afford. With a reduction of the output of gold there will come a demand for some measure of inflation in order that rising prices may forever continue. Adding silver to the currency would, as we have seen, accomplish this purpose only temporarily. In the long run this metal is bound to appreciate like gold. Using paper money would have a temporary effect and would be a more dangerous measure. Waiting for a short time for a new adjustment of loan interest to the trend of prices would be the only rational course. Will the further fall of prices rob the *entrepreneurs*? They must pay only the rate of interest that capital earns. If that is five per cent, five they must pay, so long as prices are stable. With prices falling by one per cent a year, they will have to pay only four. Will the fall check business and make men afraid to buy stocks of goods? They can carry stocks as cheaply with a four per cent rate of interest and declining prices as they can with a five per cent rate and stable prices. Will it blight enterprise by making men afraid to build mills, railroads, etc.? Here again the loan rate of interest comes to the rescue of the projectors. If they can float their bonds and notes at a lower rate, they can build with impunity.

Steadiness is the vital quality in currency. Let its purchasing power be either unchanging or steadily changing in either direction, and justice will be done and business will thrive. If a metal fluctuates greatly in its rate of increase in value, it is a poor coinage metal, even though the average rate of gain be slow; if it gains slowly and steadily, it is almost an ideally good one.

What would be the effect of any practical measure of inflation? If we use as money available for all debts the present stock of silver in the world, we make one large addition to the volume of money now available. We start an inflation that cannot continue by the use of silver alone. In the hope of perpetuating the rise in prices we may follow the silver with paper. By the action of the principle that we have stated we shall thus make the interest on loans higher, and every man who buys a farm or a house while the inflation continues will pay a high rate of interest on an enlarged purchase price. When we are forced to stop the paper issues, as in the end we must be, the price of the land, etc., will fall, and the rate of interest on new loans will fall also. The price of all produce will go down, and the purchasers of property will struggle again, as in the years following the Civil War men had

to struggle, with a fixed debt, a fixed rate of interest, and falling prices. The early *post bellum* days will be reproduced. Entering on a policy of inflation would therefore be inviting men again to suffer what those suffered whose hard experience is so frequently depicted in Populistic literature. Conceding all that is claimed as to the evil that comes from buying or mortgaging real property while the volume of money is increasing and paying the debt so incurred while that volume is relatively contracting, one must see that a policy of inflation would end by inflicting exactly that evil on new victims, unless a method can be invented by which the inflation can continue forever. Far better will it be to endure the transient evil which a slow change in the supply of gold will bring. Retaining gold through all its minor variations will mean all the prosperity and all the justice that any monetary system can insure. If we shall ever abandon this metal, experience will make us wise enough to return to it; but we shall have paid a high price for the wisdom.

FOOTNOTES

[1] There is a slight compounding here to be taken into account. If commodity has gained five per cent, while prices have lost one per cent, the capital as measured in money has increased by three and ninety-five one-hundredths per cent instead of exactly four.

CHAPTER XXX

SUMMARY OF CONCLUSIONS

Perpetual change is the conspicuous fact of modern life. So revolutionary are the alterations which a few decades make in the industrial world as to raise the question whether there are economic laws which retain their validity for any length of time. If there are not, we have one economic science now, and shall have a different one ten years hence and a widely dissimilar one a century later. Of Descriptive Economics this is true, since it changes with the world it describes; but it is not true of Economic Theory. There are certain principles which are equally valid in all times and places. They were true in the beginnings of industry, are true now, and will remain so as long as men shall create and use wealth. They are not made antiquated either by technical progress or by social evolution. We have at the outset stated some of these truths. They have reference to man, to his natural environment, and to the interactions of the two, and they do not depend on the relations of man to man. We have also stated other economic truths which apply only to man in a social state. They are not universal, but are so general that they are exemplified in the economic life of every society, from the most primitive to the most highly civilized. They are the principles of Social Economic Statics, and in order to have them distinctly before us we have created in imagination a society which is changeless in size, in form, and in mode of economic action. In such a condition the wages of labor would remain fixed, as would also the interest on capital. Wages and interest would absorb the whole product of social industry; for the static condition, as we have thus created it, excludes profits of the *entrepreneur*. In broad outline this describes the condition toward which certain economic forces are continually impelling the actual world.

There is at each period a standard shape and mode of action to which static laws acting by themselves would bring economic society. This social norm, however, is not the same at any two periods. The static laws remain unchanged, but they act in changing conditions, and if they were left alone and undisturbed, would give one result in 1907 and another in 2007. The changes which a century will bring should make society larger and richer, the mode of production more effective, and the returns for all classes greater. The laws which set the standard of wages and interest will remain the same, but if the tendencies now at work have their natural effect, all these incomes will be larger. It is as though great quantities of water were rushing into a lake and causing disturbances and upheavals of the surface. If the inflow should now stop, the surface would subside to a general level. If the inflow should recommence, go on for a hundred years, and then stop, the surface would again subside to a level, but it would be higher than the former one. Yet *the laws of equilibrium which produced the first static level would be identically the same as those which produced the second*. Social Economic Statics is a body of principles which act in every stage of civilization and draw society at every separate period toward a static norm, though they do not at any two periods draw it toward the same norm. They make actual society hover forever about a changing standard shape.

