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PRINCIPLES OF ECONOMICS

BY

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VOLUME II

New York

THE MACMILLAN COMPANY

1925

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Set up and printed.
Published November, 1925.

Printed in the United States of America by
J. J. LITTLE AND IVES COMPANY, NEW YORK

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PRINCIPLES OF ECONOMICS

VOLUME II
THE DISTRIBUTION AND GROWTH OF WEALTH

BOOK ONE
DISTRIBUTION

PRINCIPLES OF ECONOMICS

VOLUME II

CHAPTER 1

THE PROBLEM OF DISTRIBUTION

§ 1. The word *distribution* is used by economists for three different purposes, each having a distinct meaning. In the first place we may mean by it the distribution of goods over territory, such as is effected in the course of marketing them. As we have seen already, this work of merchants is important, and in a very real sense indicates an act of production, of creating values, although ordinarily we associate production with the manufacture of tangible articles or with agriculture and mining. To distribute goods here means to bring them to the proper place. They must be shipped from point to point. They must be put into the hands of people scattered over possibly millions of square miles, so that distribution is equivalent to scattering. We contrast, as it were, a spreading out of things with their concentration at a particular point. This is one idea of distribution with which we meet, and most people would probably mention this first.

In the second place we may indicate by the word *distribution* that events do not happen evenly over a course of time, or that the number of instances in one class of events is more or less than that for another class. In this sense statisticians—who may at the same time also be economists—speak of distribution. What they really refer to is the relative frequency of happenings or of objects. For instance, we may group a hundred students according to the grade they get in class.

We may distinguish four grades, calling one *A*, the next *B*, the third *C*, and the last *D*. We may also assume that *A* indicates excellence and *D* failure, although that is of no importance just now. The crucial question for us then is, how many out of these one hundred scholars belong to class *A*, and how many to each of the remaining three groups. If we find out that ten get grade *A*, twenty-eight grade *B*, forty-five grade *C*, and seventeen grade *D*, we may call this a distribution of grades because the pupils' records are scattered, as it were, over the entire ground of achievement or of intelligence. There are 10% in the highest class, and 17% in the lowest, and that is one distribution out of many possible ones. For some purposes such an analysis is quite useful; indeed, nowadays we consider it impossible to do justice to all phases of economic activities without measuring statistically, without talking in terms of distribution as a synonym for relative frequencies. Whether it be prices or wage rates or different degrees of efficiency shown by workers in a factory, or mortalities among human beings or crops for successive years, we may be anxious to compare the number of things or events in each class after these classes have somehow been established; and we may also be interested in changes from time to time. Thus distributions in the second sense are just as worthy of consideration as processes in marketing commodities.

In the third place, we may mean by the term *distribution* the assignment of items of wealth to different people. We may wish to say that there is a certain total, such as a billion dollars, and that this total goes to a number of persons, perhaps to ten or to a much larger number. The question may then arise how these people obtain their share out of the grand total here assumed to be one billion dollars. To make an attempt at following this process by which the sum just mentioned is divided is also to study distribution. It is what we have in mind at this time. Economists are much interested in this problem. They are desirous of finding out how the income of society—of a nation es-

pecially—is apportioned among different individuals or groups. They realize that income is not the same for all. Like others they take it for granted that reasons for inequality exist. And in any case they are determined to see how the total is dealt out among all the producers or all the inhabitants of a country. When they speak of distribution, they may mean this fact. It is a case of property rights in goods or services, and of their *transfer* to different people. That is the third interpretation we may offer for our word, and that is the one which concerns us in the next chapters.

§ 2. Before we proceed however to state the nature of our task more exactly, let us first notice what is *not* to be done when we study distribution. Let us exclude three things from our survey which might possibly be confused with it.

For one thing, we are as scientists not interested primarily in exact amounts of money earned by a nation within any one year, or by particular groups within a country. Though a great deal of interest attaches to the relative amounts going to each social group, however defined, and though it is well worth our while to watch changes in the pecuniary income of nations, either by themselves, or relative to changes in population, these topics do not constitute our chief concern. The calculation of the monetary value of national output per year, and the distribution of this among individuals or special groups such as farmers versus manufacturers, or laborers versus enterprisers, is a distinct problem, and one of a quite incidental nature from the standpoint of *economics as a science*. However important it may seem for practical purposes, and whatever care we shall bestow upon the solution of it, we must regard it as of minor importance.

Secondly, when we discuss the distribution of the annual income of a nation, we do not, as a matter of fact, include everything in it that is really produced during the year in question. Though at first we might expect this to be the case, we shall find on investigation that some things are left out. We *exclude indeed every-*

thing that is not sold for money in an open market. Although goods of this sort are much in our mind, and form a not inconsiderable portion of the grand total of income boasted by a nation, we do not reckon with them in a distributive analysis. For reasons which will appear presently, economists have preferred—or rather have felt obliged—to define the income, the distribution of which is to be studied, as that stock of goods and services which is exchanged at a definite price, the value of which is measured in terms of money. If mother, for example, does a great deal of work at home, but is not paid a definite rate for each hour or for each piece of work done, her output does not enter the grand total which economists consider. However valuable her services for the family circle, they do not figure as a portion of that income which we must study just now. Produce consumed on the farm, errands by children, parental labors and indeed all sorts of work done for love's sake or for personal use, but not with a view to selling it in the market—these items we must bar from our consideration.

Third, we cannot properly pretend to be interested in the reason why a certain number of people get definite fractions of the value of any *one article, or of a service* rendered by a number of people jointly. If we buy a piece of soap and pay ten cents for it, we might conceivably ask how many persons helped to make it, and what each one of them received for his or her contribution. Or we might put all the participants of this productive act into a few classes, distinguishing between crude and skilled labor, or between chemists and merchants retailing the article, or between capitalists (providing funds so somebody could manufacture soap) and the rank and file of laborers employed for converting raw materials into the finished article. These are possible groupings of people who took a hand in the making of the soap. We might wonder how much of the ten cents we pay is assigned to each of the classes mentioned, or to any other we distinguish at the outset. But again this is not our concern. We are not obliged to

find out how the value of any one product is divided among those responsible for it. We do not ask who gets how much out of the price for a pound of sugar, a barrel of crude oil, a mile of railroad transportation, an hour's entertainment at the theater, and so on. Though this is a legitimate theoretical question, it will not be our way of treating the subject of distribution. No one unit of a product is the object of our examination.

To get at the real question before us, we do well first to bear in mind the sort of economic system amidst which we live. We must restate its outstanding features, though they have been pointed out before. In modern times, we noted earlier, there arose an individualistic system of economic activity which left each person his or her own master. This background prevails to-day among nearly all whites, and is slowly gaining recognition even among other races. We preach and practice private property, freedom of contract, of vocation, residence, association, and of marriage. These rights are shared by all individuals of adult age and in good legal standing—that is, when not debarred from their enjoyment by crime, imbecility, and so forth. Without these rights we should hardly be able to picture life, for they have been in force now about two centuries, though longer in some countries. Because these rights are possessed by everybody, production, exchange, consumption, and distribution are natural parts of a study of economics.

§ 3. What they mean for our present purpose may be suggested by a bare reference to older regimes and to one advocated now by socialists.

Originally, we may be sure, the income of a society was not divided precisely as it is to-day. It is safe to say that slavery arose early in the history of mankind, and lasted for many thousands of years. Whenever a number of people came together, marked inequalities were likely to lead to a grading of individuals according to their personal merits. There were doubtless masters and servants, and often these latter had no rights of

property, no rights of citizenship of any sort. They were dealt with as if chattels. They did invariably as they were told by the superior person or class. Social stratification meant such a sharp line of demarcation between men with rights and those with duties only. And if we add further that tribes frequently clashed, that one group conquered another, we have a complete explanation of serfdom or slavery in its crudest form. Indeed, up to a few centuries ago this difference between lord and serf or slave existed in all western civilization. It was characteristic of a thousand years of European history, and ceased to be important only toward the end of the Middle Ages. If anybody in those days, therefore, had tried to explain the distribution of income among members of society, he would have had a comparatively simple task. He would have discovered that one group (a small minority) kept as much of the year's output as it saw fit, and that the other took what was left. Without exaggerating a great deal, we may assume this to have been a leading feature. The masses received little more than sufficed to keep them alive; while the classes retained everything else, whether it was much or little. Even the wealthiest did not have much, compared to modern days; but at least they had the satisfaction of deciding who was who, and how much was to go to each party. Each manorial lord or owner of the tangible assets of production then in use preserved for himself a liberal portion of the wealth turned out during the year. His serfs or slaves had to be content with the residue. It was an arbitrary arrangement. Physical force was ultimately back of it, though on the surface lay hereditary privileges, class distinctions, forces of habit and customs, and so forth. Whenever force or natural superiority assigns to one group all the rights, and to another all the duties, we shall find the distribution of income simple. However we may lament such practices, they have the merit of leaving few baffling problems for a student of economic distribution.

But this system, of course, has long ago crumbled.

It is no more. Instead we may see the future through the eyes of a would-be reformer, of a socialist or communist. If we imagine all means of production, trade, communication, and so on, to be owned by a central government, or rather by the people electing this government; or if we imagine every item of wealth not for direct personal use to be owned and operated by a local community—if we start out with such a condition, we again have a distributive question different from the one actually existing. While such an arrangement lasts, we may expect the annual output of a nation or community to be apportioned among its members by mutual agreement. Perhaps each individual or family is allowed so much regardless of what he or she or it produces. Perhaps wealth is given out proportionate to contributions made. Perhaps age or sex or types of occupation or regional climate help to determine the amount of goods and services, or the quantity of money, granted to different individuals and social groups. But whatever the standard, it is easy to see that the allotment may be by common consent. We may distribute goods exactly as we assign political offices, using elections or lotteries or some other device for finding the right parties, the proper powers and privileges, duties and sacrifices. Possibly enough is set aside from the start to make taxation unnecessary; for surely, we do not have to keep what we individually produce, and then grudgingly turn over to the state a small fraction by way of so-called taxes. A socialistic or communistic order might find various ways for dividing the whole national income of each year. Whatever the details might be, we have to acknowledge that they would furnish problems and solutions not now familiar to us. We live in a different regime. We have a legal background only a few centuries old, and one which even now is not shared by all races.

§ 4. With this general truth in mind, then, we are now ready to understand that our notion of distribution as a part of the science of economics is deeply colored by the current rights of private property, and so forth,

mentioned a moment ago. Since every individual can buy and sell; since rights of occupation and residence leave us free to do what we like, and where it suits us;—since these ideals constitute our competitive system of enterprise and labor, it is possible to classify all claimants to a total social income or dividend in a peculiar and rather startling way. We may define the problem of distribution as it has never been defined before.

In fact, from what was said in connection with Production and Price, it is perfectly clear that there exist fundamentally but *four kinds of producers, and that their shares or incomes must form the chief subject matter for economists.*

There are two major groups, and two minor ones. There are workers who earn money by exerting themselves, by using muscle or mind, and there are others who need not lift a hand, yet receive payment for something. The former create value by manual or mental effort, as just remarked. They are obviously productive. We should expect them to be rewarded for their efforts. But those who do not live by personal effort are none the less considered productive if they do something else, namely provide land and loans. As things are to-day, we cannot deny this fact. Even though we do not move a muscle, we may render services. An owner of land furnishes soil which another may rent and operate. An owner of a million dollars may lend them and charge a fee for this privilege. Thus we have one major group of people who live on their holdings, on their property rights; and this class is customarily divided into two minor ones, namely, into landlords who lease out land for soil or site uses, and capitalists who grant loans in person or through leaving their surplus with banks and investment houses which then negotiate loans and remit an income to the owner of the funds. These two minor classes of people are productive without sweating at work, receiving rent and interest. But the first major group living by its personal efforts may also be subdivided into two, namely, into laborers and enterprises.

The former resemble landlords and capitalists in that they are paid at a fixed rate, under a contract which guarantees them so much per unit of service rendered. But they differ from them because they must work mentally or manually if they wish to earn a livelihood. The only striking difference between them and the enterprisers is the fact that they reecive a contractual income, which the enterprisers do not have. These latter are in a class by themselves, consequently. They are self-employing, obliged to work to earn money, and at the same time uncertain as to what their income per hour, day, or month will be. Because of this notable difference employees and self-employing persons may well be contrasted. It is customary, as we have seen, to speak of one as *labor,* and of the other as *enterprise.* Laborers and enterprisers constitute the two minor groups in the larger class of producers who earn their living by personal effort, just as landlords and capitalists (or owners of loan funds) form two sub-divisions in the major group which receives pay for leasing or lending its properties, but not on any other ground.

§ 5. The study of distribution, then, deals with the data or principles determining the net income of these four groups. Since our present legal background makes it possible to divide all producers into four classes, indeed prevents us from recognizing any other, the question is why each one receives a certain amount of pay. Laborers receive wages, entrepreneurs profits, landlords rent, and capitalists interest. Every producer must fall into one of these groups, though he may combine income from several services, as will be emphasized later on. What then fixes the rate of income for each? What factors are back of it at any one time, or at different times? If changes in income occur, how are we to explain them?

Generally stated, that is the problem of distribution. But we must, of course, admit at once that it may be impracticable to treat each class as a solid unit. In everyday life we do not ask why *all* employees obtain this or that wage, why *the* interest rate has risen or fallen,

and so on. We take it for granted that a number of types of labor exist, and that these may receive rates far apart. Similarly rentals and profits represent different kinds of landlords and enterprisers. In other words, it is a foregone conclusion that while certain principles govern all wages, all profits, all rents, and all interest rates, certain others are peculiar to particular kinds of labor, enterprise, leases, and loans. We know that the salaries of school teachers are subject in part to influences which do not apply to coal miners or bank presidents. We can easily find out from newspapers that the interest rate on loans made, say, by a stock exchange member, follows a course somewhat different from that for fifty-year bonds or even for three-month discounts. The analysis of distribution involves, therefore, really two sets of factors, namely one which helps to fix net incomes for each of the four classes just mentioned, and one which applies only or chiefly to some one sub-division within any one of these classes. On the one hand we ask why laborers in general receive a certain wage. We imply that they are all paid on the same principle or set of principles. Some conditions affect all wages at any one moment or during a given period. But on the other hand we also remember differences in rates of wage and wish to know whether these may be explained definitely, what special factors determine the wage for this or that group of laborers, such as mechanics, teachers, store clerks. etc.

§ 6. Another way, therefore, of stating this approach to the distributive process or to the principles underlying the distribution of the annual income of society, is to emphasize that all incomes are treated by the economists as prices in a loose sense of the word. When we try to understand the apportionment of wealth for any one year, we look at the *rates of exchange* governing four main classes of services or any sub-group which we may find it necessary to recognize. Plainly, every income springs from a sale. A laborer of any sort, a landlord, capitalist, or enterpriser sells his services for a definite sum. Though only three of these rates of

exchange are fixed beforehand (profits not being usually a subject for agreement between buyer and seller), all four net incomes must be connected with sales. If we do not sell our services in the market for money, we do not form a part of the producers whose income economists study. That has already been pointed out. So a good way of describing the nature of the distributive problem is to say that *it deals with the principles governing rates of exchange for services at any one time, or changes in these rates from time to time,* and when we use the word "services" we mean here the services of any one of four producer classes or of a particular sub-group within any one of them.

Of course, whether these incomes of labor, enterprise, capital, and land (as "factors" of production) can be treated as if they were prices *only,* is one of the moot points to be remembered. When we say that a lawyer or carpenter or teacher or retailer or banker or landlord is remunerated for his services, we do not necessarily imply that he sells them exactly as if they were sugar or lumber. Though there is a service of some sort, and though this is exchanged in an open market for money, we may not conclude finally that the ordinary rules of trade hold. Not only may we doubt whether a certain vocation represents labor rather than enterprise—as will be shown before long—but what is more important, we may find the facts back of such incomes different from those governing the price of bread or electric current. We must not start with the supposition that the distribution of the income of a nation is effected purely on a pricing principle, by a bidding among buyers and sellers who offer and take services as if they were concrete goods. That would be a mistake. We may find reasons for qualifying the thought that men earn money precisely and in all respects as they pay or obtain prices for goods. Even though we accept the legal background of modern days, and divide all money earners into a few classes only, we may explain distribution without clinging too closely to the notion of a price.

§ 7. Let us illustrate from earlier economic writings, before citing a few palpable differences between prices for service known as incomes and prices for goods or services recognized solely as prices.

A hundred years ago economists often explained the distribution of income among members of society in the fashion of David Ricardo, whose work can still be read with great profit on many topics. It was believed that the entire income of a nation went to only three classes of producers, one being labor, the second the landlord, and the third the entrepreneur who was not sharply distinguished from the capitalist, but instead was held to receive both interest on investments and profits from his personal efforts. These being the only three clearly distinct groups of producers, or factors in production, the income of a nation was apportioned among them as follows.

Laborers received enough to keep them alive, but very little more as a rule, for they were driven by a natural instinct of self-perpetuation to increase their numbers so rapidly that the world's food supply barely sufficed to sustain them. As had been noted during the eighteenth century there was a tendency among human beings to multiply as fast as the yield of the soil permitted. The more productive the land, and the more of it on hand, the earlier people married and the larger the families resulting from marriage. Thus the average wage earner was pictured as a man who cared little for standards of living, but was naturally prone to keep himself in such ignorance, poverty, and misery as a bare subsistence level entailed. If it was true that the great majority of people were willing to get along on the absolute essentials of life, or that numbers grew as fast as additions to food would allow, then wages could not rise, whatever might be the share of landlords or enterprisers. They could not, in fact, either fall or rise, for the one was prevented by their being already at a minimum compatible with existence, while the other was out of the question as long as employees or farm tenants adjusted the size of their family solely to the quantity

of food and a few essentials of clothing and shelter which their money could buy. Wage rates, consequently, seemed to be uniform for virtually all classes of labor, and to correspond roughly—though not of course precisely—to the trend of food supplies or of the productivity of land in any one country or the world over.

Landlords also had their income fixed because of the facts mentioned, but so far from suffering as a result, they prospered everywhere and might well rejoice in the plight of their more lowly brethren. As the contemporaries of David Ricardo saw it, rent rates varied directly with the density of population or inversely with the abundance of land. The more mouths that had to be fed, the better off was the proprietor of the soil; the fewer there were, the less could he exact from his tenants. While land was plentiful, rents would be low; but as soon as scarcity became marked, rent rates were bound to rise. All this followed from the two circumstances already cited, and from one other with which every one is familiar. The tendency of the human species to multiply as fast as food supplies permitted, and the fixation of most wages at a subsistence level, constituted one basis for the variation of rents regardless of what the landlord did; while the great *differences in soil fertility* provided the other reason for variations in rent. For now it was perfectly evident that some lands would be so bad as to be unfit for any kind of cultivation, hence would be left unused. Others again would be suitable for tilling, but could not bear more produce than sufficed to repay the worker for his pains and his costs in seed, capital goods, and so forth. This type of land, therefore, was likewise rent free. It could not yield a rent to the owner, for whether he operated it himself or let somebody else do so, it would not give more than a pittance. It would give, say, enough wheat to provide for next year's seed, for implements to be bought, and for a family which wanted only a bare livelihood; but it would yield nothing more. The poverty of this sort of soil thus made the levy of a rental impossible. But by comparison with these two worst classes of land all

others were capable of yielding a perceptible amount of rent, since they provided more than a bare subsistence. Any acre which yielded more than enough to keep a family alive (on a low level of consumption) could bear rent if the landlord insisted upon it. Since wage earners —generally speaking—multiplied as fast as a minimum allowance for dire necessities, they could not keep the surplus yields from superior land. Competition would shut tenants out from a share in the surplus, and if consumers as a whole refused to pay that price for foods which reflected the costs of production on the worst land, then they would in part go hungry.

The owner of land thus was in an advantageous position. He said in effect to the general public: "You pay enough for your produce, whether it be corn or wool or timber or meat, to cover the expenses of that farmer or tenant who works the worst soil. For if you do not, these toilers on the worst land will have to quit. Supply will be smaller, and some of you will suffer. Eventually you must bid enough for the produce to bring those who stopped producing back to their land. Competition among you buyers will have to work out in this manner." And to employees in city or country he said practically: "If any one of you will not work for a mere subsistence wage, somebody else among you will. The struggle for life will force you to this step; so it is just as well that you accept my terms in the first place. Those of you who cultivate marginal land yielding enough to sustain a family, but hardly any more, will have to pay no rent. Nobody can exact it from you. But if any of you live on better land, on supra-marginal land, you will pay rent, and this will be approximately the difference between what the no-rent or marginal land brings and what the other yields. This difference I the landlord, will pocket. Every proprietor will get this surplus, and I shall take mine like the rest."

Now, if this was so, if wage earners really received little more than a subsistence and if landlords could withhold most or all of the produce above marginal yields, then two things inevitably followed. For one thing, pro-

prietors would get the more, the scarcer the land, the denser the population per average square mile in a country, and the bigger the demand for food or other raw materials from the soil or from the mines and forests. The number of people to be fed and clothed must determine the quality of lands needed, and eventually every bit of land fit for use would be worked by some one, leaving either a bare subsistence wage, or this plus rent. But in the next place we can also understand that *net profits* were virtually fixed by this law of wages and of rents. Since the entire national income went to only three classes, the determination of wages and rents left automatically one part which fell to entrepreneurs. Dependent upon their number the profits for the average one might be high or low; but whatever that might be, the total profits could not rise while rents were rising. Manifestly there was a clash of interests between landlords and enterprisers or business men, and this had its basis in laws of nature which could not be modified or abrogated by man at will. Profits could be only a remnant or residual income which varied with the share going to employees and to landlords.

§ 8. Now, this rather simplified statement of an old theory of distribution has been made here to show that incomes for factors of production may be considered as prices from one standpoint, and yet find their explanation in ideas or facts that we do not associate with the fixing of prices for commodities. To judge from our historical illustration, factorial incomes are not, after all, real prices. That is, while we grant their originating in an exchange, we do not find them described by Ricardo and his disciples in that spirit. Plainly, incomes are peculiar kinds of prices.

For one thing, it is best to distinguish between prices as bundles of incomes and between these latter themselves. In nearly all cases a price for an article or for a service bought by consumers represents a *number* of prices for work done. If we buy a pound of sugar, we buy something produced by thousands of people *jointly*. As we have seen on another occasion, a long chain of

productive steps precedes the sale of almost everything made by man. Everywhere we find joint production, a coördination of efforts on the part of large groups of workers, a roundabout way of doing things, a manufacture of tools and machines preparatory to the making of something else which is the real end kept in view. Thus a pound of sugar embodies, not one price for the work of one person, but possibly thousands of prices, while by income we mean always a net income for some one person as representative of his class, or for an entire class such as laborers, enterprisers, and so on. Incomes, therefore, are single prices, while prices for commodities or such composite services as electric light, railroad mileage, and a musical performance are bundles of prices.

In the next place, we may perhaps object to having human services put on a par with lifeless merchandise. Without knowing anything about the actual facts underlying the distribution of income we might suggest that the work of entrepreneurs or laborers is not merely a commodity, is not in any sense comparable to it; and in this position we should not be wrong, considering the principles really back of the determination of incomes. As we shall see later on, there are reasons for our distinguishing between genuine prices and so-called prices for the services of land, capital, labor, and enterprise. In several respects the principles of supply and demand governing the price of ordinary goods and services do not apply to the fixation of wages or profits, and so the problem of distribution differs somewhat from that of pricing. We may say that competition works out in distribution as it does not in pricing. It is part of our task in studying distribution to note the departures from competitive biddings, to ask in how far the services of producer groups are determined by the same principles which obtain for commodity prices, and in what degree they are not.

In the third place, we may infer from the preceding remarks that in the analysis of distribution everything hinges on the facts *back of* supply and demand. Even supposing that we should find our answer to every ques-

tion in supply and demand, even granting that all incomes follow this rule of relative magnitudes or changes in magnitude for supply and demand—we should still have to inquire into the reasons *why* they vary from time to time, or what influences them at a given moment. Here, too, a difference between the study of prices and of distribution exists. In the former case we seek to ascertain how competition fixes rates of exchange when supply and demand are given, or when a change as such is noted regardless of its causes; in the latter case the causes back of supply relative to demand interest us very much. These ultimate factors varying supply and demand will receive attention in the distributive analysis.

With these general points in mind, then, we may now announce our plan for the study of distribution as follows: We shall first take up interest and rent because they resemble true prices more than do wages and profits. Interest will be considered before rent, though both need treatment along two lines. For in the first place we may wish to know why such a form of income as interest or rent exists, and in the next place we must try to discover what determines their *rates* at a given time and at different times. To account for the existence of an institution is one thing, and to show why it operates in a certain way or assumes certain proportions is another. Both aspects must be considered for interest and rent.

Then, after these matters have received attention, we shall discuss wages and profits which go to labor and enterprise, closing with a brief mention of some facts in the distribution of personal incomes. The questions here asked are, first, what fixes wage rates; secondly, what is the source of profits, and what conditions influence their rates from time to time; and third, how is the whole national income divided among all citizens of a state. Of course, as was admitted earlier, this last topic does not concern economists primarily. They deem it less important than the explanation of factorial shares of income for labor, enterprise, capitalists, and land-

lords. But it is nevertheless of practical interest and may in part be connected with principles effective throughout the world at all times. Thus a cursory examination of personal or family incomes forms a natural conclusion to our inquiry about producers' income resulting from an exchange of services for money.

Collateral Reading

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CHAPTER 2

THE NATURE AND BASIS OF INTEREST

§ 1. Interest is the price paid for the use of money which we do not own, but borrow from others. It is usually stated in percentages of a sum and in units of the currency prevailing in the country in question. In the United States, for instance, the rate is so many dollars and cents per each hundred. If we borrow exactly a hundred dollars, the rate being 5%, the price paid is five dollars. If we borrow a million dollars, the rate being the same, the total price is fifty thousand dollars. This price is always reckoned by the year, unless there is a specific statement to the contrary. Whether the loan covers a few days only or half a century, the rate refers to one year and is so understood. More exactly, therefore, we may define interest as the price paid for the use for one year of a sum of money, the price being stated in percentages of this sum and in units of currency legally valid in the country concerned. Interest rates invariably refer to a sum of money, not to specific items of wealth. They differ from rentals in this respect. Rent is the price paid for the use of land or natural resources which we do not own, but lease from others. It is calculated per unit of such concrete forms of wealth. We speak of a rent of one dollar per acre of land or per mine or part of a mine. But interest never relates to definite quantities of goods of any sort. It tells us only of sums of money which have been loaned out. These sums are the occasion for the price charged by the creditor or lender.

In insisting so sharply, however, upon the inseparable connection between interest and money we must make two reservations, lest we misapprehend the nature of

our problem. In the first place we must not assume that interest rates vary directly with the amount of money current in a country, for that is wrong. Whatever the relation between the two, it is not as precise as that. And in the second place we must not imagine money in this case to consist entirely of gold or silver. Though the precious metals *are* important, they do not figure alone. Rather, it may be either metallic or non-metallic, real money or virtual money. Metallic money consists, of course, of gold, silver, or less precious metals used as media of exchange. Non-metallic money is made up ordinarily of pieces of paper properly printed and issued by either a bank or government. Such notes are familiar enough nowadays. We have in the United States federal reserve notes, national bank notes, and so-called greenbacks. These are the most important, though not the only ones. Bank notes are the promises of banks, while our federal reserve notes represent government promises and circulate as legal tender. But in addition to these we make use of orders written out to banks, known as checks, or possibly of drafts, as in Europe. These orders indicate that the writer has credit with banks. He may have acquired it in various ways, as has been shown already.

But whatever the origin, this credit is as good as money. That is, if we have an account with a bank and are allowed to draw against it at any time, we may do this by means of a check written in favor of a third party. For many purposes such a check is virtually money, since it circulates like it and becomes a widely accepted medium of exchange. Interest, consequently, is a price for the use of money consisting either of coin or of bank notes or government notes, or of orders made out on banks with which we have liquid credit.

§ 2. This being understood, then, we must state our problem under two headings. We ask first, what makes interest, as such, possible, and secondly, what governs its rates and their fluctuations? Both these questions must be answered. The first is the less difficult, but the

second is the more important as seen by bankers or businessmen or economists who are interested primarily in truth for its own sake.

The reason for interest itself may, to begin with, be found in the very fact that governments *allow* it to be charged or paid. There is no doubt that it might be made illegal if we so desired. Indeed, for many centuries interest was looked upon as an unfair price which took advantage of unfortunate people. Until comparatively recent times the borrower was nearly always a poor man who could not sell his belongings so as to buy something else. In such straits he would go to a money lender and ask for a loan. The lenders were for the most part Jews, since Christians were not supposed to thrive on such questionable practices. All lending passed as a taking of usury, and usury was taboo. It was sanctioned by neither Church nor State. It expressed an uncharitable attitude toward a needy person, hence seemed wrong or wicked. Not till the fifteenth and sixteenth centuries was this position of leading minds changed. They then became more tolerant because borrowers ceased to be paupers or persons who had to tide over temporary difficulties. Increasingly credit was asked for purposes of conducting a business. An entirely new economic regime emerged out of the ruins of feudalism and its primitive methods of production. What we call the capitalistic, monetary or credit system arose by degrees; and so the objection to lending at a price subsided gradually. Credit became essential to business, and banking respectable as well as lucrative. Still, since this turn of events happened not so long ago, we might be impressed with the institutional character of interest. Beyond a doubt it *could* be abolished or declared criminal. Just as authorities tried for generations to limit rates of interest, so they might do away with them altogether. If we as a sovereign people were to condemn interest, there would be none. Of course its abolition might be anything but profitable. We might find the enforcement exceedingly difficult, as has been the case with some other laws which provoked the wrath or discontent of a

large minority. Nevertheless, a first explanation of interest *per se* must point to an official sanction, to the legal background of our modern economic regime. We approve of interest publicly; that is one reason for our having it.

This interpretation, however, does not go very far. Many of us take so much for granted. We ask: Given our modern economic organization and its legal framework, why does interest continue to be popular? Many things are permissible, yet not customary nor even attempted sporadically. What, then, are the more immediate grounds of interest?

When we pursue our inquiry in this spirit we come upon an element of cost—although for the most part of an unusual sort—and upon one of net gain as seen by a very important class of borrowers. These two facts explain interest itself better than anything else we might mention.

As for the cost of loans, it may be viewed from two entirely different angles, for in one sense it is physical and in another psychical. The physical costs can be established readily enough if we go into a bank. It is here that much credit is manufactured or a loan made to people. For reasons which just now need not detain us a commercial bank is able to advance money up to large amounts. But in granting them some expenses are incurred. A bank is a plant that operates because of labor done and of equipment used. There are salaries to pay out, taxes falling due, supplies used up from year to year, premises and buildings, and incidental outlays of various sorts. These items constitute costs to the corporation which runs and owns the bank. They must be defrayed from the proceeds of the year. It is argued, therefore, that interest rates charged to customers are in part, if not entirely, justified by costs. Just as a farmer or shoemaker or textile manufacturer demands a price for his services, so does a banker who lends funds. It seems reasonable that interest is asked, considering costs of the kind mentioned.

There is no objection to our explaining interest in this

way, provided we see at once that this does not touch the real core of the matter. For we may suggest at once that these costs are but details peculiar to one class of loans such as originate in banking. Since interest is not paid to banks merely, but also to the rest of us who do not manufacture credit nor deal in it professionally, how do *we* secure a price for loans? That evidently is the question.