The laws which govern progress—which cause the social norm to take a different character from decade to decade, and cause actual society to hover near it in its changes—are the subject of Social Economic Dynamics. We have made a study of the more general economic changes which affect the social structure, and they stand in this order:—

- (1) Increase of population, involving increase in the supply of labor.
- (2) Increase in the stock of productive wealth.
- (3) Improvements in method.
- (4) Improvements in organization.

All these things affect the productive power of society, and correlated with them and standing over against them is a fifth type of change, which affects consumers' wants and determines how productive power shall be used.

We have examined each single change by itself and have then endeavored to combine them and get the grand resultant of all. Beginning with the increase of population, we have traced its effects on wages, on interest, and on the values of goods. We have made a similar study of the growth of capital, the progress of technical method, and the organization of industry.

The variation of economic society from its static standard offers a problem for solution, and in this connection the type of change in which the most serious evils inhere is that which discards old technical methods and ushers in new ones. The question whether these evils are destined to increase or to diminish we have answered conditionally on the basis of past experience and present tendencies. If competition continues and labor retains its mobility, the evils will naturally grow less. The grand resultant of all the forces of progress is an upward movement in the standard of economic life gained, not without cost, but at a diminishing cost.

A vital question is that of the continuance of the movements now in progress. Do any of them tend to bring themselves to a halt? Is any change on which we rely for the hopeful outlook we have taken self-terminating? We have found that the growth of population tends to go on more slowly as the world becomes crowded, while the motives for an increase of productive wealth grow stronger rather than weaker. Technical progress gives no hint of coming to an end, and improvements in organization may go on indefinitely, though they will naturally go on more slowly as the modes of marshaling the agents of production are brought nearer to perfection. Knowledge of the causes of economic change is at best incomplete, and enlarging it by the statistical method of study will be a chief work for the economists of the future. Analytical study points distinctly to a coming time of increased comfort for working humanity. Progress gives no sign of being self-terminating, so long as the force which has been the mainspring of it, namely, competition, shall continue to act.

The suspicious element in the general dynamic movement is progress in organization. That which we have primarily studied is the marshaling of forces for mere production—the creation of efficient mills, shops, railroads, etc. This, however, carries with it a tendency to create large mills, shops, and railroad systems, and, in the end, to combine those which begin as rivals in a consolidation in which their rivalry with each other ceases. This means a danger of monopoly, and is the gravest menace which hangs over the future of economic society.

If anything should definitely end competition, it would check invention, pervert distribution, and lead to evils from which only state socialism would offer a way of escape. Monopoly is not a mere bit of friction which interferes with the perfect working of economic laws. It is a definite perversion of the laws themselves. It is one thing to obstruct a force and another to supplant it and introduce a different one; and that is what monopoly would do. We have inquired whether it is necessary to let monopoly have its way, and have been able to answer the question with a decided *No*. It grows up in consequence of certain practices which an efficient government can stop. Favoritism in the charges for carrying goods is one of these practices. Railroads have become both monopolies and builders of other monopolies. Certain principles, which we have briefly outlined, govern their policy, and the natural outcome of their working is consolidation. This creates the necessity for a type of public action which is new in America—the regulation of freight charges.

Akin to this is the necessity for keeping alive competition in the field of general industry by an effective prohibition of various measures by which the great corporations are able to destroy it. The dynamic element in economic life depends on competition, which at important points is vanishing, but can, by the power of the state, be restored and preserved, in a new form, indeed, but in all needed vigor. With that accomplished we can enjoy the full productive effect of consolidation without sacrificing the progress which the older type of industry insured.

The organization of labor, its motives, its measures, and its tendencies,—including a tendency toward monopoly,—we have examined. Through all the wastes and disturbances which the struggle over wages occasions we have discovered a certain action of natural economic law, and have seen what type of measures, on the part of the state, will remove impediments in the way of that law and enable it to act in greater perfection.

Connected with the dynamic movement on which the future of society depends are the policies of the government in connection with currency and with protective duties. Here, less action, rather than more, is demanded on the part of the state. While no renewal of a *laissez-faire* policy is possible, a reduction of the duties which now play into the hands of monopoly is distinctly called for. In connection with currency a greater trust in nature and a smaller reliance on governments will give the best results.

Our studies have included, not the activities of the whole world, but those of that central part of it which is highly sensitive to economic influences. The whole producing mechanism here responds comparatively quickly to any force which makes for change. This society *par excellence* is extending its boundaries and annexing successive belts of outlying territory; and as this shall go on, it must bring the world as a whole more and more nearly into the shape of a single economic organism. The relations of the central society to the unannexed zones are attaining transcendent importance, and a fuller treatment of Economic Dynamics than is possible within the limits of the present work would give much space to such subjects as the transformation of Asia and the resulting changes in the economic life of Europe and America. Here again the conscious action of the people determines the economic outcome. In the main we can still leave the natural forces of industry to work automatically; but we have passed the point where we can safely leave to self-regulation the charges of the common carrier, the conduct of monopolistic corporations, or certain parts of the policy of organized labor. Foreign relations are, of course, a subject for public control, and they are coming to affect in a most intimate way our own economic life. Everywhere our future is put into our own hands and will develop the better the more we know of economic laws and the more energy we show in applying them. The surrendering of industries generally to the state may be avoided, and the essential features of the system of business which evolution has created may be preserved; but to keep this system free from unendurable evils will require, on the part of the people, a rare combination of intelligence and determination. It will require a public policy that shall neither be hampered by prejudice nor incited by ebullitions of popular feeling, but shall be guided through a course of difficult action by a knowledge of economic law.

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