§ 3. To answer it we must stress a psychic rather than a physical fact. We must point out that money is a value which we obtain by working or by rendering other services, and that this value is always convertible at a moment's notice into things we may use and enjoy personally. In other words, we must dwell on the aversion of most people to save money. In spite of the reservations to be offered presently we cannot overlook the dislike of many people to postpone consumption. Even if no risks whatsoever were involved in lending—a fact to which we must give due consideration after a while, in analyzing interest *rates*—even if the principal were absolutely safe, many of us would still be unable to grant it for the simple reason that we should not have the money. The majority of people do not possess loanable funds. They earn much or little and enjoy life, but they do not accumulate a fund of values such as money or check accounts in banks represent. If we like, we can say that people find saving hard, although that is not the whole explanation of the scarcity of money as seen from an individual standpoint. We can say that the thing demanded by borrowers is scarce. Whether we think of it as money or as capital or simply as a value fund, it is certainly hard to obtain. The demand is apt to exceed the supply. The ratio of these two, therefore, bears on the very existence of interest as well as on changes in its rate.

Economists discuss this fact under the heading of impatience or abstinence or time preference or *agio*. All four terms refer to the same principle. Impatience is the eagerness of people to enjoy to-day what their money can buy. Abstinence is the virtue of refraining from

consumption or of not spending. Time preference is the natural inclination to have wealth and pleasure to-day rather than to-morrow or next year. Most of us would prefer a thousand dollars to-day to fifteen hundred next year. Even if no risks attended the postponement, we might still prefer the smaller sum now to the larger one some time hence. That is the meaning of the phrase "time preference." *Agio* is an Italian word reminiscent of the money market on which creditors and debtors met (and still meet) to exchange present values for future ones. Such a contract involves action or a business deal, and that is the literal meaning at the bottom of the word *agio*.

So we come back to the widely accepted belief that many, if not most, people dislike saving irrespective of risks. To defer purchasing is to defer using and enjoying. It is not easy for everybody to reconcile himself to it. Undoubtedly our mind and memory is so constituted as to rate the present higher than the future. Man has probably always done that. In order to survive he had to respond to his immediate surroundings. Things nearby compelled him to perceive, think, and act. What was near in time was as crucial as what confronted him directly in space. Thus our valuations came to center in presence and proximates. Though memory went back far and imagination projected itself into the distant times ahead, sensation remained most vivid. The remoter the events are, the less strong our feeling about them, the less concerned we are. Hence the average man is by instinct disposed to emphasize the to-day, and to neglect or discount the to-morrow. The less disciplined we are, the more active our instincts and the weaker our reasoning or judgment; hence the more we prefer the present to the future. Races vary in their abilities to appraise impending events. A negro, for instance, is held to find saving well-nigh impossible. A dollar burns a hole in his pocket. Untutored tribes the world over live in the fleeting moment. Even the white man has his temptations and foibles when it comes to weighing the future against the present. One might

illustrate *ad infinitum* the aversion of men to deny themselves such pleasures as the spending of money brings. There is no doubt that loanable funds may be rare, and to a certain degree are rare, because people do not make the sacrifice of postponing consumption. Such a waiting is a kind of cost. It seems to give pain. It keeps on nagging us until we finally succumb and squander our tiny hoard of money, if we lack will power. Education and native strength of will are the best protection against such a proneness to enjoy now what our funds can procure for us.

Especially if we earn but a pittance, living from hand to mouth forever, or if we meet with accidents that reduce our savings to nil, are we disposed to value cash greatly. Loan companies and pawnbrokers prosper because there are always some people who cannot make ends meet, who find themselves for a while in straits, so that short-time loans must be made. Under such circumstances a dollar to-day is worth perhaps two to-morrow. The poorer we are, the more we insist upon money for necessities, if not for comforts. Hence a number of reasons may drive people to borrow at high rates. They not only take it for granted that some price will be charged for the service which gives them money, but they also expect to pay for it dearly. The preference of to-day over next year is exceptionally marked in such cases. We get the impression that people have no thought at all for the coming day.

§ 4. However, in spite of these situations which picture the impatience to consume so clearly, we must allow something also to debators on the other side. To enjoy now is not the only human trait. To postpone is, after all, just as natural for some people as to spend. A number of reasons suggest why people should save regardless of interest, that is, without insisting upon a reward other than having the principal itself. There is, for instance, old age and the reminder of infirmities coming with it. We shall think of this with some care, if not with trepidation, for none of us can work forever and earn money. If we have no friends to fall back on, we

must help ourselves early. We naturally anticipate these evil days and prepare for them by saving in days of plenty when earning power is at its best. Many of us do this without fail.

Furthermore, we are likely to reckon with accidents of diverse sorts, and protect ourselves against them, too. Occupational diseases, transient ailments, bodily injuries through maiming, sickness in the family, recurrent idleness through strikes, lockouts, or business depressions, these and other contingencies preach a mighty sermon. We resolve to prepare for "the rainy day." We are reminded by friends and relatives, by insurance companies, banks, and governments, that emergencies do call for outlays while leaving us possibly without employment. So we use foresight and save in prosperous times. More people possess this imaginative quality of being able to picture dark hours far ahead than we are aware of. It is a trait that offsets the primordial love of pleasure. On the one side the natural desire to enjoy and to gather at once the fruit of toil; on the other the warning voice which urges us to forego gratification, to save and to reap double benefits when sickness or idleness overreach us.

Again, not a few people save because of pride in financial independence. We know that it is a bitter pill to have to beg from others. Relatives are not always a sure refuge, nor do we particularly enjoy going to them first. Friends feel less obliged to help us with large sums, and are in fact approached last of all. As a rule we are more willing to take from strangers or from casual friends than from the more intimate ones or from immediate relatives. This may seem a perverse trait, a mode of reasoning not at all in consonance with our sense of relative moral obligations, but it exists nevertheless. Besides, we may not be disposed to live on *anybody's* charity. Few men are. The overwhelming majority detest such dependence and, therefore, are anxious to save something for the scanty days that are always possible no matter how flourishing the present.

But even if the dread of dependency were not real

among a great many people, we should still have to credit them with a pride in ownership in itself. There is no doubt that money attracts us peculiarly because it represents a counting device and a standard of values of the most definite sort. We are not half as determined to save wheat or cotton or lumber—supposing these could at all times be exchanged for other things—as dollars or pounds sterling. We are less systematic about saving goods, because these cannot be measured so nicely, compared so easily, nor thought of as readily as stocks of currency. Treasure is most enticing when of high intrinsic value per unit amount, when definitely computable, when wanted or used by everybody with equal appreciation. Now, money fulfils these requirements. It is universally welcome. It permits us to express every addition or loss of value in commodities. It can be accumulated in gold or silver, or in tokens which theoretically may be converted into standard metal. Money consequently is in a class by itself. It is better than platinum or diamonds, even though these are worth more per unit quantity. It is better because it refers to exact units of value which we can count and quickly compare with the possessions of other people. This arithmetical function of moneys lends them an odd charm. To say that somebody owns a thousand acres of land or many tons of coal, or blocks of houses or an infinite number of bales of cotton is to express wealth; but to say that Mr. So-and-So is worth a corresponding sum, say of a million dollars, is not only to mention values, but to suggest in a single phrase both the power of money, the ability of the person to get almost anything he wants, and the hugeness of the fortune which had to be built up from the first penny to the last. *Growth* is apparent in piling up dollars. It impresses us here more than in the extension of real estate holdings or of other forms of tangible wealth. And this idea or feeling of growth is popular with most of us. We like to save when growth becomes noticeable. The first thousand dollars is the hardest not only because we start with nothing but also because we have yet to be introduced to the idea of a

steadily climbing sum. Once the first thousand is ours we *know* that saving gives results. We know that two and two make four, since every dollar added to the preceding one raises the grand total. This proof of gradual growth and of our ownership of things calculable to the last farthing is another incentive to save. Many of us are thrifty for the sake of this steadily increasing wealth and the measurable power that goes with it. We should save even though interest were not paid on capital.

Furthermore, if we wish to overlook this item as being not the loftiest among human traits, we can instead emphasize a common regard among men for their next of kin. This desire to leave something for the family is no less a reason for saving than the expectation of a price for loans. Indeed, we cannot be too sure that people would not save for this one purpose alone. Parents do love their offspring strongly. Such ties of affection impel thrift by prompting self-sacrifice along many lines, one of which is the postponement of consumption with a view to having more for children to spend at a later date. The accumulation of fortunes may thus be said to spring from a natural love among relatives who leave to one another their savings when they die, or shortly before. Inheritance, while not a necessary right of property, nor a custom which has existed in all periods of human history, is none the less a fairly natural provision. It reflects feelings and ideals of mutual aid that are most in evidence among people united by ties of blood. To give this help or to make others happy, many people are desirous of dying well-to-do, even though the principal brings no returns.

In the case of men with big incomes we shall of course expect savings anyhow. Such people do not really forego anything when they grow richer. Having a liberal allowance to start with, they find it easy to live below their possible level of living. Instead of spending everything the most natural thing is to use up a portion only, the remainder going to places where it keeps on growing as the years roll by. We may assert with some ardor, then, that capitalists are inevitable as long

as wealth is distributed unevenly. Capitalism in this sense is a by-product of a highly efficient social economy which enables some people to earn enough to make it virtually impossible for them to spend it all in riotous living.

§ 5. But letting the matter of time-preference rest, and passing over now to a very different aspect of the situation, what can we say about the *raison d'être* of interest as seen by the *borrowers?* Supposing that lenders themselves do demand a reward for loans, justifying them by difficulties of saving or anything else they may think of, why is it that the borrowers are *willing* to humor this demand? Clearly, though loanable funds are rare, they are not valuable unless somebody wants them. Only if desired for definite purposes do they bear some rate of interest. What makes them so desirable?

The case of poor people who need funds for consumption cannot be offered as a sufficient explanation, for such loans play a minor rôle. It is doubtful whether 5% of all funds borrowed nowadays among western nations spring from this need. The shiftless person is not the one who keeps banks busy or provides an easy income for bond holders. On the contrary, the biggest debtors are necessarily well-to-do people who, precisely because they have large funds of their own, are "good risks" for professional lenders or the general public. It is the man of means who must give the last answer to our question. He explains why interest is offered, just as impatience accounts for the demand of the would-be lender.

We come thus to the opinion that *interest is made possible by the advantage producers of wealth derive from borrowed funds.* There is a claim to interest better even than temptation to spend, and that is ability to produce more after a loan than before. That is the main point.[1]

In the first place loans may help us to produce kinds of wealth which otherwise might be quite impossible. They may be our sole means of increasing our variety of goods after inventions have pointed the way. Sup-

[1] Compare with Vol. I, ch. 18, section dealing with functions of credit.

pose a manufacturer wished to make automobiles, but lacked the requisite funds for buying materials, factory sites, machinery, labor, and so on. As a matter of fact enterprisers often are in this position. They are capable and willing to start in business, but cannot finance themselves. Well, then, under these circumstances our manufacturer naturally casts about for help from outsiders. He tries to obtain funds from third parties. Let us at any rate go on this assumption. By utilizing these funds, amounting to all or a large part of the million dollars put into the plant at the start, he is able to offer the public a new vehicle of locomotion, a new species of wealth which represents gratifications of use and possession hitherto impossible. It is safe to say that the great majority of people welcome this accession. They are glad to buy the car at whatever price is set. That is, a certain percentage of consumers buy at this price; and they do so chiefly because of the novelty of the car, because of the extra enjoyment experienced in handling a new piece of utility. Human nature always craves innovations, provided they do not bring bodily displeasures or ideas and sentiment hostile to the generally accepted ones. From a social standpoint, therefore, this increasing variety is itself a gain and would justify paying a little to those who, while not actually constructing the car or its parts, helped to make it by providing the requisite funds. Interest is paid and seems reasonable to many of us. We want this new kind of product and express our appreciation of help from owners of ready cash (or of goods bought with the cash) by allowing them an interest. How much, is not now the question.

Secondly, however, we are also safe in presuming that the use of capital lowers expenses of production, thus again promoting the general welfare and adding to the income of nations as a whole. For instance, we saw earlier [1] that a law of size obtains in all fields of production except the primary industries. This law or principle expresses a relation between amounts of space and of products. It reminds us that increasing quantities

[1] Vol. I, ch. 9.

of materials and of labor power concentrated upon some one point yield more than proportionate increases in net results. If we do not want merely to turn out a fixed amount of goods per year, but instead wish to find the minimum of space going with a maximum of output, we must experiment and enlarge our scale of operations continually up to the point where additions of space cease to give more than proportionate net gains in a volume of goods or in their value. Whatever this commodity or group of commodities, we find some one scale which is most economical. It necessitates concentrating our technical means of men, power, and materials upon one spot. It means localizing our efforts. But as long as we are willing to add to the classes of goods made under one management, as long as our basic methods are not rigidly defined beforehand, so long added allowances of space within a single area ensure us savings, that is to say, a net gain in productivity which more than offsets additions to space. Spatial concentration, in short, lowers the ratio of costs to products. Costs fall, up to a certain point, and this fact urges men naturally to magnify their scale of production if they can procure the necessary materials and energies.

The law of size thus is a powerful incentive to enterprisers who wish to reduce expenses. Assuming for the moment that the social rather than the individual viewpoint is adopted by a producer, we may explain his willingness to pay interest on borrowed funds in this manner. Let us say the article, when made on one scale, is sold for one dollar, and when made on a larger scale, for ninety cents. Let us also assume that the other items of expense and profits change as follows:

Price	Labor Outlay	Gross Interest	Other Expenses	Rate of Profit	Annual Output	Annual Profit
$1.00	$0.50 (½ hour)	$0.00	$0.30	$0.20	5,000	$1,000
$0.90	$0.20 (⅛ hour)	$0.10	$0.30	$0.30	15,000	$4,500

On this supposition the result of enlarging the plant by borrowing a certain amount of money or capital is, first, a fall of ten cents per article sold to consumers;

second, a reduction of labor time to one third, as well as a rise of 20% in the *rate* of wage per hour, equal to ten cents per half hour; third, a new expense of ten cents per article, due to the loan of capital which made the enlargement of output per year possible; fourth, a rise of the *rate* of net profits from twenty to thirty cents; fifth, an increase in annual output of 200%, and sixth, a rise of annual net profits for the entrepreneur of $3,500. These changes take place only because capital is used in the second case, and not in the first; and this capital represents machinery, and so forth, bought with the proceeds of a loan which costs for the average article ten cents. From a purely social standpoint, therefore, the justification of the interest payment lies in the fact that more goods can be turned out per year with a constant amount of material and power, or that labor costs in point of time, energy, and wages are reduced from fifty cents per article to twenty cents. The extra outlay for interest is thus overbalanced by a saving in time, by a rise of the wage and profit rate, and also by an increase of profits per annum. The interest rate includes charges for wear and tear of capital goods used, besides paying the owner of the money, with which the capital goods are purchased. Labor time is lowered per article, but this does not mean idleness for the average employee. He simply becomes more efficient and adds to the aggregate of utilities turned out per year. And finally the consumer gains whenever he buys the article in question; for this is now cheaper by ten cents. Plainly, as far as the general public is concerned, this change through the introduction of capital and credit is a marked advantage. Even if personal motives play no part in the loan for purposes of business expansion, the new interest burden is a blessing in disguise, since it materially augments the income of society in the kind of commodity here at issue.

Still, it is of course true that from an *individual* standpoint interest payments may be justified by facts of entrepreneur profit alone. There is no doubt that business men consent to interest charges because loans enable

them to produce goods more cheaply without being obliged at once to lower prices correspondingly. Enlarged scales of production or improved methods based on a purchase of patents—or whatever the procedure may be—these advantages make possible a larger output per annum and a lower cost per average commodity, yet may not compel the producer to lower his price. As we have already seen,[1] at any given moment it is maximum expense that helps to determine the price at which things are sold in the open market. Only in the long run do superior methods lead to so large an increase of output that supply covers demand, thereby tending to bring prices down. Eventually inefficient enterprisers are eliminated, or else must toe the mark set by innovators who improve methods and start lowering expenses. But for a brief period the efficient man has his own way. He may sell at precisely as high a figure as his less fortunate rival. He pockets a differential gain, and because he expects it, he is also willing to share a portion of his gain with capitalists who make lower costs possible for him. By this route, then, an individual criterion justifies charges of interest.

Lastly, even though differential profits are not in sight, business men may agree to an interest charge because it permits them to start an enterprise and to earn profits before it is feasible otherwise. This gain in time, which brings a gain in earnings, may be the immediate occasion for borrowing. Men are frequently prompted by such considerations; and it must be added here that even in such cases the general public may be benefited no less than the borrower of funds. Broadly viewed the use of capital for the creation of material wealth or of, say, public utilities, is advantageous to all consumers. As regards the existence of interest as such, there is no great difficulty in explaining it. But it remains now to account for the rise and fall of particular interest *rates,* and that involves more factors than have so far been mentioned.

[1] Vol. I, ch. 24.

CHAPTER 3

THE RATE OF INTEREST [1]

§ 1. In discussing *rates* of interest as against the reason for interest itself, we must first of all make a distinction between gross and net rates. The former are usually quoted in the business world and concern the average person. What the practical man wants to know is the price he will have to pay when he makes a loan. Since he frequently goes to banks for this purpose, and since bankers are the leaders of private finance, these quotations are the most familiar. We expect to be told of a number of rates, not merely of one, and we care little whether they are net and "pure" or gross. Table I is condensed from a more detailed one given in a monthly publication of the Federal Reserve Board in this country. The rates are for New York City for one month during the fall of 1923. We find there rates for prime commercial paper discounted for customers, for similar paper bought in the open market, for loans among banks, for bankers' acceptances which represent pledges of a superior sort, for stock exchange loans based on collateral, and for loans secured by Liberty bonds. These are the six principal classes shown. But there are further subdivisions according to the length of time that loans run, and also according to whether bankers' acceptances are endorsed or not. The difference in rates for most of these subheadings is slight, but as between the very highest and very lowest rate given in the whole Table it amounts to about 75%. The type of security, the duration of the loan, and the question whether loans are between bankers on both sides or between one banker

[1] This chapter may be read profitably in connection with ch. 18 of Vol. I, and chapters 10 and 15 of this volume.

and his customers in business, evidently influence interest rates.

To state this same thought differently: The rates here given and ordinarily quoted by business men comprise more than interest in the strict sense of the word. Gross rates include expenses of lending met by banks. They may allow for wages of management claimed by such bankers. And most important of all, they cover the element of risk, which may be great or trifling according to circumstances.

TABLE I

DISCOUNT AND INTEREST RATES FOR OCT. 16 TO NOV. 15, 1923, NEW YORK CITY

(Federal Reserve Bulletin, Dec. 1923)

Prime Commercial Paper Customers						*Prime Commercial Paper Open Market*					
30-90 Days			4-6 Months			30-90 Days			4-6 Months		
H.	L.	C.	H.	L.	C.	H.	L.	C.	H.	L.	C.
6.5	5	5.25-50	6.5	5	5.25-50	5.5	5	5-5.25	5.25	5	5-5.25

Interbank Loans			*Bankers Acceptances, 30-90 Days*					
			Indorsed			*Unindorsed*		
H.	L.	C.	H.	L.	C.	H.	L.	C.
6	4.5	5-5.5	5.5	4⅛	4⅛ to 4.5	5.5	4⅛	4⅛ to 4.5

Collateral Loans, Stock Exchange									*Ordinary Loans Secured by Liberty Bonds*		
Demand			Three Months			3-6 Months					
H.	L.	C.	H.	L.	C.	H.	L.	C.	H.	L.	C.
6	4.5	4.75-6	6	5	5-5.5	6	5	5.5-6	5.5	4.5	5-5.25

The rates we are usually told about, therefore, *vary* in the main because risks differ and have been covered by a special premium. Bankers particularly have ways and means for making such estimates of relative risk, charging prices accordingly. As some put it, the test is a combination of character, capital, and capacity. If men are honest and enjoy a good reputation as moral citizens, that is in their favor. If they possess some capital which they may offer as security for a loan or which indicates their solvency and ability to meet unforeseen stress, that also is an advantage. And again, if they show qualities of mind and temper which vouchsafe

them success in the end, however dark the outlook for an undertaking at first, this in itself may ensure them a large loan. Men with funds to lend want to be sure that their debtors mean well, are well off, and can do well in their chosen field. The alliteration above mentioned is thus not as fanciful as it perhaps sounds. It is a fairly adequate statement of the essentials for safety in lending.

Of course, we may measure risks differently. It is customary, for example, to emphasize security, to inquire into its nature, and into the amount of debts already existing at the time a business man asks for more credit. The kind of product turned out may also be a help or hindrance. It may be a staple quickly marketable, or it may be a novelty or luxury whose market value varies a great deal and can be realized only under favorable conditions, say during a period of boom. In that case the product is not the best for the lender. He will wonder whether receipts will be regular and sufficient. Net income after all is important. The higher it is per dollar of actual investment, the lower the interest charges per gross revenue, the better the outlook for the parties in the transaction. In a number of ways risks may thus be tested, gross rates ranging high or low conformably to these tests.

§ 2. If then we have little or nothing to do with gross rates, our real problem may be formulated as follows: We must ask ourselves what determines the interest rate remaining after allowance is made for expenses, wages of management, and risks. Supposing that the loan is not made by a banker, but by ourselves who have a few savings. Or supposing that bankers ignored risks, and costs of running their plant, what would then be the interest rate? What factors are responsible for the net rate, and what variables account for its changes?

We may take it for granted, of course, that net rates vary as well as gross rates, though not as quickly perhaps; and we may also admit at the outset that interest rates are the resultant of two sets of forces, one of which is supply, while the other is demand. Like prices for

goods, prices for the loan of capital express relative magnitudes of supply and demand and their variations with time or place. When we ask about the reason for net interest rates, we really ask about the variables back of the supply and demand of capital. It cannot be otherwise. But what are these variables, and how do they fit into the economic system of which capital and credit form an integral part? That is the subject to which we shall now turn.

§ 3. As regards the *demand side* of capital, and thus of interest rates, we do well to repeat the earlier observation that virtually all loans are made for productive purposes. They are made by business men chiefly. Consumers who need to tide over a moment of poverty or borrow habitually in advance of the day when their wages are due, represent but a small fraction of the aggregate of loans. These we may here ignore, however interesting their motives from a sociological standpoint.

Borrowers may be divided into three main groups, namely, governments, business concerns turning out tangible wealth or intangible services such as amusements, public utilities, and so forth, and in the third place professional merchants, most of whom deal in goods or ordinary services. Capital correspondingly will be needed for many purposes. When business men borrow they may spend the funds for land and buildings, engineering works, machinery and tools, raw materials and accessory supplies, finished consumption goods meant to be resold, power and light, and laboring skill. While it is customary, therefore, to speak of borrowed money as capital, we must not confuse this with capital goods used for the production of other goods or services. Capital as understood here is not necessarily a set of tools or real estate. It may not refer to any technical aids associated with manufacture or mining. It consists of all sorts of forms of wealth, including the goods which employees buy with their wages. Out of a loan wages may be paid, and these will later on be converted into staples such as food or household furniture. Everything that money can buy may be needed by the

man who borrows money. A better word for "capital" thus would be the phrase "loan-fund," and since we usually think of a nation as the natural unit of a social economy, we may identify a *loan fund with that grand total of money or virtual money which can be borrowed in some one country at a given moment or in the course of a year.* The real question then is how large a loan-fund or sum of money (metallic, paper, and bank credit) is available relative to demand at same one interest rate or at rates which, though varying somewhat, are nevertheless close together. *Net* interest rates depend upon these fluctuations of supply and demand for capital as a loan-fund.

One of the most important factors in the regulation of the demand for loan-funds is, of course, the profit which enterprisers count on because of the loan they obtain. The brighter the prospects for winnings, the more eager they are to borrow. They are governed either by a prevailing rate of profit, or by experience in the immediate past. From these data they reason forward to the immediate future, unless special considerations urge them to expect a certain profit rate regardless of existing conditions. As some observers, therefore, have stated, the principle: *The demand for capital varies with its productivity.* The more productive capital is, the more it is valued and the more determined people are to borrow if they lack sufficient funds of their own. That certainly is a reasonable opinion when men enter business for the purpose mainly of earning money or developing a big business by means of large profits.

We should not, however, commit the error of taking the word "productivity" too literally. It need not mean a specific quantity of concrete goods or of gross values. These two definitions of a product may be wrong because business men aim primarily at net profits, not simply at maximum efficiency as judged by quantities of production. It is well known that farmers or manufacturers may increase the volume or value of their output, yet reduce their net earnings at the same time. Merchants, too, may lower net gains even while doubling sales per

year. So it is best to define productivity as net profit per unit of article or services turned out. The higher this rate of profit, the keener the desire to produce and to borrow money so that output may be augmented.

But even this does not explain fully what is meant by the idea of productivity or productiveness. For in the next place we must be careful not to connect it with a particular number of dollars borrowed. We do not intend to say here that entrepreneurs experiment with definite amounts of capital in order to see how they affect net profits. There is no attempt at measuring the net gain, first for a thousand dollars, then for one thousand one hundred or for fifteen hundred, and so on. Business men are not in a position to determine exactly what each dollar or each additional dose of money accomplishes. They do not increase and decrease amounts in order to find the best yield. Nor do they ordinarily weigh the difference between spending money for more labor or for more machinery. And least of all do they make sure that the productivity of their plant is attributable actually to investments as such rather than to their own management or to changes in economic conditions. If we picture them as being engaged upon such problems we get a wrong notion of the bearing of productivity in loan-funds upon net profits and hence upon a demand for further capital. Men do not pretend to be so exact in their measurements.

What they do is approximately this. They notice that profits run high and believe they will continue to do so for some time. In view of this fact or opinion, they look for means of "making hay while the sun shines." Not possessing enough money of their own they go to others for help. They say that their investments yield a pretty penny. They seek to show that expansion will raise the rate of profit or at any rate not lower it. They argue that an additional lump of money, say a thousand or ten million dollars, (according to the nature of their business) will bring economies somehow and raise profits. The new capital demanded is credited with the increase of profits rates, if realized.

The trend of economic events in any one country, therefore, is a rough indication of how much capital will be sought by entrepreneurs.

For instance, if by demand we mean a demand for long-time investments serving the creation of tangible commodities and particularly of technical equipment or the improvement of real estate, inventions of any practical significance tend to increase it, since they raise profits over a more or less extended period. For one thing, they make possible a reduction of expenses by technical improvements which affect either the entire productive process or certain phases of it. The producer saves in the output of raw materials, or in the use of accessories, or effects marked economies in the employment of power, or labor in the mill, or of clerical help in various branches of administration. He reduces expenses materially perhaps, and yet does not have to lower the price of the finished article correspondingly. As we have seen, prices for a while conform to the outlay of the least efficient enterpriser. Supply, adjusted to this demand, is reflected in maximum prices, regardless of what differences in costs exist. Since the consumer pays enough to keep the marginal or weakest producer in the field, the stronger ones reap an extra harvest. They are able to accumulate large funds for the time being. Years may go by before patents expire or secrets leak out or other factors encroach upon the differential profits of the most favored enterpriser. In this way inventions intensify the demand for capital. Besides, if we like, we can stress the fact that they frequently necessitate a scrapping of expensive machinery, thus involving a real loss which emergency loans must offset, although in the long run the fall of costs and the relative growth of the profit margin justifies this apparent waste. So here again technical progress makes unusual demands upon lenders.

For another thing, however, invention may mean chiefly a new kind of service or commodity for personal use. It may not improve methods of production so much as add to the variety of things consumed. Every staple now known to us was a novelty once upon a time. The

nineteenth century particularly gave us a long list of new forms of wealth designed to raise our economic level of living. Most of our present manufactures and public utilities, and not a few of our pastimes and professional services, originated in this era. We need only to think of such familiar items as the bicycle, telephone, telegraph, automobile, railroad, or moving pictures, phonographs, automatic musical instruments, scientific apparatus, mechanical tools for the factory or the household, home appointments, and our modern reproductions of art, in order to be impressed with the great variety of things introduced in recent generations. When they first appeared, they not only were novelties, properly speaking, but also aroused people's curiosity and fetched high prices irrespective of expenses. That is to say, at first, expenses were less determinative than later on. Supply was limited and calculated to try out the will of consumers. Since risks are great and notions of correct market values not yet formulated clearly, entrepreneurs must and can charge enough to provide a liberal margin of net profits, assuming that goods can be sold at all. In such cases, therefore, capital may be eagerly sought for the sake of rapid expansion, of improvements to lower expenses, of the possibility of eliminating rivals, and so forth. Consumers pay for high interest rates by allowing entrepreneurs a profit considerably above the ordinary. Business records are full of instances of this sort.

§ 4. But, of course, invention is not the only possible occasion for a demand for loan funds. While it is undoubtedly true that epochs of declining inventiveness reduce demand, and those of rising inventiveness increase it, other factors may act upon it even in the absence of important inventions, or when the rate of technical progress is steady and slow. Thus a discovery of new natural resources gives a fillip to industry. It arouses the enthusiasm of virile men and daring pioneers. It urges people to exploit nature and to transform useless raw materials into welcome utilities. While rates of profit may remain the same, the aggregate

grows, and aside from that, the very prospect of reaping a harvest in new fields impels men to go to work. The American continent is a good example of what an abundance of resources means to capitalists at home or abroad. Both in North and in South America vast tracts had to be cultivated during the last century. Immense mineral deposits, timber stands, and sources of hydraulic power were disclosed to man. There was not enough skill, scientific knowledge, and machinery on hand to meet these opportunities. Natives and white settlers looked to Europe to supply loan funds which were paid in exports of finished materials if not in the shape of specialized services unavailable in the western world. Thus the demand for capital exceeded supply. Interest rates remained high for many years. The prodigality of nature and the youth of the country fostered enterprises which necessitated gigantic loans.

Price levels,[1] too, may exert an influence upon the demand for capital. Curious as it may seem, demand from this standpoint raises levels of price, and this in turn calls for further loans, so that a kind of vicious circle is before us. Since a great deal of capital is borrowed from banks which, as stated earlier, pay usually in paper money or by checks accepted widely in lieu of real money, one result of a brisk demand for loan funds may be a rising price level. Without attempting to explain the process here, let us assume at any rate that a rise does take place, for historical data substantiate this view. Since levels, then, do rise and the purchasing power of money falls, two things happen. On the one hand more dollars thereafter are needed to buy goods, and so enterprisers must ask for a greater loan to achieve a constant amount of work in their plant. This in itself accounts for an absolute increase in demand of capital, though it does not imply that offers of capital will not increase in proportion. That often is the case. But on the other hand, prices move up at unequal rates for different goods and services. Some prices rise quickly and decidedly, others slowly and not so much. Wages

[1] See ch. 11.

especially lag, that is, are raised later than prices of finished articles. Hence the margin between expenses and prices is widened, inasmuch as wages form so conspicuous a part of expenses in many fields of production. Enterprisers thus are encouraged to go ahead. The demand for capital increases beyond the ordinary, and interest rates may reflect this trend.

However, these are factors back of demand as observed over a considerable period of time, say over a decade or two. Yet demand may also vary for short periods, as admitted a while ago. There are short-time loans as well as long ones placed usually by way of bonds. Merchants of all sorts are the chief sources of a demand for loans extending nominally or actually over only a few months, perhaps over a few days only. Some interest rates, therefore, can be explained better by conditions changing rapidly or applicable to only some one financial center, than by lasting influences affecting an entire nation.

Wholesalers and retailers, for instance, need money constantly to move goods. They buy on credit or arrange a credit with a bank to obtain merchandise which is resold at a profit. The demand for capital of this sort is influenced by whatever bears upon marketing and commerce. If times are good, consumption is large. Wares may be sold easily and at a high rate of profit. Dealers lay in large stocks and borrow unconcernedly. They ask for much, and for a time get it without difficulty. Again, there are seasonal fluctuations to reckon with in business. These, too, spring from many sources and affect the movement of interest rates for temporary loans. And lastly—aside from periodic and rather variable needs of governments both in times of peace and during wars—there exists a regular demand for funds in certain large cities where securities are traded in. Bonds and stocks are bought not only for investment, but also for speculation. They are capitalized values; that is, they represent future incomes as well as outlays of the past. A stock is worth more or less according to dividends declared or to net profits earned by a com-

pany. A bond, too, may vary in value with the solvency and reputation of the issuer, though not as much so as a stock certificate.

So these securities form excellent material for people who wish to get rich quickly or to save themselves from a disagreeable loss. They are offered at central markets known as stock Exchanges. In New York City, for instance, members of the Stock Exchange trade in stock either for themselves or for customers in all parts of the country. They buy and sell and do this largely with their own money, or rather with funds provided by a bank. To take a common case, an out-of-town client may wish to buy a hundred thousand dollars worth of a certain stock, but lacks the cash for immediate payment. So he goes to a broker who negotiates the purchase and furnishes the bulk of the funds. The broker probably carries an account at a bank. He has money or titles to money there. But in addition he makes an arrangement with the bank to help him out in order that the client may be satisfied and he himself procure a commission on the deal. The client probably is required to pay only 10% of it, which is known as the "margin." If the stock declines on the market the broker usually asks for more funds from his customers, since the stock is then less of a security. Similarly the bank insists upon further cash from the broker, if necessary. But in any case this account is only a small fraction of the value of the stock bought. A bank in turn, demands from the broker about the same margin that is paid to him by the customer, namely, 10%; the remainder it furnishes by way of a loan. It does this by allowing the broker to draw a check which it "certifies," thus making it good at the Exchange where the stock is for sale. The stock itself is collateral for the bank as well as for the broker who borrowed most of the funds on behalf of his client. Loans of this sort are generally terminable at a moment's notice, hence have been dubbed "call" loans. In practice they do not run more than one day, although renewable under ordinary circumstances.

These call loans, then, constitute another demand upon

the capital of the country. Just before the war the amount used daily in New York City was about $25,000,000, while the volume of dealings in securities was not far from a billion dollars annually. Loans for speculative purposes thus represent a special, but not an altogether negligible, phase of commercial credit or of the general needs of traders. A number of conditions govern people in their ventures at the Exchange. It is hardly possible to specify them or to show why they change so rapidly from day to day. But we do know that the demand for call loans fluctuates very much according to the actual or expected trend of security values. If we could assume the supply of funds loanable at banks to be constant, these variations of demand would determine directly the interest rates paid on call loans.

§ 5. But, of course, the *supply* of capital, too, is subject to changes. It is variable like demand, and for definite reasons.

In the first place we must remember that, as suggested on an earlier occasion, capital flows from three principal sources. It springs either from savings, or from a business surplus, or from credits extended by commercial banks. Savings are an annual surplus from personal income. If our earnings per year amount to five thousand dollars, and we fail to spend more than four fifths of this, one thousand dollars is saved. It is the fruit of economy or of thrift. It is something which theoretically or in reality we might have spent for enjoyable things such as food, travel, theatre parties, and so forth, but have laid aside in instalments as we were being paid our salary or received income from other sources. In general people think of capital as the result of such savings, and they are not exactly wrong.

But we have seen that a certain amount may consist of net profits which business men do not put in their own pockets for consumption nor divide among stockholders who legally are entitled to them. Joint stock companies and corporations have increasingly in recent decades made it a practice to set aside a reserve out of the year's net earnings. Instead of giving them to share-

holders in the form of dividends they have withheld a certain percentage. At one time virtually all would be kept; in the next, one half or a quarter; and in a third only one tenth or nothing. In the United States the corporate surplus has been estimated to have been in 1910 about one and one half billion dollars; in 1914 over six hundred millions; in 1918 two billions, and even in 1920 which turned out to be a year of a serious economic depression, approximately one billion and a quarter.[1] Undistributed profits, therefore, must be considered an important second source of loan funds, under existing conditions. Business firms who have such a surplus temporarily place it in banks or buy securities with it, which is to say, lend it to others. They may for years carry such accounts without giving stockholders a chance to express their opinion on the matter.

Incidentally, a surplus of this sort differs from personal income in one notable respect. As long as it remains a *reserve* controlled by the officers of the corporation or company it becomes entirely or almost entirely a loan fund at banks or in the open market. It does not lie idle as cash nor fail to be available for would-be borrowers. But if this part of the net profits were divided among the rightful owners by way of a dividend we could not be sure how much of it would be offered on the loan market. As far as the recipient of a dividend understands it, he is entitled to spend his money as he likes. He may buy consumption goods with it or invest it. In the latter case he purchases securities himself, or deposits the money in commercial or savings banks, or in trust companies acting as commercial or savings banks. Or he may buy an endowment insurance policy, or patronize building and loan associations. There are many ways for him to invest his funds, thus entering them as a part of the capital of the country. But on the other hand he may spend all of this dividend in comforts and luxuries. In a sense every dollar of dividend may be so disposed of, for the total quantity of consumption goods and services is a rather flexible one.

[1] See Friday, D., *Profits, Wages and Prices*, ch. 5.

According to our policy we may engage men in rendering us personal services or by buying public utilities and concrete goods. If we decide to have a good time with our dividend, we keep people busy waiting upon us and producing luxuries. But meanwhile we have nothing to lend, nor do we add directly to the technical means of production which are usually increased by loans out of savings or a business surplus. Hence, while undivided profits are nothing but potential personal income out of dividends, they differ from it. They are transformed entirely into loan funds *via* investment or bank deposits, while dividends may or may not become a loan fund according to the mode of living of the recipient.

In addition to savings and business surplus, however, we have also bank credits as a third source of loan funds.

The former two serve mainly the purpose of creating tangible forms of wealth or public utilities. When enterprisers need money for many years and in large amounts, they issue bonds which are bought by investment institutions or by private individuals directly. Savings and an appreciable portion of undistributed profits thus help to create production goods, as intimated before. They are spent for raw materials, machinery, real estate, power, and labor. They add to the technical aids employed in the production of wealth.

Bank credit, on the contrary, is used for the most part by merchants and dealers in securities. Though one quarter or one third has been shown to fill investment needs of a permanent sort, there being no immediate returns from the expenses incurred, the bulk of commercial loans still facilitates trade. In other words, while long-time loans made possible by savings and by a large part of business surplus further the creation of new wealth, short-time funds offered by commercial banks chiefly promote the exchange of goods already in existence. Dealers buy wares on credit, going to banks for loans. The transfer of ownership in merchandise is based upon such credits. Commercial banks, as we have seen, depend upon the confidence the general public

places in them even more than upon cash deposits from customers and their own assets. On the one hand they gather the primary loan funds of thrifty savers and of business firms who do not divide all their net profits. Besides, they use their own capital stock and surplus. But on the other hand they lend out what they do not have. They extend credit by way of bank notes and deposits subject to check which circulate freely in lieu of real money. This new medium of exchange has the effect of unlocking reservoirs of capital which otherwise would not be available. Commercial banks consequently represent a third source distinct from the other two. In so far as their loans exceed the cash deposits left with them by savers or business firms who do not distribute all their profits, they mean a net gain to prospective borrowers.

§ 6. But if these three sources of loan funds do exist, what follows for the explanation of interest rates on the supply side? What determines the size of a nation's loan fund at a given moment or in the course of a year, and what variations may be expected relative to changes in demand? These questions constitute the second part of our study of the *supply* of capital.

From the standpoint of the average individual the principal variable back of the supply of capital is undoubtedly the degree of impatience which people show. The more tempted they are to spend their money, the harder it is for them to resist, and the smaller the surplus at the end of the year. In all countries the majority have so slender an income that it is easy to spend everything for ordinary creature comforts. Wants are so great, and the powers to satisfy them so slight! Even in the United States, the wealthiest country on earth, 90% of all persons gainfully occupied earned in 1918 less than $2,300, while 75% did not have more than $1,500 per year. Under such circumstances the innate desire to enjoy things to-day rather than to-morrow or years later must be decisive. There is a constant inclination to spend, if prudence and will power do not call a halt. We may say, therefore, that the size of the loan fund

(in so far as originating in personal income) varies with the natural instinct for pleasure and with the measures taken by responsible parties to counteract it. If the population is made up chiefly of uneducated people, savings are small. Again, one group lays aside more than another, not perhaps because it earns more, but because its craving for enjoyable goods and services is not so intense, or because it has learned to master its passions. At different periods of a nation's history, time preference may be changed in proportion to ideals of life or to the extent of public and social control. At one time authorities will deplore any signs of extravagance. They inculcate a spirit of economy. They point out that waste brings want, that one needs less than is believed, that national prosperity is imperilled by reckless expenditures. There are such periods of frugality which rest on religious creeds or traditions inherited from days when thrift was absolutely essential. But at other times we may live gaily and thoughtlessly from hand to mouth in spite of a generous income. An entire nation may give itself up to orgies of spending. Nothing seems too good for the rank and file. Lack of reverence or of a sane view regarding the real meaning of life may prompt men to ignore future responsibilities. Our educational system may run counter to a spread of economy. Political maxims or a strong emotional wave born of bitter disappointments may encourage the great majority to live up fully to their visible means. Thus non-economic facts of various sorts constitute variables back of the supply of one part of capital. Indeed, at all times, degrees of impatience, however changeable they may be, influence interest rates. That is not to be denied.

Even with this individualistic viewpoint before us, however, we are bound to make certain reservations.

For one thing, namely, degrees of time preference are not measurable. Psychologists have not yet devised an apparatus or discovered a method by which a pain of abstinence can be measured. While we know beyond the shadow of a doubt that some people save more

easily than others, and that successive epochs in human history reveal waves of thrift and of prodigality which borders on wanton waste, we cannot compare these variations quantitatively. All we can say is that differences exist, and that something may be done to make them less pronounced. Prolonged mental discipline, a strict regulation of our mode of living by governments, effective propaganda by the clergy or by public schools, —these may develop forethought in us. To a certain extent a concern for future needs may be fostered and made beneficial. But we have no means of judging supplies of capital by varying intensities of impatience manifested by a population.

In the second place, a good bit of what passes for disinclination to postpone consumption is really a fear of losses. People refuse to save because they realize the risks of piling up money or purchasing power and do not wish to assume them. They are afraid of dying too early, of being cheated by banks, of losing on bad securities, of having prices rise so high that their old-time earnings are worth little. These apprehensions persuade people to spend immediately what they have. In spite of counter arguments which lead to vast savings in the hands of perhaps one half of all bread-earners, many others prefer to be branded as spendthrifts. Risk rather than a longing for the pleasures of the day diminishes savings.

Third, it is hardly fair to speak of a pain of abstinence for those who have very large incomes. To earn ten thousand dollars per annum in the United States, for instance, is to have enough and something to spare. While we cannot prove that a family so placed might be prone to spend everything, neither can we credit them with a great power of will for saving a portion of the total. Thus, there is always a small fraction of the population which experiences no trials in accumulating fortunes. Millionaires are sure to save, whether they think of it every day or not. Even though they imagine that as a class they can devote all their dollars to the purchase of enjoyable things, actually they do not want to

do so. A relatively small portion of the year's earnings fills so many personal needs that the greater part becomes a surplus without any effort or suffering whatsoever.

Fourth, as regards business surplus and bank loans, these evidently have relatively little to do with degrees of impatience. The former consists of undivided profits. Consumers as such have not yet been given their dividends. They are not allowed to claim their own. So there can be no temptation to spend. What is not in our purse is not ours to give away. Neither are the officers of the firm permitted to dispose of the surplus otherwise than on behalf of stockholders, or for credits at a bank. In any case, there can be no talk of sacrifice such as a private person may pretend to when saving his own income instead of taking a vacation with it or buying something for his family. And as for the capital created by commercial banks, this is only in small part—or in a very loose sense—a fruit of abstinence, as is suggested by the origin of most of their loans.

§ 7. We must repeat, then, that the explanation of the supply of capital through thrift or personal time preference is inadequate. It helps us partly, but does not cover the whole ground. On the other hand, there is much to be said for taking an objective viewpoint, for considering loan funds in the light of conditions which belong to the economic system as a whole. Not inborn traits, but acquired practices, social factors, and public policies,—these account largely (though again not exclusively) for the rise and fall of interest rates in every country.

As regards savings, one item to be noted is the distribution of income among all the members of society. The more equal it is, the more apt people are to spend their money for current needs. We may picture the situation as follows. If the annual income of a nation consists in appreciable part of capital goods, land and improvements, somebody has to take these in payment for his services. Somebody must own them, and it is not the poor man, for he needs all or nearly all of what he

earns for ordinary comforts. He necessarily spends the lion's share of his income for food, clothing, health service, a little education, and so on. These are consumption goods which he must have and which strip him of most of his wages. But the rich man has all these things and in addition much more. He cannot spend everything on consumables, for then the average man would be unable to secure his allowance. While people with big incomes may buy more consumption goods than the small earner, adding luxuries to necessities, much of it comes to them in the guise of capital goods. Machinery, buildings, engineering works, or whatever has been produced by a nation in the course of a year, are turned over to big earners in effect, though not in name. When they say they earn a hundred thousand a year, they really imply that they get one part in comforts and luxuries, and the rest in the technical equipment just mentioned.

In this sense the size of loan funds is *partly* determined by the distribution of personal incomes, or by the ratio of capital goods to the total income of the population. The more of the former, the larger the latter can be, for the biggest part of capital is borrowed by men who wish to buy means of production, that is to say, technical equipment of the kind referred to a moment ago. When we look at our problem objectively, therefore, we have to admit that some people so far from deciding solemnly to save and undergo hardships, are compelled to save because they cannot secure enjoyable goods and services with all of their money anyhow. In *part*, the size of the loan fund hinges on the relative quantities of capital goods and raw materials already in existence, or on the range of distribution of wealth and income expressed in terms of money.

Nevertheless, this does not tell us anything about the business surplus and the variations of *bank credit*.

The magnitude of the first may be said to vary, first, with the net profits of a concern—and these depend upon factors not now at issue—and secondly with its financial

policy. If the board of directors of a corporation is ultra-conservative, it looks constantly for mishaps or losses, and "writes off" beforehand large amounts. Some entrepreneurs have the reputation of being extremely cautious, of being always solid financially, of owning more than their books or reports show. Others do not heed experiences of the past, but go ahead serenely and divide all or nearly all of their net earnings among themselves or their shareholders. There may be special reasons why they do so. Again, something depends upon the general trend of business at the time. In prosperous years a surplus can easily be realized. It may seem advisable to withhold a part from the members of the stock company. It may prove fine diplomacy to keep outsiders in the dark as to current earnings. Questions of taxation may be involved incidentally. But at other times the need of a reserve is slight. Possibly no improvements for the producer are in sight. Perhaps the period of boom is still before him so that he expects to meet all expenses with ease, including interest charges, depreciation, and unforeseen outlays. In short, it is difficult to reduce the variations of business surplus to a few principles. The nature of the product itself may be just as decisive as the age of the firm or the temperament of the presiding officials or the outlok of business in the world as a whole. We only know that the surplus will be permanent and large if the concern in question earns more than it can possibly re-invest on the premises or spend on expansion in other fields. In that case much is offered in the market for loans to others.

Finally, as regards bank capital, the determining elements in it are of a still different nature. We must here point to facts which are altogether independent of the ones so far cited and, furthermore, bear upon short-time loans much more than upon such as are covered mainly by savings or business surplus. If by interest rates we mean bank rates for ordinary commercial credits or for speculation in securities, these vary with banking means and methods and their super-

vision by governments rather than with personal thrift or the amount of undivided profits.

Costs or expenses of production also occur in the manufacture of bank credit. Banks need land and buildings to do their work. There are furnishings within, and sometimes sumptuous ones. Machinery and supplies such as stationery, ledgers, losses from bad debtors,—these and other items make banking less easy than is sometimes supposed. However, it is true that such expenses cannot influence the supply of loan funds from commercial banks very much. It is not limited by them, as the output of wheat or of textiles is subject to costs imposed by nature or by the physical laws governing all secondary industries. Thus costs of production should *not* be mentioned as a determining factor in the variations of the supply of loan funds.

§ 8. The real determining forces on the supply side, if we refer to bank credit rather than to the savings process which is the second principal source of loanable capital, are the perennial need of cash among traders, public policies regarding currency and credit, and the prevailing mechanism or technique of banking within any one country. These three items must be taken seriously, no matter what our final verdict on the law of interest rates.

Since a certain amount of metallic money has so far always been necessary in business, and probably always will be, one main question in the analysis of capital and of fluctuating interest rates is the total quantity of money possessed by a country. All other things being equal—though that is not usually so—this volume of metallic money influences interest rates to some extent. If it varies markedly, movement in interest rates may be expected sooner or later. In spite of the often stressed truth that rates do not correspond exactly to changes in money, there does exist a loose relation between the two.

Of importance for present purposes is therefore the output of gold and silver from mines, as these two metals are either both standards or else serve most commonly

as a medium of exchange when a commodity of intrinsic value is desired. If the mineral output rises or falls materially from decade to decade, this may affect not only the size of loanable funds, but possibly also the trend of interest rates. Exports and imports too are of moment. The former may exceed the latter, or vice versa, for precious metals move freely from one land to the next. They are a staple like wool or wheat. The flow may be influenced by a great variety of facts. Bankers may be making loans or borrowing from abroad. Governments may wish to ship quantities during a war. If the export of ordinary merchandise is greater than imports, and continues to be so for some years, gold may have to be shipped to creditor nations or to their agents elsewhere. But regardless of the reasons for this movement in and out of a particular country, there is noticeable not infrequently a reaction in banking circles. Since the available volume at home is affected directly, banks as a system may modify their lending practices accordingly. As long as some cash is essential to trade (and this is an indisputable fact, as noted before), foreign commerce in gold and silver must be watched in every study of interest rates. Again, when we admit this much, we may as well add that the industrial or art uses of the precious metals also figure in the situation. Not all of the output of mines is coined into money. A fifth to a quarter of the world's gold, and a larger percentage of its silver, is consumed in the manufacture of apparatus, machinery, household utensils, jewelry, and so on. Hence something depends upon the demand of the market outside of government mints, and this demand varies with conditions far removed from banking problems.

§ 9. In the second place, public authorities play a decisive rôle in the determination of interest rates for that part of capital which originates in bank credit, and this the more plainly so, the broader the powers conferred upon them by national or local legislation. During the last century especially an attempt has been made to safeguard the rights of depositors at banks, to guide

the investment policies of commercial banks, to protect holders of bank notes, and last but not least to provide a degree of elasticity for credit and currency at the same time that limits were put upon their volume by reserve requirements. Hence we must know something of these rules and regulations if we wish to understand fully the ups and downs of capital in any one country. Variations in its supply may be influenced as much by government action as by any other factor, the rate of savings among consumers not excluded.

Let us illustrate this principle from facts in the United States, bearing in mind however that conditions are not the same for all nations nor for any one nation at all times, so that precisely this difference from place to place becomes noteworthy in our analysis of interest rates on the supply side.

In this country the need of cash reserves has been recognized officially since the middle of the last century, and since 1914 the most important banks have become members of a system under federal control which because of one of its chief functions is known as the federal reserve system. Members of this system are required to keep reserves of lawful money against their demand deposits in twelve federal reserve banks in addition to what cash they may keep in their own tills for everyday use. Country banks must keep 7%, reserve city banks 10%, and central reserve city banks 13%, the location and magnitude of operations of a bank determining the class to which it belongs. These cash reserves therefore testify to the public appreciation of their importance as a security for bank liabilities in general and for bank currency in particular. Indeed, the ratio of money in circulation to the total demand liabilities of all banks in the United States was for 1910 about 1 to 4.20, for 1915 about 1 to 5, for 1917 about 1 to 6, for 1920 nearly 1 to 5, and for 1922 about 1 to 5.5, showing that the demand for real money relative to the volume of bank credit or to check circulation is considerable.

But this insistence upon real money has evidently one serious drawback from the standpoint of business

men. The stock of real money does not change rapidly, with the result that loanable funds from banks would be somewhat fixed if no other means were taken to provide elasticity. As soon as commercial banks are prevented from extending loans regardless of their cash assets, or are compelled by law to keep an eye on these assets, their maximum of loans and discounts, which figure most prominently in their demand deposits, is correspondingly limited. Hence the problem of elasticity has peculiar difficulties.

To solve them, two safety valves were devised, namely, a rediscount with federal reserve banks, and loans from them on certain conditions.

Any member bank is permitted to build up its reserves at the federal reserve bank of its own district by substituting rediscounted paper for cash. That is to say, if found expedient, it may realize on some of the credit instruments acquired in the course of making loans or of granting discounts to its own customers. It may take these papers and have them rediscounted at a federal reserve bank, these rediscounts being also usable as a reserve against a member bank's demand liabilities, although they are not, of course, real money. To be sure, the kind of paper eligible to rediscount is narrowly defined by the central body controlling the system, called the federal reserve board. Not all commercial paper possibly held by a bank enjoys the privilege. In general it consists of federal bonds or notes, and of bank promissory notes, drafts or bills of exchange, and acceptances. With some exceptions these instruments must not run over three months. They must represent transactions involving the exchange or production of actual wealth, but not speculative deals in stocks or bonds. They must be endorsed by a member bank, and meet other tests of minor significance. Thus rediscountable paper points in the main to the existence of wealth which is being prepared for the market. The aim is to foster commercial credit secured by liquid assets rather than on investment in things which yield a return only after a lengthy period, and then perhaps

but irregularly. Nevertheless, this provision has offset in large part the rigidity inherent in legal reserve requirements. Rediscounts at federal reserve banks have grown rapidly and proven the ease with which governments can add to the lending power of banks. In 1916, for instance, the total volume of rediscounts was scarcely $200,000,000; in 1918 it amounted to nearly $40,000,000,000; in 1920 to over $85,000,000,000, this being the peak year for such business. Because of the deflation since then, and also thanks to the elimination of liberty bonds as a security for rediscounts, figures in the last few years have shrunk greatly. But even in 1924 the aggregate was nearly $25,000,000,000, the average maturity for all types of rediscounts being about three weeks. Thus the value of the first measure for elasticity is demonstrated strikingly enough.

The second one is not so important, but none the less in constant use. Member banks of the system may make loans at a federal reserve bank without recourse to a rediscount. If they do not care to lose interest on paper running several months, they may offer it as security for a loan up to fifteen days. During the late war this clause in the federal reserve act was made to include also the advance of funds on notes of the member banks secured by liberty bonds. Long-time government debts, in other words, became a basis for bank credits which gave rise to federal reserve notes, which again represented in that case mere promises of Uncle Sam to pay genuine values such as metallic money. Thus lending was made popular. Credit remained cheap in 1917-19. There was an abundance of capital so far as bond subscribers and business men could see it, and certain consequences arose from this arrangement, of which the rise of price levels was probably the most familiar.

The ultimate check put upon bank loans is, then, the reserve of lawful money held by the federal reserve banks against their own liabilities, that is, against the deposits left with them by the member banks. This reserve was fixed by statute at 35%, and as long as it

exceeds this amount, federal reserve banks can rediscount papers and grant short-time loans practically regardless of cash held by member banks. In fact, the law further allows them to reduce their reserves against deposits below 35%, if the federal reserve board approves and a tax is paid which is the higher, the more marked the fall of reserves below 35%. Thus bank credit is much more elastic than might be inferred from the reserve requirements applied to member banks. Even if we ignore the salutary effects of rediscounts by one federal reserve bank to another, the manufacture of bank capital appears to be capable of almost indefinite expansion.

§ 10. But this, of course, is not the whole story.

In the first place, we must remember that the federal reserve banks influence (or may influence) interest rates directly by fixing their own rediscount rates. This latter, because of its official origin and the great prestige carried by federal reserve banks which are really banks for all other banks, has proven of weight even during the last few years, and will probably serve more and more as an index of financial conditions, so that commercial banks throughout the country will be guided by it to some extent.

In the second place, the same principle which suggested the need of legal minimum reserves against a bank's demand deposits also finds expression in cash carried by federal reserve banks against paper money issued to member banks, and this in turn reacts upon the possible volume of commercial loans and discounts at a given time.

As noted on an earlier occasion, commercial banks have always found it convenient or necessary to pay a part of their debts in notes sharing virtually all the qualities of minted metal. Customers discounting paper or making a loan have for a long time been paid in this manner when they were not satisfied with book credit alone. The circulation of checks has thus been supplemented by one of bank money of several kinds which bears no interest, is generally accepted by people,

and rests on some sort of security defined by public enactment. In the United States all national banks may circulate national bank notes, federal reserve bank notes, and federal reserve notes, while all member banks—whether national banks or not—may circulate federal reserve notes.

National bank notes and federal reserve bank notes are secured by federal bonds, but have ceased to form an important part of our currency. Instead we find a big gain for federal reserve notes, so that to-day they constitute not only the bulk of our paper money, but also its chief elastic element. For these reserve notes rest on commercial paper of the kind previously defined by the federal reserve board as eligible for rediscount. They are secured by credit instruments for the most part, though gold may also be given. Promissory notes, bank acceptances, and bills of exchange are the security directly back of them, and these of course represent loans or discounts made by business men for the sake of obtaining ready funds. The rise and fall of loan funds is thus reflected with considerable accuracy in the changing volume of federal reserve notes. When a member bank needs more money to satisfy the claims of its customers it may apply for reserve notes at the federal reserve bank of its district, using a blank for this purpose. It usually offers rediscountable paper. This paper is submitted by the federal reserve bank to a special reserve agent who gives reserve notes in exchange, dollar for dollar, except that the discount is deducted. When it matures, the notes must be retired, or new security be furnished by the member bank. The notes cannot be used as a member bank's reserve against its own demand liabilities; neither can they be re-issued by any federal reserve bank except the original one, others being compelled by law either to present them for redemption or credit at the issuing bank, or to forward them to the Treasurer of the United States for retirement, or else to pay a tax of 10% which would prove prohibitive. Finally, though these reserve notes are not legal tender officially, they are receivable for all

taxes and private debts, thus functioning as money in every sense of the word.

To be sure, as far as the principle of elasticity is concerned, it meets again with a check, for federal reserve banks must keep gold in their coffers equal to 40% of the total outstanding circulation, and this cannot of course be augmented arbitrarily, even though imports, mineral output, and coin brought by the public to banks loom up as possible new sources. There is no doubt that this legal minimum of 40% does set limits to the issue of federal reserve notes at any one time, thus reacting also upon the trend of loans and discounts which call for bank money to a certain extent, as already noted. It must now be added, however, that again there are two saving features in the situation, and that these assure us a highly elastic and almost unlimited supply of bank *currency,* comparable to that of bank *credit.*

In the first place, gold in a federal reserve bank fulfills two duties. It may be offered by member banks in exchange for reserve notes, and it may at the same time also serve as legal reserve against a federal reserve bank's total outstanding reserve notes or deposits. This being so, the actual gold back of reserve notes may be less than 40%; in other words, the powers of expansion are less limited for federal reserve banks than appears on the surface.

Secondly, the required cash for reserve notes may be lowered in an emergency, just as that against a federal reserve bank's deposits was shown to be reducible below the legal minimum. In critical days reserves may go below 40%, provided a tax is paid which is somewhat proportionate to the extent of the decline below 40%. In this way our national currency is, after all, kept quite elastic. We have on the one hand a scheme for setting bounds to the growth of banking credit at a given moment, and on the other a series of provisions for affording bankers the utmost freedom in an emergency.

But whatever the seeming inconsistency of this dual

arrangement—and it is not hard to explain it away—we can scarcely doubt that governments may exercise a large measure of control over changes in loan funds. If the laws now in effect in this country, for instance, were to be altered to-day, the relative elasticity of loan funds, their size from week to week, and the possible range of variations would change likewise. In this sense interest rates must to a degree be attributed to public policies.

And yet there remains a third noteworthy factor on the supply side, and one which might just as well have been mentioned first as last, namely, the organization and technique of banking of any one period or nation. The absence or existence of a central rediscount market, of branch institutions, of monopoly combinations or agreements designed to reduce competition, of a mechanism for mobilizing credit quickly in different parts of a country, of facilities for turning long-time securities into short-time credits (or vice versa), of suitable credit instruments and of a law defining or regulating their negotiability, of agencies for marketing such instruments and the funds back of them, of discriminatory tactics towards special groups like farmers or exporters, of collection methods and local clearing houses—all these questions enter into the analysis of supplies of capital as here understood. Maxima and minima as well as time rates of fluctuation depend upon them to a goodly extent, so that the course of interest rates is similarly affected, all other things being equal.

In closing our survey, therefore, we may summarize as follows:

Generally speaking we must distinguish between three principal classes of loans, namely, those serving long-time investments, those facilitating trade and made for a few months (at a time) only, and those made by security dealers in our financial centers from day to day. The first are provided mainly out of the annual savings of society, and the other two out of bank credit which depends only indirectly and to a slight degree upon consumers' savings. To be sure, a rather variable

and yet noteworthy part of the capital obtained at commercial banks is sunk in real estate or technical instruments of production, so that it is wrong nowadays to associate bank credit exclusively with the needs of professional merchants. But in the main we do have grounds for thinking of three kinds of loans, as indicated, hence of as many sets of variables determining their supply and demand. Even if by interest rates we mean those only which remain after charges for management and risk have been deducted, we still have to consider facts which *in part* are peculiar to each one of the three types of loans mentioned.

As regards long-time loans, their supply is governed in the main probably by the degree of impatience which people show to consume their income. The interest rate here reflects time preference or the premium put consciously or unconsciously upon present values as against those of the future. It is impossible to say what exactly accounts for the fluctuations of this time preference or even whether it really does vary a great deal from period to period, from place to place. But perhaps it would not be far wrong to assume that interest rates, as far as determined by this one factor, range from about three to about ten per cent. If we may judge by historical records, people have always wanted as much as three per cent, and seldom obtained over ten per cent. This range, therefore, might be used itself as a proof of the fact that the aversion to forego present enjoyments is widespread and calls for tangible rewards. It must however be borne in mind that actually a great deal depends upon the safety factor. People do not save if there is no hope of keeping their savings intact, of having their purchasing power maintained. Currency inflation such as occurred in Europe during recent years does not only raise price levels, but destroys the purchasing value of accumulations from the past; hence people may refuse to save. They do not deem any interest rate high enough to compensate for risks taken. In the case of capital from *savings,* therefore, we are reminded of the difficulty of separating risks

from "pure" interest rates. We may as well decide that either the conditions are favorable, so that capital reflects time-preference only, or that they prevent the accumulation of cash funds out of consumers' incomes.

This is the substance of the situation on the supply side. Of course, on the demand side we must reckon with the motive of the borrower, and that is his belief in the profitableness of loans procured. Hence long-time interest rates are the resultant of two forces, namely, of impatience as just admitted, and of the productivity of capital *at the moment that the loan is sought.* The rosier the prospect for rapid sales and profits, the greater the willingness to pay a decent rate on capital. Thus the rate may be more or less than consumers' impatience by itself demands. Price here is fixed in the same manner as for ordinary goods produced at an expense, offered in an open market, and subject to the normal as well as whimsical wants of a buying public. But again must we repeat that the productivity of capital is not one measured by buyers, that is, borrowers exactly. It is estimated but roughly. It is imputed in a general way to technical instruments or to laborers, whose efficiency then symbolizes the worth and effectiveness of money. Only in this sense is interest on any kind of capital determined partly by its tangible returns or net profits.

When we pass over to short-time loans, which concern dealers mainly, we have on the demand side again the varying productivity of capital—which indeed helps to determine interest rates for every class of loan—and in addition several elements on the *supply* side. For one thing, namely, time preference influences the size of loan funds in so far as the annual savings of society are used for short-time loans by borrowers directly, or through the medium of commercial banks. For another thing, the amount of undivided net profits held by business concerns and not divided by them among shareholders, is somewhat of a factor; for these amounts are more likely to be used productively than dividends in the hands of private persons. These

latter may save, or spend everything for consumption of goods, while undistributed profits serve either to enlarge the plant of the going concern, or else figure in loans to outsiders. A certain difference between undivided profits and personal income, therefore, does exist, and this may justify our mentioning the former as a distinct determinant of commercial interest rates on the supply side. Again, banking technique is most important, and so also the measures taken by governments for the regulation of banking and the protection of bank note holders or depositors. Hence we have a number of variables bearing directly on short-time rates. A minute study of them would have to be made for any one country before we could feel sure of having exhausted the possibilities of our subject, namely, that of knowing all the causes of a change in interest rates from time to time.

Incidentally, then, we may raise again the old question whether interest rates vary closely with the quantities of real money possessed by a country; and now our answer should be clearly in the negative. There is no *fixed* quantitative relation between interest rates and either currency amounts or the annual social surplus. Neither cash nor savings from personal incomes determine rigidly the size of the loan fund. But it is true that a loose relation between the two exists. Indirectly and in a varying degree the changes in the volume of money, as well as those in savings by consumers, do affect the supply of capital available for lending purposes. That follows from the data already used in our discussion.

Finally, as regards the change of rates for loans made from day to day in a few financial centers, we may connect them with the following conditions. The demand for such funds varies largely with the volume of deals in securities and with the range of variations of prices for them. An active market will stimulate the demand for call loans, while a lull will give it a setback. This is a general rule, since loans of this sort are used more for purposes of speculation or the con-

venience of brokers trading in stocks and bonds than for the settlement of ordinary commercial accounts. But the *supply* of such capital does not rest on speculative activities. Instead it consists of surplus funds carried by a small number of banks at the financial centers, but built up principally by outside institutions. In the United States, New York is the hub of security dealings. There the bulk of day loans is placed, and there the condition of certain banks is of importance to brokers on the Stock Exchange. If they have balances not otherwise employed and think the security offered to them sufficient, they advance funds freely at a low interest rate. The quantity of capital is adequate. But this depends upon the deposits left at New York banks by a good many others within the country, and hence upon the drift of business relative to the potential lending powers of all banks. Thus money rates ultimately have to be explained by the fluctuations of commercial credit and the price charged for it. The general determinants of the interest rate thus operate in a wider sense also for institutions negotiating call loans. In fact, all interest rates are really interdependent to a certain extent, although this does not enable us to infer one from another.

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CHAPTER 4

THE NATURE AND BASIS OF RENT

§ 1. For practical purposes the meaning of rent is sufficiently clear. We are familiar with it because of its importance in everyday life. Indeed, most people understand it probably better than interest rates because they are so frequently in touch with it. Interest concerns relatively few men. Bankers and bondholders receive it, and enterprisers most usually pay it; but these three groups make up only a small part of the population. Rent on the other hand is paid by millions of people in all walks of life. In the United States, for instance, over 50% of all families in 1920 were tenants rather than owners of the houses they lived in. Among farmers about 40% leased their land from others, paying cash or part cash and partly produce. Mining royalties in 1909 amounted to sixty million dollars, and ten years later to nearly two hundred millions, according to estimates of our Census Bureau. So it is not hard to see why the average man should have a definite idea as to what rent is. As he knows it, it signifies the whole price paid for the use of a piece of farmland, of city lots, of business premises or a home. If we should ask him what rent is, he would probably point to this charge levied by the month or by the year. If he is the tenant of a private dwelling or of an apartment, paying fifty dollars a month for it, it is this sum of money going to the landlord which tells the story. Or if a farmer leases his land to another who works it and pays, say, five dollars an acre a year for this privilege, keeping the produce from the soil, that also is called the rent. According to this view rent is always a sum of money paid by a tenant to the owner

of land or of other real estate. This itself constitutes the rent.

§ 2. Specialists on the subject however have not been satisfied with this clear-cut and brief statement of the case. They have added other definitions and found them useful for their own purposes.

A second view thus has contrasted pecuniary rent with true economic rent or with natural products whose market value need not be measured in terms of money. It has been pointed out that nature is bounteous and yields fruits sometimes without any effort on our part. Supposing for instance that we gather herbs and nuts from the woods, are not these things a clear gain, and may not the right to gather such products be sold to others for a sum of money? Would not these by-products themselves constitute a rent, whether the owner of the woods leased them to others for gathering herbs and berries or not? Or suppose we go to the tropics where fruits in plenty are showered upon man for the asking, where nothing is done to improve the soil, and yet the harvest is ample, is not this bounty of nature again a net income? Is it not worth a great deal to the natives? Is it not true rent, since nature gave gratuitously, and keeps on giving year after year? Surely, such gifts are not the reward for labor, for man did nothing. Neither are they a return for enterprise, for nobody went to any trouble. Nor can we call them interest on investments; for nothing was spent upon the land which yields these fruits. Being neither wages nor profits nor interest, then, they are bound to be rents, since all income goes into one of four classes. There is no doubt that rent is this net produce of the land which comes to man freely, neither personal effort nor the use of capital goods being perhaps involved. The fertility of the soil, the minerals deep in the earth or the outcrops on the surface, the fish in lake or ocean, game in the forest, timber and water power available for human purposes from one year to the next—these evidently are sources of a net income and are true rents. It can make no difference whether

I own a spring and use the water myself, or sell it by the cup or bucket to thirsty travelers on a hot summer's day. In both cases will emerge a natural, economic value; and this stream of values flowing ceaselessly is rent. Money, according to the second definition, is therefore an incidental feature in rent. It is our present expression of the exact value per year or per month of a spontaneous product lavished upon us by nature. It may be called rent for convenience. But strictly speaking rent is this product itself. Economic rent is this second kind; while pecuniary rent is the sum paid by tenants to their landlords.

Still, not all economists have agreed upon this second definition. Some have argued that rent is not paid on every grade or kind of land; that some natural resources are not rentable even though they give us something of value. Instead, it has been pointed out that rates of rent can be explained only by the great *differences in yield* of natural resources. For example, farms vary enormously. One gives us just enough for a living, a bare living. If wheat is grown, it provides no more than is necessary to keep the worker of the field alive. He and his family can eke out an existence, and that is all. If such were the case, could the farmer pay rent? If he owned the land, he would have no surplus, that is sure. But if he did not own the farm, could he then pay rent? It appears to be quite certain that he neither would nor could pay a farthing; for we have supposed that his land grows just enough wheat to sustain him and his family.

To be sure, we might grant that the soil would yield a few bushels of wheat without any effort on the part of the tenant. There might be such a net product, and according to our second view stated above, this net product is true rent. But as seen by another group of students, *this poor land could yield no rent to the owner* if it did not produce more than a minimum of food essential to life. By this test it leaves no surplus to the owner, and hence can bear no rent. This poor land therefore might be called no-rent or marginal

land, since it is on the margin of fertility, and there are other grades of land above it, being more productive. Thus we arrive at the third definition of rent as the surplus yield of land above what is necessary for making a bare living, or as the surplus above the yield of the poorest or marginal land. Judged by this standard, rent is a differential product, a result of differences in the yield of natural agents such as mines, fisheries, land, or cataracts generating motive power. If one farm yields enough corn to maintain a family in the essentials of life, while a second yields ten extra bushels, then this second is rent-bearing land. It gives an economic rent of ten bushels or of whatever value it represents in the market. This amount of corn or its value is the only rent, since it constitutes the difference between the least and the more fertile soil.

Even these considerations, however, do not exhaust the possible interpretations of rent, as times proved. For ere long it became apparent that if rent was a differential, then other forms of income could in part be pictured as rents also. Nay, not only that. Aside from differences between lower and higher incomes there were sources of income just as independent of personal effort or of investment as land provided by nature. How about the copyright on a novel, for instance? Did this yield an income merely because the author labored over writing the story? Was this the explanation of royalties? No, assuredly not. For many a scribe has toiled over his desk without reaping anything but disappointment and poverty. Work itself does not guarantee us a reward under such circumstances. If there is an income, it is not a wage for services performed according to stipulation. Neither is it interest, nor profits from enterprise in the strict sense of the word. Evidently, then, incomes of that sort must be classed as rents, if we recognize only four groups of producers; and even if we are not guided by this grouping, there are still some features which rent from land and royalties on patents or copyrights have in common. Hence the willingness of some eco-

nomists to treat monopoly incomes of the latter sort as real rents.

§ 3. Now, whether such niceties of reasoning are worth while, may seem questionable to all but a few specialists. There are certainly merits in each kind of definition here mentioned. But one fact surely must be considered most important, and that is *the existence of an income which is not the result of human labor nor of the loan of money.* Such an income does exist and it seems best to call it rent. Hereafter, therefore, we shall mean by rent one of two things; either the product of nature itself which is appropriated by the owner of the land, or the price paid by a tenant for the right to appropriate it. If we own a farm, we obtain rent in harvesting crops without the aid of implements and our personal effort, or when the value of the harvest exceeds the interest due upon the investment of machinery, and the amount of wages paid for labor or payable to the owner himself. What is left after wages and interest have thus been deducted is a net product. It is rent. On the other hand, it is also correct to mean by rent the sum of money or a share of the produce which the tenant pays to his landlord. This too is rent. Indeed, when discussing rates of rent we shall have in mind usually the money payment rather than the services themselves which natural resources yield. Rent is this income from nature, *including that of the poorest land.*

But if we grasp this point, it is also clear that man-made things do not, properly speaking, yield rents. If we own buildings, for instance, the income from the lease of them is not true rent. We do call it that, to be sure. We commonly speak of the rent of a home or an office, and so on. But manifestly we are dealing here with two different sorts of income. In so far as buildings occupy space and hence involve the use of a site, there is a real rent. It pertains to this location.[1] Whether ground is used by the farmer or by the city dweller, a price must be paid for it in either case. A

[1] The *social* origin of site values may here be ignored.

value accrues from year to year under certain conditions, and this value or the price for developing it and keeping it, in part represents contract rent.

But as far as the house itself goes, that brings interest rather than rent, for it had to be built at an expense. There is a cost for every product of our fashioning. Not nature but human labor created this value. So we expect a return on it. If the house, of any kind, is sold by the builder for ten thousand dollars, we are not willing to buy it at that figure unless we are assured of an annual income equal to the interest on such a sum of money. We shall presently see what the exact relation between the value of real estate and its income is. Just now we need to note only that a ten thousand dollar home ought to net us comforts or cash sufficient to equal interest on that sum at the current rate. If the latter is 5%, then we must have at least five hundred dollars worth of pleasure or of so-called rent out of the home; for 5% on ten thousand is five hundred. But in reality even that would not be enough; for if we invest the above principal in bonds, we have five hundred dollars every year without any deduction whatsoever, excepting taxes. A building, on the other hand, deteriorates. There is wear and tear to reckon with, as well as a rapid crumpling of values toward the end of the life of such a structure. So we should get more than five hundred dollars of rent, if we lease such a house to others. And yet, whatever, this annual income may be, it is plainly interest on an investment, not rent. We call it rent only for convenience sake, or because it is necessary to lease the ground with the building on it. Custom, for that matter, implies the difference just stated by distinguishing between gross and net rent. It is freely admitted that house rent actually is gross unless interest and replacement charges have been allowed for. What is then left is net rent, and this belongs to the location on which the property is erected.

§ 4. But to pass now to the first main question before us, namely, as to the reason for the existence of

rent? Why is it possible to levy such a tribute from people? What conditions explain rent *itself* (as distinguished from particular amounts of rates of rent)?

To begin with, it must already have occurred to the reader that one reason for the possibility of rent is legal sanction. As in the case of interest, so here we may argue that there would be no rent if public authorities did not permit it. We might abolish it. We might revert to feudalism which tolerated rent, but not interest. And we might also adopt socialism or communism which exclude both interest and rent. That is no doubt true, so the first explanation of such incomes, as of many other features in our modern social economy, is an ideal of individual rights. During the last few centuries private property has become increasingly important. Nations have written it into their fundamentals of government. They have specified what it is and what exclusive rights go with it. Thus the power of leasing to others the use of our personal belongings is quite a common fact. It exists throughout the civilized world. If we own land or houses, we may rent them to strangers. We do not have to work the soil ourselves, nor live in the homes we build or buy. Our doctrine of individual rights and duties includes this institution of private property. Governments protect us in asserting our rights. To take property is to steal, and to steal is to become liable to punishment by the state.

Still, inasmuch as we start with the acceptance of the present legal background of our economic relations and practices, we must cast about for further data if the existence of rent is to become clear. So we come in the second place to the *durability* of all things bearing rent. Nothing can be leased out unless it may be used more than once, unless these continued uses yield a product which is wanted by the owner or tenant in particular, and by society in general. A loaf of bread or a cigar cannot be leased. We consume them in a single act. We have nothing left after this moment. But most goods are fit to be used many times at more

or less lengthy intervals. Not only may some of them be used for different purposes, like water, but what is more, we may use many of them over and over again, for instance, a suit of clothes, a typewriter, a house, an acre of land, a stream of water, or a dock for ships. Of course, in the case of mines there is a steady diminution of the original stock. We can truthfully say that in due time there will be nothing left worth taking out. True enough. However, we look upon it as a source of incomes extending over many years, possibly over thousands of years. So mines, too, are rentable. There is a flow of products or values, and consequently a chance to hire them. Whatever is durable may also be rented *if* another condition is likewise fulfilled.

But this proviso is important, and it gives us a third point regarding the reason for rent. It reminds us that no one pays rent for the use of anything unless he has to. For things available in abundance we do not intend to pay anything. What nature gives in endless amounts is worthless on the market. Air and water therefore are free items in a state of nature. We breathe the one and drink the second, or use it for other ends. But there is ordinarily no charge for it. Only when we must purify or heat or cool air, when we must purify water and bring it miles from mountain to man, only then is there a sense of scarcity, and hence a price. If natural resources, then, are leased to non-owners for a price called rent, it must be because they are relatively scarce; and that of course happens. More and more, as the centuries have rolled by, land and its treasures have become scarce. Each epoch has had its own notion of how much land there was and what its riches beneath the surface; and these have always compared with the density of population. This latter grew steadily. Setbacks, to be sure, occurred. War, famine, pestilence, and cataclysms such as earthquakes or floods decimated the ranks now and then. None the less, taking history as a whole, there has been a continuous growth of numbers. It was evident that population

could and did increase faster than known areas fit for cultivation. Thus owners of land proved more and more important as mankind progressed and multiplied in numbers. Whoever could hold his land by sheer force of personality or by appeal to the authority of the state, had in his hands a mighty weapon, a source of pride and prestige, and last but not least a source of income. As soon as private property was construed to mean an exclusive right of lease as well as of personal use or of sale, rent appeared and gained prominence. The original gifts of nature now enriched proprietors without their being compelled to lift a hand. If under slavery the whip compelled obedience and wrung a tribute from the tiller of the soil, under the modern competitive system of equal rights for all, ownership itself assured revenue to some. The tribute now was transformed into rent.

Seen from one angle, this scarcity of land was due particularly to the fact that it could not be increased by man himself. All natural resources, if we except timber and live stock, have this peculiarity that their quantity is not subject to human regulation. They cannot be augmented arbitrarily. Land is irreproducible. Barring reclamations from the sea, or irrigation and drainage works that add trifling amounts here and there, its area is fixed. Corrosion and erosion reduce it, but so slowly that any one generation is not greatly affected. Whoever owns land, therefore, has something unique. He has wealth that cannot be moved about, that gives products for untold years in succession, that is the primary source of the essentials of life, giving us food, drink, and raw materials for shelter and clothing. Truly, land is in a class by itself. No wonder that the owners thereof are conscious of their advantage and demand a price when permitting others to use it! If we want to cultivate land or simply take from it what it naturally yields, we must either acquire it as our very own, or obtain permission from its rightful owners to do so; and in the latter case we are probably asked by them to give up a part of the products. The pro-

prietor wishes to be requited for his generosity. He claims a fraction of the harvest or yield in minerals or water power, or whatever the product is. This share of his is the rent, whether paid in goods or in money.

But of course, in order to be exact we must go still a little further in our analysis. We must not profess to have explained the possibility of rent merely by showing that it is nonreproducible, can be used many times, and is privately owned. If these were the only three factors, or rather, if our advantage consisted simply in owning something that cannot be created by man himself, we might not be able to exact a toll from tenants. To say that land is limited begs a question unless we show why man can sense this limit and continues to suffer from it. What in last analysis is responsible for this feeling of the limits of land, and hence of the disadvantage in our not being able to produce more? Why is this irreproducibility so fatal?

§ 5. The answer to this question lies in the well known fact that *the yield of a unit of land is limited and subject to increasing costs.* In this circumstance we have the key to the possibility of rent, once we take the other things for granted.

Long before economists reflected upon these matters, farmers had found out that nature gives just so much and no more. Two kinds of restrictions are imposed upon man by laws of nature. The first is the decreasing rate at which human labor stimulates the fertility of the soil, and the second is the absolute limit beyond which no effort on our part adds anything whatsoever to the natural yield. These two facts have always been patent, and in the long run decisive. As we saw in another connection,[1] the law of proportions applies to every field of human endeavor, agriculture not excluded. Indeed, it was there discovered first, and known as the law of diminishing returns. It was shown that while we may aid nature by turning the soil, treating it in various mechanical ways, supplying fertilizers to replace chemical taken away by the harvest, we cannot

[1] Vol. I, ch. 8.

augment our yield on this plan forever. Perhaps at first we have only ten bushels of wheat for one of seed, and for an amount of work equal to, say ten units. Perhaps an increase of five units of work or of a tenth of a bushel of wheat, or both, gives us twenty bushels the next time. Perhaps we can further increase our net gain by adding to labor or by improving our methods, by using better implements, by taking better care of the soil's chemical and physical properties. That may be so. But sooner or later we strike ratios of seed, labor, outlay in implements, and so on, that yield a larger net product in wheat or in profits than any other one. When that point has been reached we speak of an ideal proportion of things used. We say land is giving us a maximum net product. Thereafter we may obtain still more wheat from an acre of land, but it is not a *net* gain. It is a greater *gross* product, an addition per acre and per season; but not an advance in *net* yields. Compared to the preceding ideal proportion we now use a less desirable one. If the former meant a gross yield of thirty-five bushels, and expenses equal to twenty bushels, we perhaps have forty bushels gross, and twenty-eight bushels of expense. The net product on this supposition is fifteen bushels in one case, and twelve in the next. What we gain in absolute amounts of wheat, we lose in employing more materials and men, that is, more of other things consumed by these additional men, or employed in producing the crop.

This principle it is which we call diminishing returns, although it is only a special case of the more universal law of ideal proportionality. Because of this principle man has turned from one piece of land to the next in order to secure a greater net product. When—as farmers put it—soil begins to wear out at one place, new soil is taken up if possible. In general, the movement has been from superior to inferior grades of land, though unusual conditions have given us exceptions to this rule. At times people, through ignorance or because of topographical obstacles, started with bad lands and by degrees resorted to better grades as oppor-

tunities allowed. For long periods, too, man knew only a few crops, and when land for these deteriorated, he reached out for further virgin soil, unaware that though his old land gave decreasing net products of this one crop, it could give more of something else. In the main, then, the first law of diminishing returns compelled man to migrate from one section to another, to put new land under the plow every once in a while, and thus to take possession of all the land on the globe.

The second principle of *limited* returns, however, led to the same result. For according to this even the gross yield could not be increased indefinitely. Not only would expenses or labor troubles gain per acre, but what was more, beyond a certain point nothing extra would be forthcoming. No matter how hard man labored, he could not wheedle another bushel of wheat from nature. There was an absolute limit. Land might under scientific treatment bring fifty or a hundred bushels of grain, or a thousand of potatoes, and so on. But these would be maxima. With further toil, nothing more. Not a whit more. Thus limits were definitely set and unalterably in force. For this reason, too, the quest for land grew as population grew. More and more land was taken up. Millions of people moved to unknown wildernesses, to "new" countries. Even before the opening of the nineteenth century land had become so scarce—relative to what was accessible or yielded products for international markets—that its owners enjoyed tremendous advantages. Rent could be levied the more easily the greater the respect for property and the severer the pressure of population. In a sense landownership now became a monopoly. Not, to be sure, in the literal meaning of the word, which gives us one seller and many buyers; but in so far as a limited and fixed supply of land allowed a small minority to exact a price for tenures. The monopoly basis of rents indeed has often been pointed out by students. There is much reason for accepting it as one aspect of the situation. But in the final analysis rents rest on a combination of diminishing rates of return,

of absolutely limited gross yields, of private property rights, of our inability to reproduce what nature gives at the start of human history, and of a growing pressure of population which must have food, clothes, and materials for shelter before it can develop art and science. Given these five facts, rents are inevitable. It is then merely a question of how much is charged and what determines differences and variations in place or time.

CHAPTER 5

THE RATE OF RENT

§ 1. In discussing rates of rent we must first of all be careful to distinguish between gross and net rates. It was admitted in the previous chapter that as a rule we quote the former. We speak of the rent of a building or piece of land, meaning the whole price paid for the use of it by the year or month. But evidently in most cases this price is not pure gain to the landlord. Something must be deducted for expenses. The building, to begin with, is not a natural product, but one of human hands and designing. No matter what income may be derived from it, it is interest rather than rent. If we wish to call it rent, conforming to popular usage, we must at least deduct costs of wear and tear or general depreciation from the moneys paid by the tenant; and as for uses of soil or site, these too involve, in all but a few cases, an investment of some sort. Farmland for instance must be cultivated and kept in trim. At first it has perhaps to be cleared of trees, stumps, rocks, and so on. Later on we must buy fertilizer to maintain its fertility, that is to say, to restore the chemical and physical properties which are taken away or impaired by a continued bearing of crops. Besides, there may be grading, fencing, and draining or irrigation for which allowance must be made. So there are a number of items, apart from implements bought to produce crops. Again, in a city the lots for building often have to be improved in various ways. Surveying, measuring off, leveling, and providing underground pipes for sewerage and water or gas, are common improvements nowadays. These involve outlays the re-

turn on which must be deducted before rents paid become truly net. Mining corporations, companies using land for a right of way, engineers erecting dams, bridges or tunnels—all these have expenses to account for in preparing sites for use and lease.

Gross rent correspondingly is larger than the net rate. It is the *contractual* rate, as has sometimes been stated, since the agreement drawn up between the lessor and lessee fixes the rent to be paid rather than the net yield of land as a free gift of nature. This latter, on the other hand, is the real or *economic* rent, that is the yield in things or values which must be attributed entirely to the original properties of the use bearer (the land), or which remains after all expenses have been properly subtracted from gross amounts.

This economic rent ordinarily tallies with the contractual one, if from this too all returns on capital investment have been taken off. If a tenant pays a dollar an acre per year rent, we may assume that the net yield of the land itself, after a return on all capital outlays has been provided for, amounts to about twelve dollars annually. In the long run contractual net rent and economic rent as here defined agree closely, though exceptions should not be overlooked. Sometimes the landlord does not know what his land produces per acre, or what the net yield in dollars and cents for a given crop. Often he does not gauge correctly the annual use value of city lots rented to private families or business men. Again, he may prefer one tenant to another, though it costs him a little money. The personal equation here plays a notable rôle. One tenant may be liked and considered reliable. He may be economical in his use of implements and materials, or efficient in the cultivation of the soil, leaving it in good condition for many years, while the next man may make a better initial showing without being able to keep the land at topnotch productivity in the long run. Many factors enter into the contractual rate paid in money, but this does not prevent us from declaring net contractual rent to be substantially equal to economic rent.

We may safely assume this equality, even while differentiating between gross and net rates.

§ 2. To explain these latter, it may offhand seem easiest to compare them with the value of land or the price we paid for it. If asked why an acre brings five dollars net per annum, we may feel prompted to say that it was bought for a hundred dollars, so that the net return could not be much less than five dollars. That is a natural viewpoint. We try to account for rents by pointing to an investment in dollars and cents. The first seemingly results from the second.

However, this is not after all an adequate mode of reasoning. Even in analyzing the prices of goods we saw that expenses do not always determine them. The mere fact that we have spent a thousand dollars on the production of an article does not entitle us to such a sum or a higher one in selling it. The question is, will people take it at any price, or at what one? Though enterprisers usually are right in their estimate of the demand for what they are turning out, they may be wrong. Valuations change quickly. Prices may fall below costs. That is not impossible. Similarly a college education is no guarantee of a large salary later on. Though very expensive, it may not yield a proportionate return. It depends upon many things, not chiefly upon the outlay we make. So, when we pay ten thousand dollars for a corner lot, that is no absolute claim to a rent of five or six hundred dollars. What we spend will itself have to be justified. We must say, this location will bring in so much money, and it will do that for a number of years. Therefore it is worth so much to-day. I shall offer ten thousand dollars for it.

But more to the point, the popular explanation of rent by the price of the rent bearer is a fallacy. It is putting the cart before the horse. It is reversing the real order of cause and effect. *Rent is not high because of dear land, but this latter is the result of high rents.* That is the real explanation. All kinds of land or of natural resources are durable, as we have seen. That is, they may be used many times before being worn

out or exhausted. Mines too represent a number of uses scattered over a long period of time, possibly over many centuries. So these durable things provided by nature yield a long series of net products which may be sold to others for a price. Land can be leased because of these successions of net yields. Its value varies with the value of these instalments of products extending over a more or less definitely calculable, more or less lengthy, period of time. It disappears if the products cease to come. It declines if they fall, and rises somewhat in proportion to their increase. Thus, if wheat becomes dear, land rises in value, while a fall of the price of wheat is almost certain to reduce the value of the soil producing the wheat. Rents always cause values in the bearer of rents, in natural resources. They can therefore not be explained by referring back to these values.

§ 3. Incidentally, then, this gives us an idea of the relation between the value of rent bearers and capital as money or as a loan fund. Sometimes these two facts are confused. If land sells for a thousand dollars, why is not this sum capital? Why are capital and land not the same things?

In one sense that is, of course, true. Land worth a thousand dollars represents capital. Even if this sum refers to the land itself, and not to any improvements or costs sunk in it, it still is capital in so far as money is capital. A thousand dollars is always capital. But there is this difference. The land is not worth a thousand dollars unless it brings revenues equal to that sum. Its net yields alone give it the value stated. Nay, in reality the incomes from the land must exceed this sum, for we have learned already that future values are not equal to those of the present. Suppose, for instance, that the land in question provides a net product of ten dollars annually. In a hundred years that is a thousand dollars. But must the land yield this sum of ten dollars for only a century in order to be worth a thousand dollars to-day? We answer, no. It must yield ten dollars for much more than a hun-

dred years, for ten dollars in the second year is worth less than the same sum now. For the third year we deduct still more, since it is farther off. Our preference of present over future values leaves us no alternative. So we must discount each successive year at a higher rate. If ten dollars to be received a decade hence are worth now only five dollars, their value, if due only fifty years hence, is now perhaps no more than one dollar. For this reason an annual net income of ten dollars must extend over much more than a hundred years in order to be worth a thousand dollars to-day. The discount lowers future values!

Furthermore, it deserves repeating that land has a present value of, say, a thousand dollars only on the supposition that it nets the owner an annual income for a certain number of years, while a thousand dollars of cash remains the same, whether we invest it or not. We do not have to lend it to others, receiving interest on it, in order to be sure of its value. We can always call it a thousand dollars because money has a purchasing power, is on the one hand estimated according to what it can buy, and on the other hand has its nominal value guaranteed by the state or possibly by a bank. So there is a very real difference between this and things that are leased out for a rental. *Rent bearers are a capitalized series of net receipts extending over a specified or indeterminate number of years, while capital as a loan fund or as money retains its worth regardless of returns from it.* As long as money is a general medium of exchange, we must take this view.

§ 4. If we cannot, then, explain rents by pointing to the market value of the capital in question (land, buildings, and so forth), if on the contrary they themselves determine these capital values, we must look to other data for an interpretation, and indeed, it might be taken for granted that the only way to explain rent rates is to consider the relative strength of supply and demand and of their fluctuations from time to time. Generally speaking, rates rise when supply falls short, while they tend to fall when demand is reduced mate-

rially relative to existing offers of land for this or that kind of use. But let us see what some of the particulars in this case are.

As to the *supply* of land, we have already admitted that it cannot vary much in a short space of time. In fact, absolutely taken, it is constant throughout historical times. The earth contains so much and no more. Additions or losses occur but slowly. Earthquakes, floods, and the gradual effects of erosion and depositing of materials by water tear away here, and build up there. But these dynamic phases of our planet are of so little significance for any one economic period that we may ignore them. The only changes that do count for particular nations or communities are the result of reclamation of land from the ocean, of drainage or irrigation, and of discoveries made accidentally or in consequence of scientific expeditions. Since the fifteenth century much new land has been made known to man. In so far as we have in mind the last four hundred years, we may consider the supply of natural resources to have been variable in a high degree, there being accessions almost from year to year, so that our notion of the shape of the earth and of the extent of nature's bounties has been modified accordingly. Furthermore, if we wish to apply the question of quantity to site uses of land, we may include such factors as the growth of a city in some one direction or municipal policies which consolidate a number of boroughs into a single metropolitan administration. We know from personal experience that engineering projects, political moves, and economic forces may change urban real estate values greatly, adding to supply or to demand, and thus rearranging rentals upon them.

§ 5. Barring these minor features however supply is practically fixed, so that variations of rent rates depend mainly upon *demand* and the variables back of it. Economists at all times have stressed this side of the equation, and rightly so.

If we think of demand at any one moment, we are doubtless most impressed with the influence of produc-

tivity. We conclude that much depends upon the fertility of the soil to be used. And this aspect should be brought out clearly, for we must never forget that land is desired largely for the tangible products it yields. There are two principal types of use, one of the soil or what is beneath it, and one of the surface or site. Site values originate in either productive or consumptive uses, just as soil rents do. We may want a piece of land for building purposes (factories, offices, homes, warehouses, terminals, and stores or amusement places being familiar kinds), or we may use it as a right-of-way, a public park, a golf course, playground for children, for a game preserve, and so forth. In many ways we can use land without taking from it concrete products such as wheat or lumber; but more important even in these days of public utilities and urban developments is the cultivation of the soil or the extraction of minerals from the depths of the earth. Most of us know that aside from house rents, farm leases and royalties on mining are conspicuous items of income. After sites have been duly noted, the material output of land in the widest sense of the word remains. There are foods grown on the soil directly, or provided in live stock, fishing and hunting. There are organic raw materials such as fibers or rubber or timber. There are minerals, coal, gas, quarrying, and so on. These and possibly water power must be mentioned as the principal results of our using the soil and subsoil. We want these things, hence pay much attention to rates of production. Productivity and rates of rent seem to go together.

Thus we may argue in the first place that lands differ in yields per unit area, so that because of natural inequalities rent rates vary also. One plot may give us only ten units of a certain crop, a second fifteen, a third eighteen, and a fourth twenty. We may suppose that these inequalities exist whether we expend labor and capital in equal quantities upon each piece of land, or whether we rely exclusively upon nature's bounty. The products may very well be as indicated. So we conclude

that rent rates reflect this condition. They are proportionately low or high. The wider the range of productivity from maxima to minima, the farther apart the rates charged by the landlord to his tenants. This appears to be a self-evident proposition. Rentals may be expressed in terms of differentials of output in the physical sense.

But this is not the whole story to be told.

To begin with, it is plain that rents may exist even though all lands are of *equal* fertility when judged by their inherent properties or by their products, no matter how brought about. We should not imagine rates of rent to depend upon the existence of differences or differentials such as just mentioned. Since that is true, then, how shall we account for the rate paid by the tenant? What is he able or forced to give when all yields are substantially the same? Or to vary our question, but without swerving from the principle involved, what determines the value of the smallest product and of the *least productive unit of land* when lands of different fertilities do exist?

Economists have distinguished between better and worse lands by calling the first supramarginal and the second marginal. In our illustration of a moment ago the plot yielding only ten bushels is the worst or marginal one, while the other three are above it, hence supramarginal. Now, we must also remember that rents are usually paid in money, that they rest on a contract written out or tacitly agreed upon. For practical purposes rates thus are of the contractual, pecuniary sort. This follows from the fact that products mean *values*, not volumes or weights of yield. Hence our figures must be understood to involve dollars and cents. If wheat sells for a dollar a bushel, and our units are bushels, then the worst land produces ten dollars worth. (Let us assume that no expenses of production were incurred.) What then accounts for the value of the marginal product, or for the rent of the least fertile land among the four given? This marginal product and rent must be explained also, or if we cannot do so, we

should confess it frankly; for to point to differences is to presuppose that the lowest rent is *already explained.*

Another way, however, of showing the insufficiency of the argument for natural differences in productivity is to emphasize the human origin of all values, hence of all productivities. On first thought it seems clear that yields are determined purely by facts of the environment, hence that rates of rent are fixed almost entirely by the inherent physical and chemical qualities of the soil or subsoil. If these are of high grade, tenants pay high rent; if poor, they pay little. So it appears.

Now, while this principle is a most important one, we must not swear by it blindly. We must not make the mistake of regarding rents for the use of soil or subsoil as results purely of degrees of productivity provided by nature and to be accepted humbly by man. Degrees of productivity, whether defined by volume or by value of output, depend as much upon human attributes and socio-economic conditions as upon the distribution of chemicals in the soil, or upon the mechanical texture of it.

In mining, for one thing, yield varies with several factors that do not concern the richness of the vein itself, so that rent rates vary correspondingly. Mines may depreciate rapidly after a certain quantity of ore, coal, and so forth, has been taken out. Costs of bringing the last stocks up to the light of day may be prohibitive, in which case it is best to leave them where they are. Our knowledge of the disposition of minerals in the ground, and of the precise extent of wealth, improves as we continue working a mine and may in the end change our original estimates greatly. Expenses of operation may increase enormously or may decline because ores are placed differently from what was at first believed. They change fitfully, not evenly like those of a farmer or manufacturer, or public utility corporation. Costs of exploration, development, and supplies constitute a heavy item at the outset, hence must be deducted from capital values and royalties paid on mines, gas wells, and so on. For

these and other reasons rent rates in the mining industry are exceedingly difficult to explain. We may consider them as being rather arbitrary, as lowered by unusual risks, and variable in the extreme. But they are at least one example of the vague meaning of productivity.

Secondly, so far as the use of the soil itself is concerned, we may observe that *technical methods* have something to do with yields. Even though nature is more influential in agriculture than in manufacturing, farmers may vary yields per acre irrespective of the intrinsic merits of land. Several tracks may be equally fertile, yet yield different amounts of a certain crop. If money has been spent upon each, the aggregate expenses may be substantially the same, but they yield different crops and rates of contractual rent because farming methods are dissimilar. As we have learned, there are laws of proportionality and of size. According to the ratios in which we use men and materials and according to the scale on which we produce, expenses per unit product are big or small. One farmer may excel another by experimenting along this line and employing his capital or labor wisely, while his rival fails to do his best. Even from this standpoint yields are humanly rather than naturally determined.

In the third place, prices and net profits vary with transportation facilities, proximity to large markets, conditions of retailing, and so forth. Hence, like acres as regards chemical properties, and like yields per average acre, may mean different net rents.

Fourth, much depends also upon our choice of a crop to be turned out on land. We can no longer suppose that a given plant is fit to grow only one crop. Those assumptions of an earlier age have proven groundless. We have learned instead that almost any sort of land is capable of producing several different crops; hence it follows that a farmer may turn out high or low values on his land according to what he cultivates. Rent rates, too, vary with this choice. If a piece of land may be used for either strawberries or potatoes or wheat or for grazing, the question arises which use is the most remu-

nerative, which product is largest in dollars and cents, or leaves the largest net profit. The same piece of land may be productive in a high degree or relatively barren. Incidentally speaking, what is marginal land for wheat may prove to be far above the margin when put under clover or corn. Thus the least productive land is so only for some *one special crop or mode of operation.* As soon as we change either one, the relative position of a number of farms in point of value output may be altered very much. In this sense again productivity is an unreliable index of different rates of rent unless we mean prices or net profits by it, explaining them as the composite result of various socio-economic forces.

§ 6. Finally, in order to revert to our earlier question why the least fertile or marginal land yields products and rent of a certain amount, or why rents stand at a certain point when all lands are equally productive—a condition applying sometimes to extensive areas—we must now acknowledge that the answer can be given only by an understanding of the laws of price. *Marginal rent and the rate levied when no inequalities of yield exist are due to whatever determines the market value of the product turned out, or the net profit from it.* Looked at from one point, therefore, rent rates depend upon the supply and demand of a certain staple derived from land. Looked at from another angle it is a matter of orders of preference or of what people like most and what least. There is no other way of accounting for rates of rent in the last analysis. We must go back to valuations as expressed competitively or under monopoly conditions. We must grant that the marginal land in our illustration a while ago yields ten dollars worth of wheat and hence a corresponding rental, simply because wheat brings a dollar per bushel. Supply and demand make this possible. Land, we may argue, is poor and scarce enough to fix supply at a point where the prevailing demand brings a dollar a bushel. To this extent physical productivity alone explains rent rates.

But it is also a question of relative likes by consumers. The marginal land mentioned by us yields a rent of ten

dollars because people rate wheat at a certain figure *relative to other goods.*

To make this fact clearer, showing once more how the human factor helps to determine productivity or net yields, let us assume that one farm produces strawberries, a second potatoes, a third wheat, and a fourth, hay. If rates of rent then differ materially for these four kinds of products we may decide that it is due purely to our relative rating of the products themselves. Probably we would rather have one pound of strawberries than ten of potatoes or a hundred of hay. Our order of preference is of this sort. There is proverbially no accounting for tastes, though all of us need a minimum of food, shelter and clothing to keep alive. So there is nothing for us to do but to accept human choice as the key to rentals, whether they refer to lands of equal or of unequal productivities. Garden land brings high rents because vegetables or fruits are esteemed more per unit weight than most kinds of produce. At any one time the demand for goods and the relative rating of them acts unmistakably upon the value of yields and rentals.

We may, however, also ask about the effect of a change in demand. We may find of interest the well-known fact that demand changes quantitatively and qualitatively, hence causes fluctuations in rates of rent for any one region or class of soil, or for the nation.

Quantitative changes occur manifestly when the number of persons to be fed and clothed per average acre of land declines or grows. If the population increases or decreases perceptibly, landlords soon know it and are able to levy tribute accordingly. The higher the density per square mile, the more must be produced upon the average acre, since the total amount of land is fixed. But the principles of diminishing and limited returns soon take effect. As was shown, expenses of production rise more than yields, so that net productivity falls off. Increasingly worse lands have to be used in order to satisfy all wants, and increasingly the superior lands are at a premium because they leave a greater net pro-

duct and net profit. Since wheat is sold at the same price regardless of where it is produced or what its costs, the owners of better, supra-marginal soils have an advantage which is naturally transformed into rents.

But there is in this situation also a qualitative aspect which deserves a casual mention. We must not believe that rent rates change only when the sum total of produce demanded from a certain number of acres rises or falls. Instead we must consider the possible effect of our wanting more or less of any one product fit to be grown on one kind of land rather than another, and furthermore, there remains the possibility of changing tastes and preferences. In these cases, too, rent rates move up or down.

Sometimes the demand for a certain article changes quite rapidly. A war may teach us new modes of living and urge us to attempt something new. We may drop one item out of our bill of fare, substituting something else for it. Rice, for instance, gained favor among Americans during the last great struggle. It was pointed out that it had a high food value, could be made palatable, and withal offered a welcome change from wheat which was needed by the soldiers. The demand for this article of diet therefore rose, so that rents on rice-bearing lands increased also. Again, a scientific discovery may affect our idea of the relative nutritive value of different fruits, vegetables, or cereals. In the United States there has thus recently been much talk about vitamines and the fruits containing them. California growers were not slow in taking advantage of this movement for health, which biologists and chemists fathered. They emphasized the kind of vitamine provided in their product, and the need of distinguishing between calories and essentials for bodily health. The consumption of raisins was increased enormously by a stress on their iron content and its importance for the blood. A few decades ago grapefruit, bananas, and cherries were minor items in the list of standard fruits, but not so to-day. Cereals, vegetables, and fiber plants have had their ups and downs in the markets of a particular

nation or of mankind at large. We would hardly expect the demand to be constant for long periods. So it is easy to see that the rate of rent for land varies also with changes of taste among consumers. Not all increases of rent are due to growth of population.

Besides, and finally, the foregoing remarks about qualitative changes make it clear that the relative demand for two crops may remain the same, and yet their rates of rent vary meanwhile. Instead of people buying more or less of them, they may simply give them a new rating. At one time they may prefer beef to mutton or pork, wheat to rye, cotton to linen, spruce wood to fir, copper wire or plating to iron or zinc, and so on. The next time their order of preference may run the other way. Our notion of what is best and should be taken first in case of a choice is subject to continual revision. Government advice given in the friendliest spirit, pressure from other foreign powers, the suggestion of relatives and acquaintances, instructions from the pulpit or from schools, scientific prestige, and leadership in art, business, or journalism, any one of these may persuade us to change our opinion about things, to rate them differently even though we continue to use them in approximately like amounts. We are never free from this susceptibility to outside factors. As individuals we listen to others, and yet also give advice knowingly or without being conscious of it. The minority rules, and the majority adopts the norms imposed by it. Thus a revaluation of things and services goes on forever. If rentals rise and fall, we may find the reason in these social aspects rather than in productivities due to soil or climate. The human origin of values of all sorts must never be lost to sight. In spite of differences in yield which we must properly ascribe to the stinginess or unequal generosity of nature at different places, a large part of the explanation of agricultural rents lies in socio-economic conditions.

§ 7. Of course, when we come to consider rents on *sites*, for the use of the surface of the land, the importance of psychological data is even more evident, and indeed

scarcely ever denied by observers. Site differs from soil in deriving its value more obviously from the will of man and his needs as determined by facts of population, economic development, and so on. Indeed, we may point out more than one difference between the two.

In the first place, sites invariably produce intangible values, that is, services which do not take material form. We use them to build a home or a factory, to erect power plants, railroad stations, and telephone lines. A road or a right of way, streets and public grounds, recreation centers for a community, golf courses or race tracks—such are the purposes to which the ground is devoted when not used by farmers or mining companies. The end in view is always the service itself, not a concrete product furnished by nature or made possible by the skill of man. Sometimes consumers lease the land, as in the case of playgrounds and lawns adorning private residences, but more usually it is put to profitable account, business men building offices or mills and storage plants. Sites, therefore, mean most in the city, while soil interests farmers and captains of extractive industries.

In the second place, site is needed in small amounts compared to what is owned by farmers or owners of timber belts and mineral deposits. It takes only a few acres to run a business of immense proportions. Millions of dollars worth of goods may be sold annually in a department store that covers but a single acre of ground. Manufacturers may turn out huge quantities of goods in a few city blocks. For dwelling purposes a frontage of fifty feet, and a depth of a hundred feet, is ample. Few people can afford to buy or lease much more, nor do they ordinarily feel the need of it. An office building may house several thousand persons during work hours, yet occupy only a corner lot of modest dimensions. All this is evident enough, and follows from the difference between soil and site uses. A farmer can not produce more than the fertility of the land permits. If the soil is rich and relatively new to the plow, twenty acres may suffice to keep alive a family of six or seven members. Indeed, under intensive cultivation and ex-

treme economy one-third the area may be enough. Asiatics have shown us how to get along with little, and how to maintain efficiency without the consumption of large quantities of food. The more easily our demands are satisfied, the less ground we have to work in order to eke out an existence.

Nevertheless, as a rule, a score of acres are necessary, and if conditions are bad, much more. It takes hundreds of acres of poor grazing land to maintain a few families, and even then the level of living may be none too high. Thus the population of the world makes great demands upon the superficies of the earth. Land is for the most part utilized for agriculture, if not for mining. We cannot arbitrarily reduce the acreage or concentrate production upon a given spot, for the raw materials of the earth must be taken where found. If veins are thin and soil properties unfavorable, it requires a great deal of ground to obtain worth-while returns. There is no use trying to economize by a shrewd application of the law of size, for soil qualities and mineral deposits cannot be moved about. Their original distribution dictates what we can do, how much area is needed and how we may work it to achieve best results. While technical means and methods help us greatly, large scale output is not possible beyond the limits set by nature. In this respect, then, site uses are more advantageous and capable of improvement. We may build a "skyscraper" which provides shelter for thousands of people, though occupying only an acre of ground. Instead of going into length or breadth we may choose height, thus saving rent. Besides, it is in the very nature of the use made of the surface itself that a little of it should go a long way. We do not expect to spread out over broad areas when erecting a home or a manufacturing plant. The average unit of such site services is so much more valuable than that of most agricultural or mining products that an acre of ground in the city satisfies the demands of business just as well as ten or fifty acres in the rural districts.

But in the third place, and most important of all, sites

commonly represent points of reference in a degree that farmlands or mines do not. When we speak of a site, we think at once *of a particular location relative to others.* The desirability of being in the right place seems nowhere more evident than in towns and cities. Agriculture does not give us such glaring examples of the influence of location. While proximity to markets in which to buy or sell, transportation facilities, conditions of drainage or elevation, of weather and scenic outlook do play a part in the farmer's life, he is not concerned about these a great deal. Furthermore, since soil uses involve large tracts of land, location also refers to large areas and to points miles or hundreds of miles apart. A few hundred feet will signify nothing. For site uses, on the other hand, a single foot closer to the street curb or away from it may have value. Slight differences in grading and elevation, in distance between certain points may be decisive for the tenant and for rates of rent. This is so because, as remarked, everything depends upon central points of reference relative to which we select places. One point becomes of importance to a second or third. A public building or a highway or railroad terminal or mill district may decide the value of sites a mile away or within a stone's throw. All site rents are based upon cross-references in this sense.

If we assume a town to develop gradually and from a single point, we may find site values to have been determined as follows: Originally natural transportation routes may have led to a settlement. History abounds in examples of this sort. A fine river or lake, a natural harbor or mountain pass, or ford over a stream—these gave rise to trading centers or to village communities which eventually grew to goodly size. If this, then, is the way our imaginary town grew up, some few localities and buildings serve as the first points of reference for many others; or rather, the use made of them helps to determine the direction of urban growth and thus of rentals. Terminals small or large may be the earliest center. Here rents are high. Docks, wharves, quays, railroad stations—these are erected first in our days. By

and by hotels spring up. Factories may be built and large industries add new centers of business. If the means of transportation can keep pace with this expansion, people will not live in the shadow of noisy mills or dingy alleys devoted to the wholesale trade. There is a desire to get away from the grime and noise of business, and yet also to keep within reaching distance of it for the day's work. So certain kinds of business move up from the river or port. Banks, brokerages, the offices of merchants and manufacturers, public buildings and public utility concerns drift away from the original settlement, but without going too far. Storekeepers, too, have to scatter so as to suit the needs of consumers who buy goods from day to day, or at any rate many times during the year. Besides, places of amusement soon appear. Sports, indoor pastimes, education and art—these are given attention and find a setting amidst busy thoroughfares or near them. Terminals for passengers, urban traction lines, hotels, stores, and amusement places form the usual "downtown" district of maximum rents. Homes are built at first close to the cradle of the town, but as traffic conditions improve and the business sections spread out, the residential streets are much extended or move further "up town". In a well developed city business and residential districts are always separated by long blocks and represent different principles of site valuation or assessment by public authorities.

From these facts, then, follows a fourth characteristic of site values, namely, their extremely wide range of variation. Rentals not only vary enormously within a small area, say a single square mile, but they also change materially from one year to the next. Agricultural rents are by comparison stable and fairly uniform. More than a thousand dollars an acre is hardly ever paid. Though rates rise and fall according to the prices of the produce, they do so slowly. A fifty per cent increase during a few years is exceptional. On the other hand, site rents are in a continual flux and quite unequal for different parts of a town. The more rapidly city life

develops, the more astonishing the rise of rent rates. During the last few generations a variety of circumstances have so favored the rise of giant cities that rents could be doubled sometimes in a single year. Now this section would expand, now that. According to the needs of industry and trade, cities must grow in one direction or another. As older quarters are abandoned, therefore, new ones get the benefit. Rents are reduced to almost nothing at one point, but double or quadruple elsewhere. Furthermore, at any one moment there are amazing differences because so much depends upon proximity to traffic. Since sites yield services only, and since services must be measured by net profits in the business, shifting lines of traffic determine rentals. In central sections of a metropolis a hundred feet of frontage may bring in tens of thousands of dollars of rent per annum. In the outlying business districts a thousand dollars may be too much, while again for residential purposes much less can be offered. The range of variation thus is very great, in fact almost unbelievable. Fabulous sums are being paid on lower Manhattan (N. Y.) for half an acre of ground, and rents are proportionate. Nothing else is to be expected as long as a few points within the city or its environs constitute a standard for all others which are devoted to building or to the sale of goods and services.

To state the case differently, site rents are an exclusively human product. They have nothing to do with fertility of soil or wealth in minerals. No objective conditions play a part except in so far as the natural distribution of trade arteries, of resources and climatic data influence the location of towns in the first place. So, as contrasted with rents on a farm, urban rents owe their rise and fall to changes in the territorial distribution of population, to the layout of cities, to modes of living prevailing at a time, and to peculiar preferences which are often of a strictly local character. If rural rents are only in part determined by subjective facts, as was admitted a while ago, those of the town result almost entirely from institutions and practices under our con-

trol. They are hardly ever dictated by the physical environment itself.

Manufacturers, millers, and wholesalers for instance, are governed by terminal facilities and their location. (Or it may be the other way around). Hotels and office buildings, too, adapt themselves to these few points of reference. Retailers judge rentals by nearness to amusement places and to urban traction. If people going home from their workshops must take certain streets to reach a trolley or train, or must ride through them to get home, these avenues offer exceptional opportunities for shopkeepers. A shifting of trolley lines may thus affect rental values powerfully. Especially the sale of candies, fruits, or soft drinks varies with the street chosen by a tenant. It has been observed, for example, that in our large American cities soda fountains and candy stores do the best business when located close to five and ten cent stores. The class of people frequenting these shops are also among the heaviest consumers of sweets or soft drinks. Again, cigar stores are profitable—always understood, other things being equal—where men rather than women pass by on their way from or to offices, though here again the landlord or tenant may discriminate between day laborers and officials or clerks who use cigars and cigarettes more than a pipe. The profits in cigars being greater than for smoking tobacco, rents may be fixed accordingly.

Or perhaps it is a question of weather rather than of the nature of commodities sold. In some cities, for example, the shady side of the street is preferred during the summer and the early fall or spring. Here, therefore, business is brisk and profits and rentals high. In the other cities the direction of winds, of rain and sunshine, affect the value of property on some one street or of either side. Or perhaps it is a question of crossings, of the absence or presence of mudholes and puddles, of pavements and materials used, of grades and lighting effects that determines traffic, and hence rates of rent. Innumerable details may count in the heart of a big city. There is no one set of rules to be given for explain-

ing all the variations in rent which may occur on business sites.

As for residential districts they are, of course, rented at more uniform rates than stores or offices. Besides, we may consider them in part convertible into business sites, so that prospects of profit help to determine rates for private families. Or we may confine ourselves simply to the statement made with regard to soil rents, namely, that some one piece of ground is least desirable and marginal, so that all superior ones bear higher rates in proportion to the degree of superiority. That is certainly true. There is nearly always a difference in sites, and thus a possible standard of best or worst land. Relative rates may be explained in this manner. It is worth while, however, to add a few particulars in order to show how difficult the analysis of site rents really is. In all cities special preferences play their part. It may be proximity to retail stores, schools, parks, amusement places, and so forth. It may on the contrary be seclusion and quiet, in which case a safe distance from noises of all sorts, from mill districts, trolley lines, theatres and so on is decisive. Wealthy people can afford to live far from the madding crowd since private carriages, automobiles, and a retinue of servants cater to their needs. Again, it may be a regard for neighbors of the same religion or nationality, of similar tastes and incomes, if not of the same social standing that counts most. Sometimes these features are kept in mind carefully. Or it may be the appearance of the street, its width and grading, the condition of pavements, the presence or lack of sewer connections, water at high pressure, proper lighting, and what not that appeals to us most as a determining factor for rent rates.

Indeed, at times we fail to distinguish between the lot itself and the building upon it. Whatever the merits or demerits of this latter, they communicate themselves gradually to the former. We find it difficult to dissociate one from the other. Thus land values change with standards of living and our idea as to what the appointments of a comfortable home should be. In the United

States this interrelation of ground and building can often be seen. We find a well built house in a pleasant neighborhood. We expect rates on both to be high. But upon inquiry we learn that we may get the place for little, whether we buy or rent. The obstacle to the high rates is the lack of perhaps electric fixtures for light, cooking, etc. Or the average tenant dislikes living in large rooms with high ceilings. Or some features in the designing of the house are objectionable to people. So the ground loses in value because of what is on it, and if large areas are encumbered in this way, vast sums of money may be forfeited by landlords who otherwise possess desirable lots and real estate of much usefulness.

As for site uses, then, we cannot easily analyze all rentals under a few headings. They vary greatly with time and place. They are subject to a legion of facts of a purely local origin, so that an attempt at a sweeping generalization is bound to be misleading. We can only say that rates for private homes depend upon factors different from those governing business sites, and that both result from a combination of circumstances far harder to describe than those determining rentals on farms or for mines. This is naturally so, since site uses spring wholly from socio-economic conditions, while farmers or mine owners must reckon to a large extent, at least, with physical features beyond their control.

Note on the Relation of Rent to Prices.

The question whether rents constitute a cost is not, of course, put by the average man who relies upon his common sense. He says at once that such rents form part of the expense of running a business, of producing an article or of growing crops, and hence must be incorporated in the price of these services or goods. It seems evident that the tenant must get the rent he pays to his landlord back from consumers by raising his prices correspondingly. That is a natural view of the matter. Economists, however, have asked the question because of

their more scientific explanation of price and rent. It is worth while, therefore, to restate this theorem as our preceding discussion of rents suggests.

The usual definition of rent is, as remarked before, one of differential returns. It is held that some kinds of land pay no rent whatever because they could not produce enough to keep an individual or family alive. They are not fertile enough for that. In that case better grades of land have a surplus by comparison. If land *A* yields barely enough for a livelihood, land *B* may yield five units more of food or raw materials, and two other plats ten and twelve units more. These additional units may be called the true rent, the economic rent. They are ours whether we own the several pieces of land or not. Hence, if the least fertile land gives no more than a living, a tenant on the other lots may pay some rent in money to offset the superior yields in crops.

If we ask why the tenant can be *compelled* to pay for this differential product with a sum of money—the contract or pecuniary rent per year—the answer may be given in two ways. We may first be able to prove that the great mass of people are satisfied to earn a bare living, that they want no more, or at any rate cannot get much more because competition for employment among them is too severe. It may be, for instance, that passion drives men to marry early in life, as soon as they are assured of a bare subsistence. A good many students formerly clung to this belief. They asserted that the great majority of workers married when this minimum of a wage or food supply was in sight. So their numbers were always large, and they could not obtain much more than what the poorest land produced. If any one demanded more, his rival would step in and oust him from the position. In this manner the owner of superior lands was able to keep the whole difference between marginal products on no-rent land and the supra-marginal yield of superior lands.

However, this was only one explanation offered. A second one ran somewhat like this:

The price of goods is always equal (or more than

equal) to the highest cost at which they are produced. If wheat, for example, is grown on two different farms one of which is fertile while the other is comparatively barren, more costs have to be borne on the second than on the first farm to produce an equal quantity of wheat. The first farm may consume only ten units of labor and capital in growing twenty-five bushels of wheat per acre, and the second fifteen. There are under such conditions two costs for different bushels of wheat. But do the market prices therefore vary proportionately? Does the farmer with the good soil sell his wheat for, say ten dollars, and the other for twelve? Offhand that may seem reasonable. But our study of prices has shown that this is not necessarily true. As a rule, on the contrary, we find the prices for any one article at a given time and place drift toward a certain point. There is a tendency toward one single price or toward three or four centering about some one as the prevailing one; and this prevailing price is not the one reconcilable with lowest costs of production. By no means! The dominant price or prices approximate *maximum* expenses. That is, they correspond to the expenses of the least efficient producer, whatever the field he works in. This is so for the following reasons, as seen by many students of the subject.

The consumers do not know anything of the expenses of production, so they enter the market with more or less definite notions of their own wants, but not of the points familiar to the producer. The question then is what they will offer in money for a particular supply of goods produced at two or more different costs. The more they want the commodity, their personal preferences being guided chiefly by their incomes, the higher they bid. Suppose, then, that the supply representing lowest costs is not adequate, cannot fill all their wants. Ere long they feel the relative scarcity of goods. They bid higher to bring in more supplies if possible. They bid high enough to allow the man with maximum expenses to sell at a fair profit. If they did not do this, the least efficient producer would have to withdraw from

the market. To be sure, what he has on hand he would have to sell at some price. But thereafter he would stop producing, since *his* expenses exceeded the bid of consumers. So all consumers who would not meet him would have to go without the article. If they liked that, well and good. A new scale of valuations would cause readjustments in production and costs. That might be possible. But if there were enough consumers to absorb the whole supply, including that turned out at greatest expense, then the competing buyers would raise the price of the whole supply up to the point of maximum expense, especially since sellers desire to reap as richly as possible. Hence the market adjusts the prevailing prices to highest costs, and the more efficient producer simply pockets an extra profit. These are the results if buyers are ignorant of costs, if they compete fully and on equal terms, and if producers or sellers care for nothing but maximum profits, watching the consumers' wants and selling cautiously as bids rise to a maximum.

We see then that by two different routes we may prove prices to be independent of rent rates. Apparently they do not result from the exactions of the landlord, but from conditions to which man has fallen heir without having a choice. On the one hand passion is responsible for the multiplication of the human species beyond the point where food and raw materials can be produced cheaply. Men actually or to all appearances are driven by an instinct which aims at nothing so much as at an increase of numbers. The average man is less concerned about a high level of living than about getting married and raising a family. This is one of the points expounded by older students of our problem. On the other hand nature has dealt out favors very unequally. At one place she has been generous to a fault, at a second she has provided enough to encourage effort, but not so liberally that man can afford to live in sloth, while elsewhere still only the most sustained toil and greatest ingenuity suffices to keep body and soul together. In this manner a human innate trait and a fea-

ture of our physical environment seem to combine to determine prices irrespective of rentals. If a third factor is to be blamed, it is the eagerness of entrepreneurs to pocket all they can, (so that differences in cost do not count in pricing), and perhaps the greed of landlords who take from tenants as their instinct of self-perpetuation permits. In any case, we gain the impression that so far from rates of rent causing prices, these latter bring about the former. High prices mean high rents in the end because they spring from conditions of supply and demand which compel men to cultivate bad lands as well as good ones.

So far the argument is logical enough and deserves acceptance. We must not, however, overlook a few qualifying points in this general presentation. We should not, for instance, take it for granted that all producers sell goods at exactly the figure corresponding to maximum expenses, for exceptions exist. Indeed, it has already been emphasized that there may be more than one price for a given territory or market. Slight differences do exist frequently, and point to the well-known fact that something else than quantity and quality of a commodity help to determine prices. Besides, bidding in an open market is by no means as rational and competitive as we usually believe. Buyers and sellers are unequal with respect to knowledge of market conditions, and unequally actuated by the desire to get the most for the least.

But in the second place we may well argue that even if maximum expenses do fix price, allowing one price at any given place and time only, there is a sense in which rents do enter into price. After all, the significant fact is that landlords secure an income without being forced to work. Their toll from tenants is a gift which somebody must furnish. If they do not produce services other than the leasing of land they fall short of doing the best for society. They consume without returning an equivalent. If property rights nowadays were less comprehensive, tenants would not have to pay rents. Landlords then would have to work

or starve. Both rent and interest thus prove a burden from the social standpoint unless the owners of such assets render services aside from lending money or leasing out real estate. This is one point for us to bear in mind. But in addition we may also trace rentals through the disadvantage of our exploiting inferior natural resources. It surely is to be deplored that we must produce agricultural produce or minerals at a rising expense. To have to resort to marginal land is to admit loss, if not defeat. It means that society at large has to make extra efforts to satisfy its wants. It means diffusing such costs through the whole army of workers and consumers. It proves that while rents do not become part and parcel of price, as now fixed, they none the less reflect undesirable conditions in our environment. They testify to scarcities of some articles or services and bid us husband our resources carefully hereafter. So much at least may be confessed, even though we deny any direct causal relation between rentals and the prices paid by consumers.

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CHAPTER 6

WAGES

THE modern world is used to a type of employment which gives the majority of people a fixed income, or at any rate one fairly definite for a given period of time. It speaks of wages as if they were an unalterable fact, an institution without which life were impossible. And apparently the average man is quite right in this contention.

Nevertheless, until human beings had reached a quite high level of civilization and gone a long way toward mastering their physical environment, they could not establish a social order which made of all producers either employers or employees. In earliest days each man was his own enterpriser, and no one a wage earner. Individuals or tribal groups spent their time foraging for food, warding off beasts of prey, or fighting their neighbors. Nature herself offered little as a rule. There was no way of earning a livelihood except by fighting, venturing, responding to every change in surroundings, risking liberty and life, staking perhaps every bit of property—such as it was—upon a slim chance. For tens of thousands of years man led this sort of a precarious existence, fattening at one time upon an abundance not of his own design, and famishing perhaps a few months later, as helpless in means as he was heroic in spirit.

Only when this stage of savagery had been overcome, when certain wild animals had been domesticated, when the mechanical arts had gained a footing and agriculture superseded random exploitation, only then could risks be localized, falling upon a few rather than upon the many. Indispensable to such an advanced order

was first of all a fund of technical knowledge transmitted from generation to generation, and secondly a well developed organization of society for purposes of offence and defence, if for no higher moral end. In other words, a step preliminary to the rise of a wages system was bound to be the introduction of civil law and of a mechanism for carrying it out under all circumstances. There had to be a frank and widespread acknowledgment of a central authority, a fairly clear idea as to the mutual dependence of all members of a group, a plan for maintaining government and giving it powers to enforce its requests, however worded. All wage systems presuppose the existence of sovereign powers, of laws habitually obeyed, of rights and duties defined roughly so as to regulate the behavior of citizens, and of a police or military branch with which to carry out by force, at times, the verdicts of courts or the enactments of a legislature. After these conditions had been fulfilled, wages could gain wide recognition as a form of income, provided economic needs made them either desirable or unavoidable.

Wages, then, are a relatively modern institution because the conditions just mentioned were not favorable until a few centuries ago. Political, legal, and ethical ideals as well as economic facts prevented their becoming common before the era of the Reformation and of geographical and scientific discoveries. But nowadays they certainly constitute a familiar basis of livelihood in all civilized countries. The masses receive pay, and the few whom we designate as the classes give pay for services rendered to them. Thus, wages appear to be an obvious adjunct of modern life. They are paid according to the amount of work done—in which case we speak of a piece pay system—or according to the length of time one is being employed, in which case rates may be figured by the hour, day, week, month, or year. Employees other than industrial workers are often said to receive a salary, but for economists this is of course only another word for wages. Both salary and wage represent a contractual income, that is, income paid by

an employer according to terms which either are implied or written out succinctly on paper. But whether minutely described or indicated in the rough, these terms are the basis of the wage rate and of total amounts to be paid. The wage earner is an employee, while the giver of them is an employer. Furthermore, wages may be paid in goods rather than in cash. Clergymen, for example, consider the use of a parsonage as a portion of their wage. Farm hands expect board in lieu of money. Factory employees sometimes accept orders on stores which entitle them to particular varieties of foods, furniture, and so forth, thus receiving pay in "kind", not in money.

Payment in kind has the advantage that its value is thereby definitely stated, for, after all, the purpose of money is but to act as a medium of exchange, to give people goods and services which constitute the ultimate end in view. Hence economists as a rule distinguish between nominal and real wage. The former is a sum of money paid for work done or for employment during a given length of time regardless of what goods are turned out. The latter, on the contrary, is the *purchasing power* of pecuniary wages, or simply the quantity of goods and services procurable with them. When a man says he earns five thousand dollars a year, we do not know what this means until we hear of the place and the time at which it is earned. It means more in Germany than in the United States, and less to-day in the United States than a century ago. For this reason a nominal wage is rather a vague magnitude. But a given amount of goods and services is more nearly a satisfactory measure. Though even here we may dispute facts of quality in materials or in workmanship, size or serviceability or durability and so on, yet in general this standard gives us an approximate notion of what has been earned. Whenever costs of living or price levels differ in time or space, real wages are the only reliable index of earning power. This cannot be denied.

However, money wages—or what hereafter we shall call wages for short—may not constitute the only form

of pay for employees. Instead they may receive "commissions" and bonuses, or they may depend upon a combination of wages with these other two types of pay. Sales people commonly get wages at a fixed rate per time unit, and in addition a percentage of sales, 5% being a usual rate. Bonuses are paid at the end of a year in cash, or by way of stock dividends, or perhaps in the form of insurance policies. They may be adjusted to the aggregate net profit of the employer or to the efficiency of the employee, however this efficiency has been measured.

Again, in some cases we may not be sure whether the income of a party is wage or profit or still something else. Waiters in a hotel or restaurant, for instance, expect "tips" for their services. Sometimes they depend upon these entirely, and may even have to pay for the opportunity to collect them, as is shown in the records of steamship companies which carry passengers over the Atlantic or Pacific. In other cases tips are supplemented by wages, but seem none the less to represent the main basis of subsistence. We may ask, therefore, whether persons so paid are wage earners or not, although most of us would probably agree that tips are much more closely akin to wages than to profits. Again, self-employing craftsmen or retailers, while fundamentally entrepreneurs, may attribute most of their income to routine labors performed day after day, without much regard for economic conditions about them, and also without risking a great deal of capital. In some cases this is certainly true. Shall we then treat their profits as something like wages? Shall we decide that income here is wages-of-management or plain wages rather than genuine profits? Does a custom tailor who makes suits to order, knowing the expenses in raw materials and overhead upkeep beforehand, really pocket profits? Or is he getting virtually a wage which is the difference between known expenses and the price paid by his client? Evidently, we are confronted here with a situation which may be interpreted variously. We may deem the income either a wage or a profit, according to view

and to what element in our definition of each kind of earning we stress.

Then, too, it may be argued that wages are not always net, that is, an income available for personal uses alone. It may be shown that sometimes they represent services which necessitate the ownership of a little capital. Many mechanics are expected to bring a kit of tools with them when going to work. Barbers have their own outfit. Teachers or salaried lawyers may class their private library as an asset essential to their profession. A physician employed by a business corporation is a laborer in the eyes of an economist, yet may possess an equipment of his own which he uses in performing his services. In such and other cases the employee, although a laborer paid by contract, has capital at stake which is subject to wear and tear. He may lose it somehow. He may have to replace one instrument by a better one, even though it be for some purposes as good as untouched. Shall we then ascribe a part of the wage of such people to their investment in technical means? This query is logically admissible; but the majority of us will doubtless incline to disregard such details of expense, thinking of the wage or salary as pay used for personal needs alone. That seems to be the safest opinion.

We have, then, a fairly definite idea as to what wages are and what legal and political conditions lie back of them. Of the nature of wages we may feel tolerably sure, and to this we may add the reminder that about three out of four people gainfully occupied in modern society are wage earners. They represent employees and do the bidding of the remaining fourth which consists of employers. Hence—incidentally speaking—the importance of wage facts and problems. But turning now to our main subject: What exactly *determines rates of wages* and why are they not equal everywhere? What law, if any, may be assigned for them?

Before passing to our answer, we must not overlook the possibility of a misunderstanding on this question. We may indeed construe it variously. In earlier days economists thought of wage as a share going to laborers

as contrasted with entrepreneurs or landlords or capitalists. That is, when they asked about the determination of wages, they meant the totality of wages as against the totality of net profits, rents, or interest payments. What they were most interested in was the distributive process by which four parties divided the whole of the annual national income. How much did all the wage earners get, how much the entrepreneurs or capitalists or landlords? That was the problem emphasized by some investigators at the beginning of the last century. The study of wage formed an integral part of the study of the entire distributive process, the aim being to show how the relative shares of four different factors or agents of production were determined.

At the same time, however, other aspects of the question attracted attention. Some economists, for instance, tried to ascertain whether wages in general moved up and down with price levels, and if so, whether proportionately or not. Others during the last generation have been interested in wage levels for different phases of a business cycle, it being pretty well established that wages lag and lose in purchasing power during the middle of a business boom, while gaining in days of recovery. Still more commonly wages are related to *particular occupations,* so that an explanation will be sought for the differences prevailing *at any one time.* Thus the problem has been stated in several ways, and must here be narrowed down to two topics, since otherwise there would be too much ground to cover. What as a rule we wish to find out when asking about the causes for wage rates is, first, to what extent the law of supply and demand applies to laborers as a whole or to any one occupation, and secondly, what factors *other than* supply and demand may be held responsible for rates at a given moment or for changes from period to period. We shall concern ourselves both with labor in general and with specific vocational groups whose pay differs greatly. Everyday experience teaches us that some men, representing certain occupations, get much more than others. We have employees with a hundred thousand dollars a

year, and those who are paid scarcely one thousand for the same length of service. One earns a fortune from which enough can be saved to provide interest for a comfortable living, while the other lives from hand to mouth, and between these two extremes are many rates of pay for all kinds of skilled labor of a manual or mental nature. How then shall we explain differences in wage rates for different occupations? And aside from this conundrum, what is to be said about periodic fluctuations of pay for any one class of laborers or for all laborers taken together? Here we have our subject for discussion.

Now, as regards the changes in wage rates for labor at different times, and assuming price levels to be constant, we may undoubtedly attribute them to changes in supply and demand. Broadly speaking this law prevails in the sphere of wage contracts just as well as in the markets where ordinary commodities are bought and sold. If supply relative to demand drops off materially, there is often a rise of wages, and if demand grows much less than the supply of some one class of labor we may expect a decline. Almost any day we have an opportunity to test this principle. We find employees in the building trades prosper during a period of reconstruction such as followed the last war. They are much in demand, and hence can dictate terms not acceptable a decade ago nor probably a decade hence. Relative scarcity here favors them, just as in the slack season of a normal year they suffer from unemployment, weather conditions chiefly being the cause. Store clerks receive rather big pay during the Christmas rush. They are needed in large numbers because of the vast throngs buying for the holidays. Farm hands are at a premium for certain weeks in the spring and fall, thus commanding a high price for their services, while in mid-winter they may be working for half as much. In most places the law of supply and demand is seen to operate. If we were to judge by casual observation or by newspaper records we should be much impressed with the facts just now given.

Supposing, however, that supply and demand do rule, we still must reckon with other facts in order to understand the situation fully. For one thing, we wish to know what *determines* supply and demand, and for another thing we stumble, in due time, upon cases where supply and demand are of very little consequence, if they exert any influence at all. Thus we must analyze our terms, besides considering forces not on the surface of events.

The supply of different kinds of labor might thus be explained according to costs of producing them. We might think of any one laborer as a stock of abilities of certain sorts developed artificially after birth and involving an outlay in care, in goods or in money on the part of parents or whoever is in charge of children. From a national or more especially economic standpoint this is not a wrong attitude. Indeed, most of us share it on occasions. We admit that children are brought up at different expense and that to a degree this difference results from differences in kind of training or in ideas as to what parents should strive to accomplish for their offspring. In one case wealth permits vast outlays, not all of which can be justified by any acceptable standard; in a second case poverty insists that a minimum suffices, that nothing be allowed but the cheapest of foods and clothes, and hardly anything for education or self-development. Besides, in so far as parents are resolved to fit their children for particular grades of labor, they are bound to regulate their expenses accordingly. To develop in them the capacities of a physician or engineer, for example, they must face greater expenses than apply to unskilled workers or to mechanics and clerks. Hence we may insist that wage rates reflect costs of production similar to those underlying the creation of ordinary merchandise. The greater the expenses, the higher the price of labor!

There is some justification for this view, for we can show that in general the skilled worker receives more than the one absolutely untrained, while again the most highly paid officials in both public and private life have

usually enjoyed advantages in upbringing which only families of affluence can provide. Yet we must qualify this statement about a causal relation between costs and wage rates, lest its truth be over-estimated.

As parents see it, the productive powers of their children are certainly not a commodity which one cultivates as one generates motive power in an engine. They perhaps scorn the idea that economic costs here can ever be rated in dollars and cents, or having been so computed, can express a moral sentiment. From their standpoint family life is natural and an aim in itself. The care bestowed upon offspring has its reward automatically, in due time, representing no cost at all. Thus wages and worth are bound to go far apart.

Secondly, even if we overlook this personal type of valuation grounded in feelings of kinship, we have to admit that expenses of education in themselves do not guarantee a man any income, much less one of proportionate size. Employers do not ask what it has cost to develop labor skill of a particular kind, in order to remunerate it accordingly. What is true of commodities in general applies also to labor. If a house upon which we have spent ten thousand dollars may prove to be worth before long but half that amount; or if an item which an enterpriser produced at an expense of fifty cents, may fetch only a dime in the market, then similarly a large outlay upon the education of a child may mean little to the employer later on. We do not value the present or future by the past. We instead judge men by qualities displayed, by the service rendered during employment. Entrepreneurs,—to anticipate our later argument and to state it in its broadest terms—emphasize products rather than expenses incidental to the training period. To them the past is dead, the present of passing significance, and the long future the decisive element in wage adjustments. Thus wage rates need not correspond at all to differences in costs met by parents while they were preparing children for a life of usefulness. Self-made men with little instruction climb to the very top where emoluments are showered upon them

lavishly, while .those pampered on every occasion and schooled in the most careful manner manage perhaps to earn only a moderate salary. Again and again we hear of such contrasts, of such paradoxes which illustrate the force of personality, of achievements triumphing over all handicaps, no matter how pronounced. Neither supply of a particular class of labor and costs, therefore, nor costs and wage rates appear to be closely related. Though in general the most highly paid employees have had the best opportunities for capitalizing their aptitudes, the exceptions are numerous enough to spoil the rule.

Besides, a few laborers obtain relatively big wages in spite of doing quite ordinary things. If special circumstances intervene, the grade of labor from a technical standpoint need not determine its rate of earnings.

Risk, for one thing, is a disadvantage during work which must be offset by extraordinary inducements. We find that men are paid the more, the more dangerous their occupation. To be sure, risks are of varying degrees, and not all of them are decisive for wage rates. We must not assume that the supply of farmhands is larger than that of sailors because these latter are more exposed to hazards. Neither does it follow that laborers in the electrical industry receive better pay than millhands because accidental deaths among them are five or six times as numerous per average thousand hours of employment. However marked this difference may appear to us, it need not influence wage rates. To be effective, the degree of risk must be very high. It must be obvious and readily understood. Thus deep-sea divers, steeplejacks, caisson workers, employees in chemical and munition plants where poisoning or explosions occur again and again—these represent classes of work well paid. Irrespective of the quality of workmanship or of the technical skill of the individual,.pay will be good because of occupational hazards alone. The supply of such kind of labor is small relative to demand, or else employers voluntarily make liberal offers in order to overcome hesitancy born of fear and caution; for the aver-

age man undoubtedly prefers perfect safety to perils that may shorten his life.

Again, if employment is irregular or seasonal rather than permanent, wage rates tend to be comparatively high. It is expected that the laborer will lose a source of earnings for a part of the year, since he will not know how to find work elsewhere. Though enterprisers are trying more and more to stabilize business by spreading output evenly over the year, by educating traders and consumers to the desirability of buying in every month, and not merely in one or two, their policy cannot prove successful in all fields. The nature of their products prevents this. Farmers have to till the soil and harvest crops in certain months, according to the latitude they live in. Changes in weather affect building operations, shore resorts, municipalities keeping streets clean, department stores, and so on. Holidays and special occasions call for extra help, or cause a slump that cannot be avoided. Thus wage rates vary with the relative abundance of labor kinds, and this is governed by preferences for steady employment whenever possible.

Again, persons of unique talents are in an enviable position. Whatever service they render is paid for on their own terms, or at any rate so generously that we are tempted to excuse it on the grounds of a virtual monopoly. Great artists, athletes, or men of science may be paid on this principle. Yet there is, of course, another way of dictating terms, and that is to organize. Laborers may combine and form unions such as exist to-day in many civilized countries. The last half century has been one of remarkable developments in this direction, and not least of all for skilled mechanics and employees in the public utility field. We find them organized in local and national bodies, guided by men of ability who hold office by election for a number of years, and increasingly determined to make their influence felt among employers. Even small affiliations have been able to accomplish a good deal under proper conditions. In California, for instance, they have not seldom held the balance of power because of isolation and the

difficulty of enlisting workers from the rest of the country. Thus wage rates as well as work schedules have been improved. Monopolies have prevailed for short periods, while in the long run unionism has succeeded in coaxing concessions from entrepreneurs which individuals could never have hoped for. In so far as organization is permanent and well defined, therefore, we must recognize in it a force for regulating market supply regardless of the total number of laborers in any one occupation. It is again the old difference between being willing and being able to do something, so that wage rates reflect more or less faithfully the relative fighting strength of each party.

Domestic servants, too, represent a special case as far as supply helps to fix wages, for though their skill may not be of the highest grade, they have been able to dictate terms because of several reasons. Increasingly during the last few decades, but most of all in the United States perhaps, domestic service has been unpopular enough to reduce supply. Women and men have objected to it as something inferior to employment in factory, mill, office, or even in rural districts. Long, if not irregular, hours of work have scared away one group. Confinement to a place which is home as well as workshop is displeasing to others. The tedium of routine duties and irksome tasks is naturally disliked here as much as elsewhere. But over and above these considerations looms that of a social odium, of a menial position which differentiates sharply between master and servant. In business this relation does not often become apparent, since the firm is treated as an objective fact, even though it consist of but one owner or a partnership. Work in such situations is held to be noble, no matter what it is. There is an impersonal view of things, a sort of equalization of interests and rights within limits everywhere drawn and emphasized. But "help" in a private home does not share this view. Social standing, the necessity of taking orders, segregation during meals and after work-time—such features are easily magnified and objected to. The modern world of democ-

racy seems to disapprove of such distinctions. We find a widespread demand for equal rights in spite of all too evident differences in capacity, outlook, or education. Thus the supply of domestic servants has fallen short of demand for long years. Wages run high and must be explained by this ideal of social leveling rather than by any of the other elements so far mentioned on the supply side.

But to pass now to the demand side, which is just as important, if not more so.

If we ask first why there is a demand for labor at all we are no doubt told at once that laborers do something which mankind wants. They render services which are desired for their own sake, or for the goods created by these services. Thus, speaking in general terms, wage rates are connected with productiveness or with efficiency proven by output. Economists especially have dwelled on this point. They have shown that national productiveness varies from time to time, and that wages as a whole have varied correspondingly. Employees have petitioned boards of arbitration for an increase of wages because of larger net profits in some one industry, or for the plant in which they toiled. Employers themselves have now and then sought to change wages according to rates of net profit or to their total annual net income. Even in this broad sense productivity has been made a key to wages.

As a rule, however, people mean something else when talking about this topic. By productivity they mean, not that of a whole nation or of any one branch of business, but of this or that individual or small group of men doing the same sort of work. They wish to make clear to us that each man ought to be paid what he contributes to the output of the establishment, what he adds to the income of his employer. Let everybody accept the wages he is worth, and peace will reign—that seems to be the understanding of the man on the street.

Quite literally, to be sure, this slogan is not intended to be taken. At least, we need not assume this. It would probably be granted that enterpreneurs had no incen-

tive to go into business for themselves if they had to give all their employees an exact *quid pro quo*. In that case they would shoulder risks without adequate compensation. They could have no more than a bare wage for their own trouble, and they might lose that. Hence we must interpret the cry for wage-according-to-worth to allow for a margin. We may read it to mean that barring a trifle, each man is to get what he produces, the trifle amounting to a good bit where an individual or a corporation employs a number of workers.

Yet even with this mental reservation we have not done justice to all aspects of the principle, for we are evidently compelled to ask what this "product" is that will serve as a criterion. How are we to find it, if at all? Physical volume cannot be the index of efficiency, for in economics we are dealing always with value in the end, whether we begin with quantity or not. The real question is: What value does a man add to the sum total during hours of employment, and perhaps still more truly: What net profits does he bring his employer? No fixed ratio of gross value to net income can be established in the great majority of cases. The two are related but loosely. Hence the productiveness of an employee is best viewed as a contribution to net profits, although value itself may suffice to illustrate the nature of our problem.

Looking at it from this angle, therefore, we do well to make two classifications at the outset, showing how each one bears upon wage determination on the demand side, productiveness being the sole ground for such a demand. We may first divide all employees into those rendering personal services, impersonal services, and those creating tangible commodities of some sort, and secondly distinguish between simple and composite or compound services. If we are willing to adopt these two principles of classification, we shall be helped materially in studying productivity and wage rates.

Personal services here refer to those which, being valued for their own sake, are bought by somebody who at the same time is also the employer. Domestic servants, for example, do work for a private family. They

do not for the most part turn out concrete goods. But they perform services which are worth money nevertheless, and which answer needs or wants on the part of members of the family. The employer himself or herself is consumer of these services and has no thought of using them for pecuniary profit. In hiring work, money is spent, not earned. Chauffeurs in large numbers, nurses engaged within the house, male and female workers rendering what the census taker calls domestic services—these figure prominently in our first class. About 5% of all gainfully occupied people in the United States belong to it, and more than that in European and Oriental countries where an hereditary aristocracy boasts of much leisure.

Impersonal services, by comparison, consist of such as yield no direct gratification to the employer, but are hired only for the monetary gain resulting from them. Almost two-fifths of all employees in the United States fall into this group, transportation, communication, banking, public utilities, pastimes, and education, absorbing the great bulk of this labor. Important it surely is, as we can see from the list of activities just given; but it yields no concrete forms of wealth in itself. It is but a means to that end. It is engaged by enterprisers to assist them in commercial undertakings. The aim is invariably net profit. Only for this reason are impersonal services in demand.

Employees of the third class differ from the two so far mentioned in that they turn out tangible things, creating them by hand or by machine, or both. They give us farm produce, minerals, oil, timber, fish from the sea, and manufactures in a thousand different shapes and sizes. Manifestly this class is like the second in that it is hired for the sake of a profit to the enterpriser, yet differs from it (and also from the first) by giving mankind wealth which the eye can see and the hand may touch. About three-fifths of all employees are so engaged. What they produce has a physical aspect as well as a market value.

But this still leaves us our second system of group-

ing employees, viz., of distinguishing between simple and composite services. This difference, too, is an important one, as we shall note presently. A simple service is one which a single individual can render, while a compound or composite one is of the sort which presupposes the coöperation of a number of persons, possibly of thousands of them. A teacher, for example, may give instruction by himself. He may use neither book nor paraphernalia in a classroom. Whether he teach music or languages or any other subject, his work may be entirely his own, and often is just this. A clergyman or a lawyer in the employment of a firm may also be imagined to work individually, and in addition nearly all personal services as defined a moment ago belong to this class. They either do actually depend upon themselves alone, or may under circumstances do so, without using capital to any extent. Simple services consequently are not a rarety.

But undoubtedly the other kind is much more common. Perhaps nine-tenths of all impersonal services (as defined above) and a still higher percentage of all employees producing concrete forms of wealth, represent joint effort. Indeed, coöperation in the technical sense is the rule, and individual work the exception. Nearly everything we eat, wear, enjoy as pastimes, use in our homes or employ productively consists of services or goods which it took many persons to provide. Whether it be a telephone message, or a telegram, the transportation of coal or marketing of fruit, a loan at the bank or ministrations at the hospital, gold from mines or the manufacture of production and consumption goods—no matter what we may have in mind, we discover it to be either a composite service or a commodity which has called for collaboration by a number of workers.

But if this is true, what follows for our explanation of wage rates by productivity? How are we to interpret the statement that on the demand side a vital factor is the efficiency of each employe?

As to personal services, their value is surely fixed in the same way that prices for ordinary commodities are

set under competitive conditions. If we waive for the moment the possibility that employers are influenced by non-economic considerations or by special motives not their own, we have but two principles left. Namely, either the same kind of service is rendered also to producer-employers, so that *their* payment affects the other, or it is not, and then the question is settled purely according to the wants of the consumer-employer and those of the applicant for work. Some occupations represent impersonal as well as personal services. A chauffeur or cook or butler may work either for a private family or for a taxi company, hotel, business club, and so on. Hence it is safe to say that whatever these concerns are willing or are obliged to pay, also affects the rate paid by a private family. But where no such competition exists, the wage rate is the result of a natural bargaining between consumer-employer and the worker in question. The former bids according to the intensity of his wants, and the latter according to his idea of what he should get or what he must accept to be sure of a livelihood. Demand here aims at personal satisfaction, and at nothing else.

The great majority of employees, however, do not belong to this class. Instead they render either impersonal services or create tangible goods. Hence we are not yet done with our analysis.

When employees aid in turning out tangible things, we may at first console ourselves with the fact that physical measurements of the "product" are feasible. We may compare the quantities of articles made by different workers *in any one line* rank, rating their efficiency accordingly. On rare occasions one employee by himself may do the work, barring only the use of a few implements. Farmers, mechanics, bakers, or tailors are examples of this sort, and the list grows as we pass from modern to more primitive methods of production. Again, entrepreneurs may attribute to a particular worker a definite volume of output even though he has coöperated with many others, besides depending upon machinery and managerial guidance. For the sake of convenience the

employment of capital and of foremanship may be taken for granted, so that the road lies open to comparisons of physical efficiency. But when we are dealing with impersonal services, this possibility no longer exists. We do not find it very satisfactory to measure a stenographer's output by number of words per minute, or a letter carrier's by the weight of his mail, or a shipping clerk's by the quantity of parcels sent off. Though many impersonal services, such as a railroad conductor's or elevator boy's or bookkeeper's, involve routine duties that can be reduced to physical units of some sort, yet as a rule the employer does not attempt this. Besides, for some impersonal services it would be obviously impossible. What is the product of a teacher engaged by a private business school or, for that matter, by a government in public institutions? How can we measure *his* efficiency. Plainly, whatever our assertions about his moral influence, about his ability to impart knowledge or to present new viewpoints or stimulate thinking, we cannot prove them by experimentation. That is not possible. Sales agents fill in this respect an enviable position, for an employer may be able to show that his store clerk or commercial traveler has sold so much, and that consequently he has produced so many dollars of profit. Wages or commissions may then be paid accordingly. In fact, large retail stores and manufacturers commonly estimate productiveness in this way, ignoring certain factors just as they do in measuring the physical output of a factory employee. But for the most part impersonal services, like those yielding tangible wealth, cannot be credited with definite amounts of a value product.

We cannot do this precisely because such services and concrete commodities are the result of joint effort, of a combination of materials and labor skill whose interdependence is absolute. The making of a newspaper, for instance, calls not only for many laborers of the same sort such as linotype men, not only for many *different kinds* of work such as is done by proofreaders, compositors, reporters, editors and so on, but what is

equally significant, there must be much capital and a good deal of supervision by the proprietor and his executive staff. In the great majority of cases we find commercial products to be composite in this sense, whether they be material like wheat and silks, or immaterial like transportation, electric power, or bank credit. Always the need of concerted action! Always a dovetailing of many kinds of technical knowledge, entrepreneurial insight, manual skill, and so on! We are not able, therefore, to ascertain the exact product of any one employee. We do not know how to find it either as a physical quantity or as a value or as a net profit. Though economists are quite right in saying that an employer may weigh the relative advantages of machinery as against labor, buying more of the latter or of the former, dependent upon which he thinks is most profitable—though to this extent productivity tests are in force, enterprisers seldom do vary their means and methods in order to ascertain the efficiency of a worker.

Nicety of measurement in production is out of the question because of the complementary functions of different materials, of different classes of labor, and of different sort of equipment and managerial talent. There is no chain of one cause, one effect. We have no right to contend that invariably or for a long time, in a long series of productive acts, some one employee turns out goods of such a value, yielding such net profits. Barring situations where everything depends upon personal attributes, as in a star actor, athlete, or virtuoso engaged by the season—barring such cases, individual effort cannot be evaluated exactly. What appears to be the productiveness of labor, may be the result of policies directed by the owner of the establishment. Questions as to scale of output, advertising campaigns, amounts of a loan and the time to float it, of the location of the plant or of the variety of products to be turned out, of staff organization, types of machinery and their replacement, of building designs or methods for marketing products—all these affect aggregate net profits and wages. On the one hand, therefore, we are uncertain

as to whether laborers or enterprisers and their assistants are the chief cause of efficiency; on the other hand we have a host of different classes of workmanship, mental and manual, none of which can be isolated in such a way as to measure productiveness for particular individuals. No more than the value of a piece of jewelry is any indication of one prevailing wage rate for the various grades of labor involved, no more can we trace definitely the value output of some one employee during a given time.

If employers, then, speak nevertheless of efficiency wages, we must understand them to do either one of two things. In one case they *impute* productiveness to an employee or to a number of persons doing the same kind of work. They believe that labor has done so much, and reward it accordingly. But just as likely they speak of wages paid according to *differences* in output. This indeed is what most of them do refer to when they discuss productivity, and this is also what the majority of people mean when they advocate pay in proportion to efficiency. All schemes for bonuses, premiums, profit-sharing, or ideal wage payments start with the supposition that an average or standard exists. It is assumed that to do a given piece of work in a certain length of time, or to use a certain amount of materials, of motive power, or of overhead expense represents the best possible or the actual average of preceding times. Furthermore, whatever this physical quantity of output or the nature of a service, a definite value is set upon it. We are given to understand that its market value is already known, that either it can be read out of current quotations, or else must be agreed upon arbitrarily. *If a given article or unit service is worth a definite sum, and if the time or materials to be allowed in the work represent another definite quantity, then these two facts become a point of reference or standard for the performance of any one worker.* That is what business men have decided, and that is all they can mean in adjusting wage rates to productivity. Employee *A* is a standard either because

he is the best or the worst man (judged by physical performance), or because he represents the average in the plant. If his product is worth one dollar, or if the net profit he yields his employer is one dollar, then it is often easy to ascertain the efficiency of *B* or *C* or *D*. There is room for a plus or minus. Some employees are average, some inferior, some superior. Differences are recognized and measured, and wages granted to correspond to these differences. Productivity thus means differential productivity, and what is more, it is based upon a prior estimate of value per volume of goods or per unit of intangible services. Only in this sense can we speak of a productivity wage that is fairly exact, while the determination of productiveness without such a standard is virtually impossible.

All things considered, then, the explanation of wage rates by demand is no more complete than that through supply or costs involved in developing particular kinds of skill and knowledge. We must evidently be prepared to find still other determining factors. If wages for different occupations go far apart, the reasons are partly of such a nature that it is difficult to treat them under the heading of supply and demand. Hence we shall now discuss them separately, though again they tell only a part of the story of wages in modern economic organization.

In the first place, employers are guided largely by the personal equation, that is, by knowledge, skill, and traits which together give persons individuality. It is understood that education is valuable on its own account as well as because of its effect upon intelligence and adaptability to business demands. Other things being equal, those with a good common school education are rated more highly than illiterates, and applicants with a high school or university training have an advantage over the graduate from a public school who went to work at the age of, say, fifteen. Cultural equipment has weight even though never transformed into productiveness. But above it stand, of course, technical knowledge and skill. What employees know about the

occupation which they have entered, about the scientific background of their routine duties, and also how snugly they manage to fit into all the peculiarities of any one establishment which engages their services, that is a decisive matter. Exact and comprehensive information on any one specialty and its allied branches in invaluable. The skill of hand and fingers, the speed and accuracy of movements developed with prolonged practice and conscientious application, bring rewards before long. Since quality no less than quantity of output count, those are paid best in the long run who by virtue of their excellency of workmanship and reliable information on difficult problems attract attention. Efficiency here need not be tested directly. It is read out of accomplishments inherent in the person and brought to bear upon any situation, whether products are tangible or intangible.

Personality in its broadest sense, too, is judged, and this the more so, the more important the ability of an employee to get along with other people, with subordinates, superiors, and with customers. For crude labor, of course, this element carries little weight. Facts of temperament, appearance or manner and mannerism may be negligible. Even for skilled mechanics such items may prove to be a detail, since productiveness varies in the last analysis almost exclusively with insight into technological relations. Craftsmanship therefore is the great desideratum. But for foremen or managers in the primary industries and in manufacture, and for many employees in business as such, the vital factor is sure to be the personal make-up. Scientific knowledge or manual skill is not enough. Neither one is decisive. Instead we look to habits and modes of expression which characterize one individual as contrasted with a second or third. Intelligence may be rated independently of output, since we seek it in a man's eyes or judge by trifles in an initial interview, and so on. Intelligence or the capacity of a person to meet unforeseen difficulties, to overcome obstacles not studied beforehand by rule of thumb—this supreme

gift is a thing by itself. We count it a fundamental in every employee. But in addition there are other attributes that interest an employer and help him to gauge the worth of an applicant or of those already in his pay. All of us, for example, admire distinct individuality and the traits belonging to it. Now it is versatility or quickness of comprehension; now tact or grace of address; now tenacity or singleness of purpose displayed at a crisis; now ready response to extra duties or to prejudices long nursed in our superior; now modesty of demeanor, now self-assertion or an imperturbable mien in a tantalizing situation. So many tests to consider! So many characteristics that spell success or failure in trade, banking, insurance, and like fields of enterprise! Wage earners engaged in any of them must expect to be judged by traits which they deem inconsequential in younger days, of which at no time of their lives they may even be conscious. Increasingly this clue to worth and wage rates in different occupations is being appreciated. Psychologists in particular endeavor to justify such an index.

In the second place, length of service is frequently a basis for wage rates regardless of the supply of labor or of degrees of productiveness. It is supposed that efficiency grows with practice and hence with years of service. Each business establishment has peculiarities of its own which must be studied if an employee wishes to give it his very best service. Length of time therefore is assumed to be a guarantee of productivity even in this respect. Furthermore, labor turnover is reduced when employees stay for years with a firm. Personal relations develop gradually and lead, not only to mutual confidence and a spirit of friendship, but also to a sense of obligation on the part of the "boss". There is a natural tendency to recognize loyalty shown in prolonged service. The commercal viewpoint here crosses the moral one. Whatever harshness it may have, is mitigated by a desire on both sides to coöperate, to make of necessity an ennobling virtue. Thus we find bonuses increase with the number of years served by

labor; or there are rising wage scales and privileges which take the place of so much money. The more advanced the stage of economic development which a nation has reached, the more likely we are to meet with this recognition of seniority. Indeed, in Europe it has long played a notable part in determining salaries of business employees, and in the United States it is being applied also to industrial workers.

Third, for a certain number of employees social connections and sheer nepotism are decisive factors. That is to say, something depends upon the social position of parents when their sons or daughters enter the economic field. The better their standing, the wider their circle of friends, the more influential these acquaintances of theirs, the more their children profit by it. Viewed from one standpoint it seems, of course, as if position and pay are after all governed by what these young applicants are able to do. Their training and productiveness unquestionably count. But upon further reflection we must also grant that there exist discrimination at times, that others starting with the same experience, or lack of it, and doing the same sort of work, are not rewarded as liberally. To the majority a customary scale applies, while the favored few receive more, being promoted at shorter intervals, and managing somehow to hold positions whose worth is judged by title rather than by tasks imposed. Blood ties thus may decide wage rates regardless of personal efficiency or of amounts of work done. Though they constitute but a minor factor in our problem, they should not be ignored entirely.

Fourth, sex means discrimination in perhaps most occupations. Women do not get the same wage as men for doing the same kind of work. Judged by their technical proficiency the two sexes belong to the same class and ought to be paid at the same rate. But in this case a vaguely measured or imputed productivity decides in favor of the male. It is pointed out that females are less desirable because they do not hold their position as long. Sickness is more common and

affects efficiency by interrupting experience gained in the workshop. Many women are supported in part by parents or relatives, or are credited with such advantages, so that it reacts upon their pay. For a variety of reasons, then, women fare less well than men when they enter the field of production amidst competitive circumstances. Though there is, as usual, much to be said on both sides of the question, employers not seldom hold to only one. There is a considerable amount of statistical evidence to prove this point, and it has been discussed at length by both economists and moralists.

Fifth, what is at the bottom of such criteria as personality, social standing, and sex discrimination may be shown most easily when we consider the wage of clergymen and the rank and file of government employees. We shall then note that it is social structure and a set of ethical standards which decide the income of millions of people. Local and central governments do not pay wages entirely according to rates prevailing in the market, that is, paid by entrepreneurs. Granted that they must to some extent be subject to this principle, and this the more completely so, the smaller the percentage of all workers in a given field employed by them, there remains nevertheless an independent policy, a way of rating services which reflects public sentiment among the middle and upper classes rather than a law of supply and demand at one place or moment. The overwhelming majority of teachers, for instance, are public employees. In public administration too there is need of types of work not known in private business. Then there are services which we associate most naturally with business, yet appear in public employment also, artisans, clerks, draftsmen, stenographers, and managers of offices being good instances. Governments, then, represent a distinct force because they are sovereign and may set wage rates in defiance of market practice. What a teacher shall get, for how much a soldier must fight, on what terms a judge or policeman or mail carrier shall assume his duties, these are questions answered partly in disregard

of competitive principles. Wages may be raised or lowered because it is done in private life but also because a new political party comes into power or because ideals of right and wrong constrain those in office to make such a change. We cannot explain everything by economic pressure. We must look to modes of valuation which lie outside of the sphere of business and yet affect it not a little.

Hence too we must reckon, in the sixth place, with *standards of living* as a rising power in wage determination. During the last few decades it has grown distinctly, and promises to mean still more hereafter. Although public authorities and notably jurists have not so far seen their way clear to reconcile it with the traditional freedom of contract which underlies our pecuniary and individualistic regime, they have none the less witnessed a steady spread of sentiment for a minimum wage. In some countries it rules supreme, and many of our American commonwealths have dealt with the question sympathetically, so that labor unions and their friends feel encouraged. According to this newer notion, every citizen gainfully occupied is entitled to a decent allowance. Enough to keep body and soul together, to maintain health and the degree of efficiency dependent upon it, and also a competence permitting marriage and the perpetuation of the race—this is the ideal sponsored by a growing number of people, some employers joining in the campaign, though less confident of its feasibility than the remainder. For some purposes, therefore, our competitive law of supply and demand is conceded to be at fault. It is held to be just in the abstract, and certainly the best to be expected in our modern world of private initiative, but seems too stern in spirit and cruel at times. Some there are, we must acknowledge, who do little, yet thrive lustily, assured of an income which is more demoralizing than inspiring. Some contribute generously toward national prosperity, and receive their rewards. But millions, on the other hand, toil day after day without being paid enough to make self-development easy. For

these people adequate provision cannot be made on strictly economic principles. If they are to fare better, we are told, an artificial distributive arrangement becomes necessary. A standard of living must be found and defended by courts. Just what this is to contain, is not of course clear to everybody. There exists a great variety of opinion, and possibly agreement will never be universal or lasting. But in spite of this fact the drive toward a minimum wage is waxing strong. To substitute charity for justice seems advisable, even though not a task to be mastered in a brief time.

All in all, then, the determinants of wage rates are numerous. We cannot explain them solely on a pricing plan. We cannot account for them wholly by some one test such as productivity, though this does have great importance. We must seek an answer partly in personal traits and their evaluation by individuals or social classes. And finally, we must treat wages as a kind of booty in a struggle, as a claim of workers pitted against entrepreneurs who have interests of their own and often represent a superior fighting power. In short, profits and wages are connected causally.

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CHAPTER 7

PROFITS

§ 1. Profits represent the fourth class of income going to the producers of wealth which is sold in the open market. The other three shares have already been discussed. We have seen that owners of capital receive interest, owners of natural resources rent, and laborers wages. The first two shares are prices paid for lending and leasing property. The third is the reward of labor, that is of personal efforts made by an employee who works for somebody else. Now, profit is by contrast the reward going to the party who employs himself, and who frequently employs others. Whoever is his own master is an enterpriser, whether operating as an individual or as a joint stock company or corporation. It has already been pointed out that entrepreneurs need not be physical persons in the eyes of the law. A corporation is not, and yet it represents enterprise, is legally a person in some respects, and usually secures profits for work done.

The characteristics of profit then are these: First, it is the income belonging to enterprisers who have functions distinct from those of the other three producer classes. Secondly, it belongs to men who employ themselves and usually hire labor to work for them. Third, it is not something specifically contracted for. It is a remnant in so far as the other three shares are definitely agreed upon and must be paid *whether there are profits or not.* Just to what extent or in what sense profits are a last or residual income we shall see later on. The subject may be viewed from several angles. But there is no doubt that rent, interest, and wages are prices for services agreed upon beforehand and paid regularly,

whether profits are large or small. Indeed, for a short while the first three incomes may continue at a regular rate even though no profits whatever are left for the business concern. It may pay out interest on its loans, rent on its leases, and wages to its employees, and yet have a deficit rather than a surplus. In talking about profits this possibility of a loss must not be forgotten.

A fourth feature of profits might possibly be added to the preceding ones, namely, their relation to capital. It has often been observed that enterprisers work with investments, and could hardly be successful without them. In nine out of ten cases that is certainly true. It is best for us to picture enterprise as a blend of managerial skill and financial resources. Enterprisers must have funds of their own, or borrow them. They must employ capital goods such as machinery, tools, scientific apparatus, and so forth. They may be dependent upon large stocks of raw material and incidental supplies, to say nothing of real estate and cash at the bank for current expenses. We have seen long ago that modern methods of producing and marketing wealth call for initial outlays the return on which constitutes an integral part of profits.

Still, there may be profits even in the absence of capital funds, or at any rate, these latter may be anything but a safe index of the scope of transactions and of rates of profit secured. Commission houses, for instance, sometimes build up a big business though possessing only slender means of their own. Insurance companies have little capital except what is paid in by policyholders, and these payments are not loans for the most part, but prices for a service rendered. Thus we may argue that an insurance company has a tremendous volume of sales, but a slight working capital. Capitalization in any sense here is no barometer for scale of operations or for total net returns per year. So, while profits hinge ordinarily on the use of funds, we must not consider the two inseparable. From a logical standpoint the two are not interrelated, what-

ever the view of the average person who enters business equipped with cash or concrete forms of wealth.

The prevailing combination of enterprise and capital, however, brings up the necessity of separating *net* from *gross* profits. Evidently business men have both kinds. They have a volume of business, a rate of turnover which shows how often they must replenish their stocks per year, and a net income. Gross profits are total receipts from operation, or from sales of goods and services. Net profits may be defined as gross profits minus the sum of expenses and an imputed interest on bona fide investments. If for instance we spend ten thousand dollars on our plant and on supplies, the current interest rate being 5%, we write off 5% of the sum mentioned. Five hundred dollars thus is deducted as imputed interest, meaning that if our money were invested in bonds of some sort, it would bring us so much annually. Only what is left after wear and tear, imputed interest, and other costs have been subtracted from gross profits, are net profits. It is this latter which we calculate per year or per total sales, or per average dollar of sales made.

Statistics on net profits are not hard to obtain nowadays and show very high rates in some cases. For more than ten thousand corporations in this country the return on investment has been estimated to be as follows during the triennium of 1911-13:[1] For nearly fourteen hundred concerns, less than 6%; for nearly three thousand. 12-20%; for over thirteen hundred, 20-30%; for two hundred and thirty-three, 40-50%; and for eighty-five, over 100%. These figures are the more noteworthy since they apply to fairly normal years. Again, in 1922-23 the Pullman Company reported net receipts equalling 10% on gross sales; a national automobile concern, somewhat more than this; a prominent department store, about 8%; while wholesale coal dealers according to a commission of inquiry pocketed appreciably over 50% in 1920, a peak year for business in general. It is plain therefore that some types of enter-

[1] Friday, D. Profits, Wages, and Prices, p. 41.

prise do very well, if investment is made a test, and indeed, probably by any other test. But on the other hand these rates must not be taken as quite representative. After all, the great majority of enterprisers are farmers and retailers, and for these net profits do not run usually far above a current rate on capital or a prevailing standard of living. Even for corporations the return is not so large, taking them as a whole. Thus in 1918 the average for *all* corporations in the United States was reported to be scarcely over 5% on investments, while for some fields net profits were, of course, much lower.

§ 2. Neither should we assume that profits can in all cases be distinguished easily from interest or wages or even rent. While our definition may leave that impression, it is not true. Now and then we may be in doubts about our classification.

The salaries of high officials in a corporation, for instance, may be regarded as profits even though not called by that name. It is safe to presume that the directors of the business in such cases set aside for themselves, with or without express permission from shareholders, a portion of the profits expected in the course of the year. What exactly is an expense *necessary* to the operation of the plant, and what not, can rarely be told offhand. Salaries of twenty or a hundred thousand dollars may be considered essential on the ground that capable officers cannot be had for less. But it may also be that men already in power allot to themselves such exceptional stipends because their position permits it or because it seems better to pay big wages than to declare dividends which are subject to a special corporation income tax.

Again, managers of chain stores are in one sense employees receiving a wage, but in another semi-entrepreneurs because they are responsible for the branch they supervise, receiving a commission on total sales, and fulfilling some of the functions typical of a self-employing business man. Thus too brokers, auctioneers, realtors and agents of all sorts charging a commission for

their services are usually classified as enterprisers, although the rate of pay is fixed per unit sale. On the other hand, commercial travelers and a number of employees in banks and other business establishments count on two sources of revenue, one a regular salary, and the other a commission or a bonus. Are these men then recipients of a wage or of profits in the narrower meaning of the word? It is possible to argue the matter both ways.

In the third place some professions depend upon fees which differ from wages in that the individual service is the basis of income, while the number of services rendered during the year is uncertain. Physicians, dentists, lawyers, and some public officials belong to this group. A lawyer's so-called retainer fee is a special instance in this group. Or consider the price charged by a tailor making a suit to order, his expenses being known at the start, and also the price paid by the consumer. Shall we class such an income as profits or as wages? If wholesalers order goods according to agreements made with retailers, do they get profits or wages? If joint stock companies or corporations declare dividends, the majority of stockholders taking no active part in the business, do they pay out profits or interest on investments? From the standpoint of risks the dividend is undoubtedly profit, but if we regard the venture as safe and find returns made regularly, averaging a fairly fixed rate on stocks contributed, we may be inclined to call such dividends a virtual interest on investments. Especially where the policy of cumulative preferred dividends is introduced, the intent is clearly to pay a fixed return on property, the rest becoming the share of others in the company.

As for banks and bankers, are their net receipts interest because derived from a loan of funds—albeit not for the most part their own—or profits because secured by conducting a business? Here again we may give two different answers. It is not easy to prove either interpretation wrong. Public utilities too present a perplexing case since their monopoly is granted

and guaranteed usually by the state or by the municipality. Precisely because of this privileged position they are restricted frequently to a maximum profit, a return of perhaps six or seven per cent on actual investment. So we might class this return as interest.

Or to take the well known case of rentals accruing on special rights of property. Are patents and copyrights rent bearers or sources of profits? Inasmuch as the owners have a monopoly by virtue of legal protection and use it to secure a revenue by way of leases, we may treat the revenues as rents. They are akin to rents from land or mines. Similarly profits from an appreciation of land, or from a sale of goodwill may be called rents. There is no need of denying this. Let us however define all of these incomes as profits with the clear understanding that they spring from peculiar conditions, and hence must be treated as only one of the known forms of profit.

§ 3. In general three sources of profit may be distinguished, and will be discussed here in the order mentioned. *We have, first, profits akin to wages* because they spring largely from the sort of skill which labor employs in making a living, or because the regularity of their return suggests the position of an employee who is paid according to contract. This type therefore is commonly called wages of management. *In the second place we have monopoly returns, as mentioned a while ago, and in the third place rewards for risk taking which are known also as "pure" profits or aleatory gains.*

§ 4. As regards the *first* of these three kinds of profits we should perhaps stress particularly that they cannot be reduced to a principle of supply and demand such as applies to ordinary wages. The phrase "wages of management" must not deceive us. We do not mean that such profits vary with fluctuations in either supply or demand. There is really no demand for entrepreneurs, for each one of these goes into business on his own responsibility and cares little or nothing about the attitude of the public. This latter never asks specifi-

cally for services of the entrepreneurial sort. It does not say that there is an excess or a dearth, nor does it bid for these services as it always does for goods. Besides, the same number which at one time may be sufficient, may leave a void in the business world the next time. It is difficult to picture a definite demand for certain numbers or for quantities of service. Supply too is vague, if not meaningless, for the same reason. We cannot argue that a given number of enterprisers meet certain needs, and that a more or less of service reacts measurably upon profits in any shape. All we know is that men enter business and leave it as they like, rendering services of some sort, but remaining independent of the formula which holds for commodities or to a large extent even for laborers.

Wages of management, then, may be defined as a type of profits which accrue to entrepreneurs whose functions resemble in large part those of employees, and which constitute a fairly regular income as contrasted with gains due directly to risk taking.

They are therefore not a residual claim in the sense usually applied to net profits. We cannot say that they are thought of last or remain highly problematical. To be sure, from one standpoint all profits are a remnant. We must admit that this follows from their being a non-contractual income. Since no class of profit is agreed upon at the start of a transaction or at the founding of a business, the question whether a gain results or not is a real one. There may be none. There may be much. Expenses and prices decide this. First the expenses must be met, and then they must be deducted from sales prices or gross returns. What remains is either a deficit or a surplus. In the one case the entrepreneur has less than nothing; in the latter case he has profits, however explained. So there is reason for considering all profits as a final share, as a residual one.

Nevertheless, we may counter this argument as follows, so far as wages of management are concerned. To begin with, these "wages" are fairly stable from year to year, reflecting technical skill and the faithful

performance of routine duties rather than genuine business qualities. Retailers, mechanics like plumbers, roofers, and auto repairers, the old time crafts of the tailor, baker, or blacksmith, these and other self-employing persons earn profits aptly called wages of management. What they need to be successful is a fund of knowledge pertaining to the management of *things* and physical forces. Information on this point is more important than an insight into unstable business conditions or human nature. Hence the labor aspect predominates in these fields, and what is more, the income is neither large nor alarmingly variable. Business men of this class know approximately what each month will bring, or what is theirs for consumption at the end of a year. If we insist upon speaking of such an income as residual, we must at any rate add that there is nothing very contingent about it. Its existence is taken for granted and usually proven by the course of events.

Secondly, there is a sense in which every share going to producers is a residual one. We have four producer groups for purposes of analyzing the distributive process, namely, labor, capitalist, landlord, and enterpriser. Each receives pay for his efforts which is known respectively as wage, interest, rent, and profit. If these four classes comprise the entire annual output of a nation, the deduction of any three makes the fourth a last or residual one, and as far as our arithmetic is concerned, we may of course start with any three in order to find the size of the fourth. So it is in part a question of method which share impresses us as being the final one, that is the residue remaining after all else is accounted for.

Third, there are cases of specific price fixing which give us something in the nature of a contractual income even though it is neither wage nor interest nor rent. Manufacturers in recent years have put a definite price upon articles and also fixed the margin of gross profits for middlemen. Both wholesalers and retailers have had their income predetermined in this manner. That is, to some extent they found it controlled by producers.

How many articles they sold in the year, and what their expenses, remained of course their own affair. But the agreement signed by them with the manufacturing concern shows none the less how far from the truth we are in picturing profits (and especially wages of management) as a remnant which nobody figures on beforehand. On the contrary, to judge by such modern practices in the United States, profits are fixed at the outset so that sales prices range accordingly. In a very serious sense wages of management are a preëmpted portion of the social dividend, a return which enterprisers demand before offering their services. Instead of paying out to others first, and then taking what is left, they frequently fix a certain percentage on all expenses as a legitimate profit for themselves. A merchant may reason as follows: "My operating costs amount to $10,000. My interest and depreciation fund is not less than $5,000, and my profits merely as a reward for efforts should be another $5,000. So I must set my price at such a figure that under normal conditions I shall secure a net income of $5,000."

To be sure, his forecast need not come true. We must emphasize again that sales may fall below the average, or that new and superior rivals may compel him to sell for less than at first resolved upon. Competitors and consumers are truly decisive in many cases, and notably at a critical period in business. But for all that, the budgetary basis of wages of management remains. The majority of entrepreneurs do estimate profit *rates*, though not perhaps total net receipts in the year. They reckon with them as a kind of expense or first lien on the funds turned over by the public when making its purchases. So wages of management may be considered a prior rather than a residual claim.

Fourth, it should be easy for us to understand that personality is always a vital factor in business, hence a force tending naturally to claim a minimum for services rendered. The larger the firm doing business, and the abler the management back of it, the safer it is to argue for the reality of a predetermined rate of profit

partaking of the nature of wages of management. Most business men figure on gains as a necessary reward for sheer effort, for labor in the wider sense. Their net profits seldom appear to them in any other light. They argue that they render valuable services and should be compensated at their own valuation. They struggle for recognition in this spirit and impose prices upon the consumer even though neither monopoly nor restraint of trade is involved. It is simply a case of superior personal gifts and energies demanding a tribute from the masses of people who live rather carefree into the day. Enterprisers must be thought of as men firmly resolved to get the most for their offerings and to lead others in the race for wealth and power. Thus wages of management again loom up as a first title to social income, or at any rate as something very different from an accidental residuum. They range above most wages and salaries. Insight into market conditions, singleness of purpose and clean-cut principles of management, an understanding of the patrons to be served and perhaps of human nature in general—these traits do for most enterprisers what scientific knowledge or mechanical skill usually do for the laborer.

§ 5. *Monopoly* is a *second* possible source of profits in addition to those which we have called wages of management, for it includes the power to fix prices irrespective of costs of production. As we have seen in analyzing the pricing process, sellers or buyers occasionally are at a marked advantage. There may be only one seller against many buyers, or vice versa, in which case the monopoly is absolute. Or there may be comparatively few buyers or sellers, so that those on the opposite side lose by intensive bidding against one another. Total monopolies are rare, but partial ones based on advantages of production or sale rather than on sole control of merchandise can be found in all countries at almost any time. They constitute a regular feature in our modern economic system and thus lead to the emergence of an income distinct from both wages of management and rewards for risk as such.

The immediate effect is generally held to be—and often is—a price above what competitive conditions would allow. There is an attempt to fix price so that the aggregate net profits are the highest regardless of the volume of sales effected or of the number of customers served. The law of monopoly price is for this reason contrasted by many observers with that regarding open market operations. Or instead of stressing this point we may refer to consumers' rent which may be wiped out completely by monopolistic privileges. Ordinarily the purchaser pays less for an article or service than it is worth to him. It has already been explained why this is so.[1] But when somebody controls supply, the price is likely to extort what the buyer can give. As it is put in the vernacular: Monopolists are tempted to charge all the traffic will bear. Thus everybody pays the equivalent of the full use value embodied in commodities. This elimination of a normal benefit enjoyed by people stirs up their wrath and leads to incriminations which may compel interference by public authorities.

When we consider the sources or kinds of monopoly, we note first of all that it relates either to reproducible things or to nonproducible ones, and secondly, that this latter class is the most familiar and may easily be subdivided further.

Among irreproducible things, we must mention mainly land as soil or site, natural resources taken from the interior of the earth, and certain objects of human fashioning which in their very nature are unique. Soil and site cannot well be classed as monopolies, however, for as a rule the ownership in them is distributed among too many people. There are hundreds of thousands or millions of farmers owning the land which produces our foods or raw materials of organic origin; so it is hardly fair to class landlords as monopolists. But sometimes timber, water power, and mineral riches or coal, gas, and oil are owned by a comparatively small group. This dwindling minority controls them so per-

[1] Vol. I, ch. 25.

fectly that prices rise above the competitive ones. Profits from sales of such items may grow rapidly in a short time and give proof indirectly of undesirable conditions, as the average man sees them.

Again, monopoly sometimes pertains to things of human making, thus differing from one in land and its treasures which are provided by nature and need not be improved at all by man in order to attain value. Well-known instances of this kind are art works, historical monuments or those of a prehistoric epoch which later on are prized for their quaintness or possible beauty. Whoever possesses such man-made wealth is in a fortunate position for purposes of selling, if not in other respects. Objects may be bought for little or found accidentally, yet sell for huge sums. There is a wonderful opportunity for growing rich over night, for coaxing consumers to pay prices that are as ridiculous, judged by ordinary standards, as they seem reasonable to the seller. If we believe that the craftsmanship of former ages cannot be revived, that antiquity itself is a virtue, that the achievements of the distant past as embodied in tangible objects should be preserved for posterity, then we are willing to pay a heavy tribute to dealers. The greater the concentration of incomes in society, the higher are the prices and profits derived from sales of such objects. Recent decades have been instructive on this score.

Where monopoly is fairly complete, even though the article or service is technically *reproducible,* it is due to either one of four facts, namely, either to legal protection or to ownership of materials or to their control by agreement among competitors or to personality itself. Public authorities grant charters, patents, copyrights, and trademarks, and thus give particular persons or corporations the sole right to market a certain commodity. Municipalities either own their public utilities or permit only one or two private parties to furnish them. The initial outlay for urban traction power, light, harbor facilities, and water supply is so large that it would be folly to duplicate plants or systems

for the sake of trying out the effects of competition. Whenever fixed charges relative to operating expenses are very high, and whenever physical obstacles render difficult or prevent the development of competitive services, a monopoly may be granted. Railways, telegraph and telephone systems, postal services or highways belong to this class, hence monopolies for them might be granted in all countries, and frequently are, profits rising above the ordinary if charters do not set a limit or claim the whole surplus above a certain fixed return on actual investment.

Governments however ensure special privileges also to individuals who do not provide public utilities. Inventors and authors may secure huge royalties from their original ideas; or the rights to them may be bought up by others who thereafter become the sole producers and sellers of the article in question. Thus the law protects originality of thought. Ideas are claimed by particular persons. Applications in industry or art are commercialized. An opera, a play, a novel, a mechanical device or scientific apparatus may bring big incomes to the originators. Royalties from phonograph records of one man's voice amounted (we are told) to over a half a million dollars for 1921 and 1922. Novelists and dramatists have grown wealthy on copyrights within a short time. Inventors of trifles have more than once made millions of dollars. Leases of machinery have enriched some companies manufacturing them, while in other cases inventors and producers have divided the spoils, each securing a steady income from exclusive rights legally guaranteed. Thus government action may evidently add something to the usual wages of management, even supposing that the administration of such patents or royalties involved effort on the part of the originator. Revenues from these sources would have to be considered profits since they certainly do not represent wages of employees, nor interest or rent. If we must classify them, they are best treated as net profits.

Still, instead of legal protection we may find a high

concentration of ownership or of control by agreement, and this may be tantamount to a monopoly. Occasionally a few concerns own most of the capital invested in the production of a certain article or service, hence are able to ask what they like. More commonly ownership is scattered, but competing firms get together, sign agreements, fund their interests, distribute territories in the sale of finished goods or raw materials. Here too monopoly may be fairly complete. It may arrest the development of potential competitors for a time, especially if the ratio of fixed charges to annual sales is large; or it may lead to a control of supply and demand in such a degree that prices are not really competitive. The history of the nineteenth century abounds in instances of attempted or successful monopoly by a "cornering" of markets, by pools or gentlemen's agreements or trusts in the strict sense, or by various business combines which regulated prices regardless of costs of production. Business profits thus have often risen high. Statistical data have been supplied to prove the remarkable effects of combination and restraint of trade. There is no doubt that public opinion for this reason forced many governments to call a halt to this policy.

A fourth type of monopoly cannot so be prevented, nor does it play a conspicuous rôle at any time; and that is the commercial use of personal gifts and reputations. These special advantages will always exist and favor a few individuals. Genius is in a class by itself. It cannot be created at will nor forbidden to sell its services at whatever figure the public thinks right. Men of extraordinary talents therefore have a unique source of income. If they are self-employing, they may garner undreamed of riches, especially nowadays. Great singers or actors or actresses go on tours acting as their own managers, earning hundreds of thousands in a single season. Reputations are capitalized by leasing the use of names to manufacturers of this or that article. Athletes, billiard players, vaudeville performers and other prodigies sell their tricks at

high figures while popular taste allows it. Thus in a dozen different ways profits are accumulated and traceable directly or indirectly to facts of personality, to those rare capacities and characteristics which the public prizes highly, and is bound to admire whether entertainment is cheap or dear.

It must be confessed however that for the most part monopolies are not absolute but relative, not complete but partial. In other words, if profits range above mere wages of management, or accrue irrespective of risks, the cause is a relative slight advantage which certain producers enjoy over others. The commodity is both reproducible and actually turned out by a number of competing parties. There is no one seller dealing with consumers as he sees fit. But in producing the goods or service expenses vary. For a variety of reasons they may go far apart. Sometimes access to natural resources, or their proximity to factory and markets, favors one entrepreneur. Sometimes technical means and methods are so superior for one party that costs are less than half of what others figure on. Sometimes economic rent is divided between the landlord and the tenant, while to all appearances the latter alone is responsible. A store in a city, for instance, may be exceptionally located. At that point traffic is heavy and hence business brisk. Sales per average year may be several times what they are not far away in rival shops selling the same line of goods. Thus the question arises to what this extra gain is due. The landlord may attribute it to the site itself, and hence wish to pocket the difference in rent. On the other hand, he may not know anything about the location, or knowing it, waive his rights. He may collect only a part of the economic rent, leaving the rest to the proprietor of the store. Or we may attribute the bigger sales and profits to a finer display of merchandise in windows and cases, thus pointing to the manager himself rather than to the advantages of the location. Or certain personal traits of the vendor may appeal to us and be regarded as the key to the situation. But whatever our opinion, we are

sure to find a greater net profit and to compare it with monopolies of a more definite character.

Producers of lower expenses are usually gainers by it because goods are sold somewhere near that point which takes care of the least efficient men. At any one time the market demand calls for a certain quantity of goods, and if these are turned out at varying costs, somebody is going to benefit by it. Consumers do not know who is the most efficient producer, nor does this latter sell for less simply because he can afford to. To be sure, we have seen that under such conditions prices may vary slightly. There is no *one* price at which all wares are sold. There are several, according to what we mean by market and how equal the knowledge and motive of all buyers or sellers. The dominant price represents a group of prices rather than a single one. Still, this dominant group approaches the maximum expense of production at the moment. Hence superior business men or those favored by superior external circumstances pocket an extra reward. For them there emerges a sort of monopoly profit. For monopoly after all need not be taken literally. It need not be one seller exploiting competing buyers. It may be simply a notable difference in costs of production.[1] Quite generally such variations from place to place can be found. They are really inevitable as long as men and environments, social or physical, differ so much. A few sellers therefore are at an advantage whatever the nature of their product or the final outcome of a struggle with inferior rivals. If they succeed in ousting their competitors they have a virtual monopoly, especially if they stop fighting with one another, entering into a sort of gentlemen's agreement. And if they do not conquer the field, but have to leave the inferior rivals in the market, they will nevertheless gain an extra profit because the price tends toward a maximum of expense when expenses vary. So, in any case, there is an income distinct from wages of management as well as from profits for risk taking.

[1] Compare with Vol. I, p. 79.

§ 6. The *third* source or kind of profit is this gain which goes to entrepreneurs who assume *risks* regardless of monopolistic or competitive conditions, and who demand a reward for this responsibility in addition to what wages of management represent.

Of course, from one standpoint this third type of profits results from extraordinary insight into business conditions. There can be no objection to our identifying it with this ability of some men to judge markets and to acquire knowledge which gives them a lead over others. In a sense, "pure" profits are the recompense for intuitive judgments and information of a superior sort. The more of this faculty or asset a business man possesses, the likelier he is to reap a big harvest wholly aside from what he could claim for taking charge of a plant. We might say that there is a world of difference between performing routine managerial duties and sizing up a situation containing unique features and demanding instant attention. Whoever can satisfy these singular requirements of business wins richly. For him there are profits irrespective of monopoly, and additional to ordinary wages of management. No doubt of this fact.

In the main however it is logical to link our third class of profits with risk taking. We may assume that a business man has to charge for this function even though no one individually entrusts him with it or benefits directly by it. We may grant that he chooses his own occupation, hence is obliged morally to bear its burdens cheerfully. But it must also seem clear to us that in the long run risks signify expenses, so that something must cover them or more than offset them. Every entrepreneur, in short, plays in part the rôle of an insurance company. He takes risks on behalf of others and receives payment therefor. If he is a producer he buys raw materials, equipment, and labor power ahead of the day of marketing a finished product, without knowing what exactly the public will pay for this product, or how much of it may be wanted. In a dozen ways he incurs risks that may prove costly.

Society should not expect such work to be done without being charged for it. It should say to itself that the liberty to buy anywhere, any time, any amount it pleases is well worth a premium incorporated in the price and offered occasionally—though not always—as a reward to the producer. If instead of creating goods the entrepreneur merely markets them, he none the less has responsibilities of a peculiar sort. There still are hazardous duties. There is buying beforehand without guarantee of price by the ultimate buyers. There is an equalizing of supply and demand at different places. There are risks in storing and meeting emergency demands. There is plenty of chance to perform labor without reaping a harvest. We need not just now discuss the reasons for risk in order to realize that they do exist and connect immediately with the normal functions assigned to business men. The general public rids itself of odious duties and great hazards by delegating them to a few specialists. These minimize risks for the average person and make life more pleasant. In return these specialists expect extraordinary profits now and then, or a profit sufficiently ample in the course of time to cover all losses actually incurred, as well as to constitute a kind of heart-balm for worry and perhaps sleepless nights. Viewed from one angle, that is the justification and explanation of aleatory profits. They represent a service rendered to society and a premium paid by it at irregular intervals to particular entrepreneurs. But, of course, we may also stress the common sense fact that men go into business for themselves, take hazards, meet reverses stoically, and on the other hand pocket all gains as a fair recognition of their daring, if not of their heroism. Profits which are neither wages of management nor monopoly returns may impress us either as a tribute levied by buccaneering business men or as a type of premium paid by society for insurance against such personal losses as would be sustained if every individual were his own entrepreneur.

Business firms may suffer in one of several respects.

In the first place the net *income* normally expected for effort may be lost. There may be no wages of management. In the second place a great deal of capital may be at stake, so that either this or the interest upon it may be lost. Nowadays production and exchange in every field necessitate considerable outlays. It is not unusual for a corporation consisting of, say, ten thousand shareholders to invest a quarter billion dollars in a venture. Public utilities and manufacturers or mines are thereby put upon a working basis and made to yield large returns as a rule. But the placement of so much money in such highly specialized forms as machinery, tools, buildings, engineering works, and so on, point to grave risks under extraordinary circumstances. A thousand different events of an economic or political nature may jeopardize these tangible assets, to say nothing of intangible ones like goodwill, rights of way, and so forth. The *interest* on capital so sunk may very well be forfeited. For years in succession there may be less than the current rate on high class bonds, or nothing at all. Furthermore, the *capital* itself may go to wreck and ruin. There may not be sufficient income to keep it in good repair, to maintain the *status quo* of operation. Instead of providing for these needs, enterprisers may feel obliged to close their plant, to neglect upkeep, to abandon their field entirely. Or external circumstances over which they have no control may destroy their property physically, or diminish its value so much that it might as well have been scrapped and burned.

Finally, there are risks in reputation and in life itself. Some enterprisers do stake their health and happiness upon a venture. They are willing to risk everything in order to prove theories or to test their mettle or to win applause and prestige. Whatever the motives for their undertaking in the last analysis, they may work and fret enough to shorten their lives, to invite even thoughts of suicide. This cost, too, might be considered in an enumeration of the possible losses in business. But aside from it we are bound to reckon with

a dimming of business reputation as a result of unfortunate, ill-fated enterprises, for it may be difficult after a serious defeat to regain the confidence of banks, to obtain credit in the open market, to sell goods again with fair success. A single failure is remembered as long as a score of victories! The high repute of a business firm established after many years of arduous work may be shattered in a single month of financial reverses. It is not unreasonable, therefore, to include these items among the losses to which business is subject and which call for exceptional profits at times, if men of courage and ingenuity are to have a proper incentive. As we know from everyday experience, deficits are just as real as big profits. Retailers invest a few thousand dollars and are compelled to close out within the same year. Big concerns go under at times without salvaging more than a small fraction of their assets. Bankruptcy is genuine in many cases, even though in others the chief purpose of the receivership is to reorganize the firm or buy off creditors at less than could be done otherwise. In fine, the risks of business are before us everywhere. We should not be blind to them.

Superficially viewed they consist of the fact cited earlier that enterprisers must meet expenses before their "ship comes in", before profits on sales are fully realized. They must buy materials, hire labor, pay probably some rent and interest, and thus incur huge expenditures ahead of returns in the shape of wages of management, monopoly profits, or aleatory gains. There can be no doubt of the importance of this advancement of funds, particularly in modern times. Besides, we have seen already that bills must be paid regardless of returns on a venture. Though in any one year net profits are slim, expenses have to be defrayed as usual. Usually indeed they are. Interest on bonds is due and paid to the holders thereof. Royalties and rentals accrue to certain persons or corporations and are remitted in due time. Wage earners expect pay and are seldom disappointed. Supplies are costly

and yet are paid eventually, even though there may be delays because of poor business. Thus the average enterpriser can account for his risks, and the possibility of a loss readily enough. He simply points to outgo of the past and to obligations incurred regardless of returns. If he always pays others first and himself last, risk is created by this circumstance alone and must be rewarded somehow.

§ 7. Still, fundamentally risk arises not in this lapse of time between outgo and return, or in the mere absence of a guaranteed income, but in uncertainty. It is because the return cannot be safely inferred from *any* fact, whether through a contract or otherwise, that business men assume risks. They are ignorant of some things and events, and that is the ground of their trepidation. Risk always implies uncertainty, and this again means a lack of knowledge, or ignorance. There is an objective uncertainty in the sense that things do not happen regularly and invariably in the same manner, and there is a subjective uncertainty because human beings themselves find it hard to decide what will happen, to adjust their conduct accordingly in any one situation, for any one transaction. Thus the inability to make forecasts and to provide for every future occurrence is the final reason for risk, if not the measure of it quantitatively.

Back of this uncertainty is the universal rule of change. If things remained ever the same, if we could reduce all happenings and relations to a few basic laws or modes of manifestation, we should be ready to prophesy, to plan ahead carefully and to calculate impending losses and profits. Indeed, if we were omniscient to this degree, there would be no excuse for losses. There would be gains only. The very monotony or unalterable sequence of events would ensure us a definite return on effort and investment; for all relations between things and persons would be ours to understand and to apply practically. But since men are not so magnificently endowed, and more especially since nature and society are ever changing, income is un-

certain. We can hardly ever tell what will happen the next moment, the next month, or the next year.

Things are so unstable! Social and economic relations are so incredibly complex! We find it impossible to predict weather or political events or prices or costs of production or the drift of population and demand. Economic relations do not last. They are continually in a flux. They vary in kind, in magnitude, in their bearing upon other facts. Thus we may explain the existence of business risk by the one word "variability". Socio-economic relations are built out of an indeterminable, virtually infinite number of variables of many sorts. There are unstable ideas, creeds, policies private and public, physical facts like soil properties or the weather, or legal rights like those pertaining to property, to citizenship, to corporations, and so forth. There are countless connections between these things, ideas, and rights. There is before us a network of relations which no one can analyze or control even in small part for purposes of his own.

Changes in fact come swiftly as well as slowly. Some occur in the twinkling of an eye and upset business calculations. The news of improved crop conditions may flash over a private wire and affect quotations in the wheat pit decidedly. A fire or a flood may disturb markets for hundreds of miles over night. The results of a Presidential election in the United States may bring new problems in business, even though the campaign has been going on for months previously. The rush of events is therefore rapid and irresistible. It exists everywhere and makes it impossible for us to master all possible cases. We are scarcely ever sure of our estimates in business. Risks loom up continually and must be faced bravely if we wish to add to bare wages of management or to receipts from monopolistic privileges.

Apart from the classification of the sources of change or risk to be cited presently we may distinguish at this juncture between two major kinds of risks, namely, between the calculable and the absolutely incalculable. To

a certain extent it repays us to draw a line between these two, for if all risks are somehow calculable we may of course insure ourselves against them. On this supposition risks for any one enterpriser can be practically eliminated. But if certain types of risk of the incalculable sort remain, then a reward for shouldering them is still logical; then the third source of net profits must be considered.

The existence of calculable risks reminds us, first of all, of the close relation between the two terms "risk" and "chance". In the first case we apparently emphasize the probability of a loss as against a gain, while in the latter we expect to gain rather than to lose. When the outlook is favorable we speak of *a* chance, or of *our* chance. We rate it as fair and indicate that we shall probably get what we are after. But if the dangers in an undertaking are pronounced or easily gauged, risk becomes the characteristic feature even though we admit the possibility of winning. Risk and chance thus express relative magnitudes in a rough measurement of probabilities. In "taking chances" we admit facing risks, just as the riskiness of a move suggests indirectly that contrary to expectations we may be safe and profit by it.

Secondly, risks are calculable, not in the sense that we can predict the probable amount of a loss or gain in a given business deal, but in so far as we are able (or think we are able) to estimate the probability of the happening of one kind of event as against all other possible ones. Enterprisers, for instance, are interested in profit and loss, hence face these two classes of events continually. They look forward to either winning or losing. If they believe that uncertainty or risk is calculable they mean that they can count the factors and the relative weight of the factors for and against a loss, or that for a more or less determinate number of transactions they can estimate the chances of loss as against those of gain. They ask whether in one particular deal the possibility of a profit can be roughly gauged, or they ask whether in the long run the chances for and

against them can be expressed numerically. If in both cases the answer is in the affirmative, this indicates the calculability of risks, no matter what the rate of profit or the aggregate sum of money gained or lost. Calculable risks are always rough estimates of a percentage of favorable outcomes, or of a number of favorable factors as against unfavorable ones.

In the realm of physical events, for example, we find estimates of a certain "hand" being dealt out of a deck of cards, of our turning up a certain card out of fifty-two the first time, of the frequency with which a certain combination of cards returns, of winnings at the roulette table, of heads or tails tossed in flipping a coin, of the kind of weather we shall have the next day or a week hence, or of the frequency of sunshine as against rain in the course of a month or year. In these cases we frankly admit that chances or probabilities may be calculated approximately. As regards cards or the tossing of a coin, we know beforehand how many kinds of events are possible and what the determining factors at work. But even in weather forecasting we may consider the number of determining factors to be definite and their joint operation understood, since past studies and experiences have again and again proven to be a sound basis for generalizations. So we argue that risks here are truly calculable. Since physical relations are usually few in number and uniform in character we do not hesitate to make predictions. Our knowledge regarding such events can soon be turned to good account.

§ 8. When we pass over to psychic and social relations our insight is no longer so adequate. We find a much greater number of influences bearing upon the occurrence or nonoccurrence of a particular event, and likewise a much greater complexity of interconnections. We are consequently not so optimistic in estimating our mastery of facts, nor so accurate in forecasts when they are attempted.

To be sure, even socio-economic risks can be reduced for particular persons, or shifted in such a way that the

result amounts to a reduction of risks. We have already seen that manufacturers and merchants habitually resort to "hedges" in dealing in futures, that is, in placing deliveries or in buying options some time ahead.[1] Furthermore, we have the familiar example of insurance companies who calculate probabilities to a nicety and make it their business to prosper through an assumption of risks. In this case uncertainties seem to be eliminated altogether. Deaths, births, fires, thefts, rainy days, and a great many other kinds of events are treated as if they obey laws which can be mastered for the benefit of every individual. Indeed, from one standpoint that is true. The secret of success here rests in the study of a vast number of cases regarding one class of events, the happenings of the past being used for calculations ahead. But an insurance company does not ask whether a *particular individual* will die at a certain date; nor does it predict fire or accident or disease for a very small group taken by itself. Instead it seeks to find out merely what percentage of a very *large* number of cases has yielded the event in question. It deals with huge numbers and with *averages or samples* which are deemed sufficiently representative. That is the viewpoint. If there are a million men and hence a million possible suicides, we estimate that a certain percentage will die by their own hand. If statistics gave formerly a rate of twenty per each one hundred thousand of inhabitants, we may be inclined to make this the forecast for the next year or decade. Whether we have much faith in our estimate or not depends upon our idea of what factors lead people to commit suicide, and in how far these factors operate at all times and everywhere; but we are assuredly entitled to an opinion of some sort. As long as we deal with large numbers we feel safe in accepting frequencies of the past for future reference. That is part of human nature and of our reasoning process.

One result of the existence of calculable risks, therefore, is the development of a statistical service which

[1] Vol. I, ch. 20.

seeks to guide entrepreneurs. Whenever we can study a great many *similar* cases, prove the similarity to a large extent, and base averages upon them, we may offer advice regarding probabilities in the future. If business men then wish to know merely what percentage of cases are in their favor, or what combinations of factors have predominated in the past, they may go to professional investigators and secure the desired information. Probabilities may be made widely known in this manner. Risks may be made further calculable by the aid of these experts who do what the individual business man does not have time to do. The costs of uncertainty may thus be lowered perceptibly for the benefit of all members of society. Governments, universities, corporations, newspapers, and private research agencies of several kinds glean data for this purpose. They compile them and reduce them to averages which suggest frequencies hereafter. Weather forecasts, market reports, bank records, and highly detailed business surveys save a man money if he scans them regularly and acts upon them.

We must not, however, forget that a good many kinds of events cannot be counted and classified after all, and that often an entrepreneur wants information for a *single* transaction, not for a year's routine business suited to constant conditions. Some risks consequently are incalculable and not to be met by paying for statistical information or maintaining a bureau for commercial research. Even if the statistical service were not very costly, most entrepreneurs would place no faith in it since each one of them has problems peculiar to himself. There are so many kinds of business and so many different ventures for each class that cases can neither be standardized nor made applicable directly to future needs. Instead of attempting this, enterprisers take each proposition on its own merits and bring to bear upon it such experience as seems to fit without being reducible to definite rules or measurements. For this reason many types of undertakings lie outside of the pale of statistical help. Risks cannot be calculated,

however bold we are in gauging them to the best of our abilities.

§ 9. To cite a few concrete instances of risk in this sense.

A speculator at a produce exchange may sell short, that is, pledge himself to deliver a large amount of a certain article—say, wheat—at a future date, hoping that he will then be able to buy all he wants at a price below that at which he has contracted to deliver. He expects a fall of the price of wheat and a handsome net profit with it. But he is taking risks, of course. He cannot estimate even approximately what will happen to interfere with his plans, though he may be a good judge in the majority of cases. The very fact that he sells short may affect other gamblers at the exchange. They may buy up wheat in huge amounts at about the same time. There may be underhanded methods in trading, so that the actual visible supply of the grain does not work itself out normally. Furthermore, in the intervening four or five months a war may break out and call for large stocks of wheat to feed soldiers. While the grain is still in the field, a new plague of insects or a new parasite may make its appearance, ruining the crop. Cold snaps early in the summer, rain during harvest time or just before, a long dry spell in any part of the world where wheat is grown in considerable quantities, corrected government reports which prove the harvesting prospects to be much less favorable than at first believed—these and other elements may tend to raise prices by lowering output. The "bear" at the exchange who hopes for cheap wheat at the date of delivery cannot insure himself against such contingencies. He must take events as they come, though as a rule he may show his fitness for the occupation he has adopted. Aleatory gains and losses are especially common at stock and produce exchanges.

Again, a building operator may put up a row of dwellings to be sold at retail. He buys the ground and the materials, superintends possibly the construction, and attends to every phase of the project. He incurs big

expenses and aims to sell high enough so as to pocket a large net profit as the reward of his effort and risk. But he is not sure of success. He may have chosen the wrong location or an unpopular design of house, or may have installed fixtures which displease people. He cannot rectify his mistake. The operation is perhaps his last, or the only one in contemplation. Thus he must take his punishment as it comes. The chance of losing rather than gaining is always there. While he can figure out beforehand many pros and cons in the scheme as a whole, or for any one part of it, he is far from knowing all of them. He cannot know them all.

A financial concern pledges itself to sell, or if necessary to buy, all the bonds issued by an industrial corporation. It does this regularly and makes its living in this way. But the securities are to be judged, of course, on their own merits and represent perhaps odd features not involved in most other transactions. It may be the nature of the business of the borrower, or the type of collateral offered, or the time and economic conditions amidst which the issue must be placed, that present peculiar difficulties to the underwriting syndicate. If it, therefore, guarantees to market all the bonds or to absorb what is left of the issue it must assume risks of a high order. It must be prepared to borrow itself perhaps, so it may take the bonds off the hands of the industrial concern. It has to count on the possibility of losing by carrying bonds for too long a time. Interest rates on the type of bonds in question may rise shortly, so that the guarantee is especially burdensome. Or the trend of business may have been misjudged at the moment of issue, or the taste of the public for bonds of the aforesaid sort may not be what is expected. Thus the financial house pledged to place a large bond issue is taking upon itself quite a responsibility. Its risks are unusually grave, and correspondingly it asks for large commissions. It must insist upon a liberal margin since each issue of securities is distinct from every other. To attempt to average degrees of risk for a dozen such ventures and then to charge fees accordingly would be

neither logical nor just to any one firm marketing its bonds.

Again, an artist on a tour across the country for his own account is engaged upon a venture absolutely unique. It must be so classed because every outstanding personality is inimitable. Suppose the artist in question is a virtuoso on a piano. His art as a performer may be widely appreciated or not. The qualities that distinguish his playing from that of all rivals in the field may have been often discussed and praised by professional critics. Yet that does not necessarily ensure our man of genius a financial success. If he is his own manager and advertiser he has a fair chance to lose because he does not understand the preferences of the general public, or because one part of the country disapproves of what is most lauded elsewhere. Perhaps he starts at the wrong season, inviting competition from theatres and so forth, or perhaps the majority of lovers of music are temporarily surfeited with high grade performances and pianoforte solos. In brief, a number of elements may thwart the purposes of our artist-entrepreneur. So far from pocketing huge sums he barely covers his expenses. The next time he might fare better under otherwise similar circumstances. But he dare not count on that either. Each tour he makes is a new deal. Each one has risks varying in degree and in its nature from the next.

Again, suppose a business man is trying to market extremely perishable goods such as strawberries grown in the south, to be sold far north, a thousand miles away or more. In that case the risk is proportionate not only to the whimsical nature of consumers' tastes, but also to the difficulties attending the preservation of the fruit. There are cold storage charges, special fees for shipping over railroads, for handling, and for transfers within a given market. The shipment must be sold within a few days or there will be depreciation. Another short while and everything is perhaps spoiled. The task thus is to find a market at once and to obtain a price commensurate with expense. A wholesale house dealing in

such articles has heavy risks and little information to guide it. A first shipment in advance of the season is riskier than later ones. But all of them call for a special premium on success lest consumers do without their strawberries the next year and thereafter.

Or take the case of a distributor buying war stocks from the government in order to retail them to the public directly. Obviously the margin of profits here must be very great, for risks are extraordinary. One never knows what people want of such a surplus. Whether it consists of technical equipment for producers or of finished commodities destined for personal use, it may be unmarketable at any price, or at the price which compensates the distributor. People may be suspicious of such things, thinking them old and worn, devoid of quality, possessing durability, but not of attractive appearance. They may have changed their taste during the years intervening between the war and the time of retailing, so that large lots of goods cannot be sold anywhere. The man buying government stocks is aware of these risks and also of the lack of information on the subject. He does not expect to apply his earlier experiences to this problem, nor to glean useful data from other quarters. He compares all the pros and cons occurring to him upon a little reflection, but beyond that is completely at sea. The risks are verily incalculable.

Novelties of many kinds are unique in make-up or purpose, hence known for the difficulties attending their sale. Flowers sold on holidays or special anniversaries, campaign buttons catering to political creeds and prejudices, toys for children, new types of amusements offered to people of all ages, passing styles in dress or fads originating in the idiosyncrasies of a celebrity triumphant perhaps only for a moment—all these are further instances of risks of a most erratic nature. Like concessions sold by authorities apropos of a national exposition or a county fair or the opening of a public park, these products of a manufacturer of novelties constitute a gamble pure and simple. The relative weight for and against cannot be predetermined. There is no

way of estimating the degree of risk involved. The enterpriser can only assume it to be high, and so console himself with the prospect of big profits, if all goes well.

§ 10. The *reason for* these uncertainties characteristic of business in general, but especially of certain types of enterprise, may be classified variously, as suits our fancy. We may distinguish between variables of the physical environment and those rooted in socio-economic facts. Or we may emphasize the difference between regular and irregular changes in the world of business, since some of them recur periodically and may as such be foreseen, while others come wholly unexpected. Seasonal variations in the weather, in matters of dress, pastimes, and the consumption of food illustrate the first kind, and hailstorms, wars, or labor troubles, the second kind. But suppose we note instead *first* the factors which create risks by influencing expenses of production and thus prices, and *next* those which act through a change in the demand for goods and services. We shall then have a list of final causes back of business risks approximately as follows. There is first man's natural surroundings, his discoveries, inventions, and policies of government, and secondly, changes in the population or in its valuations of the commodities or services offered by entrepreneurs. Through these six factors all risks must arise and be quantitatively determined, although that is not to intimate, of course, that we can compare rates of change in any one of the six fields mentioned with degrees of risk or actual profits.

The *weather* is the most familiar variable in our physical environment. It is proverbially fickle and incalculable. We can never tell far ahead what will happen or what the effect of a change will be upon particular classes of business men. But we do know that the effects are real and frequently lasting. A farmer may have his crops ruined by a single cold snap, hail, or rainstorm. He may expect a poor crop early in the summer because of a cool spring or excessively wet spell, but harvest richly in the end because of a favorable turn of events. A builder depends upon the weather for keeping his men

busy, for operations underground where temperature and moisture are important items, or for the open storage of supplies. Bad weather may bring delays, penalties and extra expenses in the form of special rates of wages, higher prices for materials ordered at a late moment and so on. A mining corporation may lose hundreds of thousands of dollars in a single flood or on the other hand because of a dry season which makes work technically impossible. Again, a storekeeper not only is subject to all the vagaries of the weather in the course of a year, thus finding his receipts rise and fall, but what is more, if he depends upon particular days for most of his sales, his risks increase. If he begins business at a seaside resort and hopes to justify his rather heavy initial outlay by the rush of the seasonal demand he faces risks hardly less pronounced, for again much depends upon weather conditions during a brief period. Indeed, a summer or winter resort is an excellent place for risks in every branch of retailing, including hotels, restaurants, amusements, and sports. Men located at such points must turn over large sums of money in a short time or face a lean year. The weather here is invariably a decisive factor, a measure of failure or success, and at the start a proof of risks which it is impossible to estimate.

Compared with the weather other variables are unimportant, although they do exist. Agriculture may be at the mercy of insect pests, of blights that destroy orchards and timber trees, of diseases killing live stock or rendering it unfit for human consumption. Ocean currents may change so as to affect deep sea fishing, bringing luck to one region and depriving another of its main source of food supply. A river may alter its course so as to bring disaster to millions of people, and especially to business in certain districts. An earthquake is not an uncommon occurrence in some countries, yet something against which one does not prepare, nor can one prevent it from taking effect in several directions. It may be accompanied by floods and fires. It may lead to a change of trade routes and centers

of population. It may indirectly induce governments to inaugurate new policies, or affect the mode of living of people. Thus a single cataclysm of nature involves risks of many sorts, though quite unequal for different classes of enterprisers.

Discoveries bring changes in our knowledge of natural resources, their extent, distribution, and precise nature. While the total stock in the interior of the earth is the same throughout all historical times, our *knowledge* of it varies greatly and from the business man's standpoint this alone is important. It is the discovery of new resources, and likewise the exhaustion or disappearance of old ones, that affect prices and profits through variations in supply, thus entailing risks in using or marketing them. A gold prospector puts his entire stake, so to speak, on one card. He sets out to find rich veins or alluvial deposits, and loses everything if he fails. A whaler leaves home shores with the idea of making a big catch, but may return broken in spirit and destitute of funds because he could not locate his prey. A corporation drills dozens of wells in the hope of striking oil, but perhaps finds nothing in the end. Expensive equipment and costly labor must be bought regardless of success in the venture, and yet bring nothing but the ignominy of defeat. Every owner of a mine or producer of minerals faces the possibility of a new discovery opening up richer veins, thereby ousting him from the field. Almost over night the unearthing of new deposits or pockets of oil and gas may render older mines worthless because they yield less or are removed farther from centers of consumption and manufacture. Thus, in a number of ways, the known natural resources at any given time constitute a risk for entrepreneurs. Not what really exists, but what is understood to be available determines business chances. Accidental discovery or the locations of a geological expert may upset budgets completely and injure one party as much as they benefit a second or third.

Inventions are one of the most important causes of change and hence of uncertainties in business, because

they affect methods of production or management as well as the nature of products offered on the market. They usually involve the introduction of a superior technique in mill, office, or farm, but they also add to the variety of goods and services at the disposal of buyers, of men with money to spend. Thus risks arise apart from those naturally incurred in research which aims at an advancement of knowledge for the sake of better means and methods, without perhaps being successful.

As regards the invention of new capital goods such as machines, tools, and scientific apparatus, this may necessitate the scrapping of earlier devices useful enough up to that time, but now no longer profitable. Machinery may be perfectly new, or kept in excellent condition, yet have no value after a better instrument has been provided. Technical equipment thus becomes obsolete, or is subject to a process of obsolescence. By degrees in some cases, and swiftly in others, it depreciates in the open market, or is held to be worthless by its owner. Indeed, we know from modern annals that captains of industry have occasionally delighted in consigning comparatively new machinery to the junk pile merely because a slight improvement promised better returns in the end or because patents had to be bought up for fear of disastrous competition. And supposing we were to regard this side of the matter as a detail, we must still reckon in addition with the experiences of the inventor himself or of the concern buying the patents. These, too, are manifestly confronted with risks, for they may not be able to market their new wares, to persuade others that what they have and make is a real labor saving device, an investment worth while in view of economies effected after their installation. The producer buyer in this case may be as skeptical as any consumer thinking of his own personal satisfaction.

This latter is, of course, the decisive factor whenever inventions give us new forms of wealth destined for the household or for personal use. In that case the producer has to find out what people want. He may have to change designs or minor points of method in

manufacture. He may invest much money before getting a return on it. He may, on the other hand, reap rich rewards, inflicting great harm meanwhile upon competitors who offer something similar, but not quite as good. From the standpoint of this inferior rival the risk consists in being eclipsed or driven to the wall financially. From that of the inventor himself or those applying his ideas commercially the risk consists of attempts at marketing the new product and at putting the firm on its feet by investing large funds in equipment, buildings, supplies, and so forth. Both parties are right. Risks are before them and occasioned directly by technical advance or by the output of a new article whose merits are appraised by buyers of many different kinds and tastes.

The bearing of *public policies* upon risks may be observed both in times of war and of peace. Hostilities among nations have always imperilled the interests of private citizens and especially of men with means. Real estate, ships, merchandise and precious plate of gold and silver were the chief items subject to depreciation or to the greed of the enemy in olden days. Merchants then had difficulty in transporting their wares and upholding the bargain entered into. Contracts would be invalid, or debts uncollectable, or sales impossible because of the social and political upheaval attending warfare. In modern times these dangers still confront dealers for the most part, but in addition many new obstacles to success have arisen. Since wars during the nineteenth century have been industrialized like every other undertaking, calling for a mobilization of producers and a reorganization of men and means, they upset values much more than formerly, besides being more lasting in their effect. A great deal of capital becomes instantly useless because soldiers need things of no import in days of peace. Factories, real estate, and supplies on hand may represent a total loss if the government does not utilize them for fighting the foe. New goods, such as cannon, ammunition, hospital supplies, battleships, accoutrement for the army and navy,

and so on, are in demand. Machinery may have to be rebuilt or abandoned temporarily. New buildings must be put up while the needs of the home are neglected or purposely ignored for the sake of efficiency on the field of military action. Some things, therefore, grow scarce all at once, and others prove to be a drug on the market. Governments place tremendous orders which cannot be filled properly or at the right time. There are rejected materials, fines or reduced prices for delay in delivery, requisition of goods without regard for the rights of the individual concerned, cancellation of orders at a late moment, tardiness in settling accounts, and other evils still. These constitute sources of risk from the business man's viewpoint. He tries hard to recoup himself by high prices, and broadly speaking succeeds; but possibilities of loss are not thereby, of course, removed. Much of the new equipment installed during the war possessed but slight value later on. Such investments have to be discounted immediately at the expense of the authorities—that is, the general public—or fall heavily upon the owner. Obsolescence now begins in earnest and involves risks that cannot always be covered adequately, no matter how lenient the government or how circumspect the entrepreneur. Speculation, too, is rife among people in all walks of life. Securities reflect the inconstancy of prices for finished commodities, raw materials, and public utilities. Bonds and stocks offer fine chances for some manipulators, while proving a pitfall to others not so clever or well instructed in the art of frenzied finance. Thus war times are particularly suited to the man eager to assume risks and to make or break by a single deal.

But in days of peace, too, the effect of public policies may be far reaching. A decision for *free trade or a protective tariff* brings blessings to one, and distress to another. *Currency reforms* may raise or lower the general level of prices, thus affecting the value of both permanent investments and of staples exchanged from day to day. If the purchasing power of money declines, prices rising all along the line, contractual incomes

adjusted to an earlier and lower level are weakened. Interest on bonds buys less. Landlords get less for leases drawn up years ago. Wage earners may suffer because their particular services are not rated proportionate to advances in price elsewhere. On the other hand, if price levels tumble, the debtor gets the worst of it. A business firm paying out large sums in interest may find the burden unbearable and collapse financially. Producers may have bought at high prices, while compelled to sell at low figures. Dependent upon the speed with which price levels change, the risks are great or small for certain people. Nearly everybody is conscious of disagreeable uncertainties regarding the worth of money or of tangible assets. A few gloat over prospects of gain, but in many cases there remains nothing but a deficit.

§ 11. All these, however, are risks incidental to changes which affect the *supply* rather than the demand of goods and services. So far we have dwelled on variables which act upon costs, upon variations in supply, and thus finally upon the chances of a producer or trader. But risks arise also because *demand* is variable at short notice. There are at least two factors which modify demand quantitatively and qualitatively, thus giving a business man cause for anxiety, especially if he operates on a large scale.

Changes in population lead to quantitative changes of demand. Numbers may rise or fall either because of migrations of people from one country to another or because of ups and downs in the curve of native net birth rates. If the trend of population is upward, as has been the case during modern times, land will become relatively scarcer and raw materials of diverse sorts dearer. Barring improvements in agriculture or the discovery of new resources of minerals, coal, and so on, prices rise. They go up either because of increasing expenses of production or because of a steadily growing demand which presses upon supply at the cost of consumers. For the nation as a whole, therefore, soil and site values appreciate. Farmers, landlords, and owners

of urban lots benefit by the change, being able to sell at perhaps twice or three times the figure at which they acquired their holdings a few decades or years earlier. On the other hand, if by population we mean a local distribution, only certain groups profit. Risks again are converted into chances, that is, into prospects of gain rather than of a loss. But for those not owning real estate loss may be impending. As people move from one part of a city to another, as streets are abandoned and new arteries of trade developed, some business houses suffer correspondingly. Their clientele departs. Their sales shrink. Investments on the spot become worthless, or at any rate they do not realize what they were expected to. Thus risks reflect changes in demand which may be called quantitative because the total volume of goods and services bought rather than the preference of people for particular items is involved in such happenings.

But, to be sure, the *change may be qualitative* also. It may be that the population remains constant, that the aggregate of things sold in any one locality or country is the same from year to year, that only certain kinds of commodities lose favor or gain in importance. The risk then consists of the possibility that familiar articles may fall into disrepute or be bought in much smaller amounts than formerly. The public changes its tastes and orders of preference constantly. Now this, now that, seems indispensable and precious. What at one time is the fashion, is obsolete somewhat later. Individuals as such have whims and caprices which are satisfied in the retailer's shop first, but find an echo ultimately in factories and the primary industries in general. If electricity is preferred to gas as a cooking fuel, that concerns a number of producers and helps to measure risks in planning enlargements, buying mines, undertaking advertising campaigns, employing a research staff for possible improvements, and so forth. Besides, the bulk of changes in demand apply to the majority of consumers, not merely to a few straggling individuals. Tastes and standards are communicated

rapidly from place to place, from class to class in society. While originated probably by a select group of leaders in business, education, politics, religion, or art, they are transmitted sooner or later to the masses of people. A qualitative change of demand thus sweeps over the country like a giant wave. It floods some entrepreneurs and leaves them helpless at once. They cannot adjust themselves to the turn of events. Whether it is a question of style in dress, or of designs in home building, or of amusements, or of fashions in food, an enterpriser may be incapable of adapting himself rapidly enough. There are disappointments and real losses. Risks emerge unexpectedly, or if anticipated, prove disastrous. As long as our valuation of things and services may be revised any time, without assignable reason or the possibility of indicating a prevailing trend, so long business men face risks even if the rest of variables are relatively inactive. Indeed, knowing human nature as we do, we cannot expect market demand to be tractable in a high degree. We must expect uncertainties of an incalculable sort, and consequently risks which deter some men, even as they inspire others to extra effort.

§ 12. In fine, profits are either wages of management as such, or more likely a mixture of these with aleatory gains which cannot be explained by anything else than the instability of human thoughts, emotions, policies, wants, and methods of work. There is always a chance for gambling. Enterprisers are essentially buccaneers who pounce upon opportunities for quick returns, who blaze tracks in a wilderness of business relations, who risk much for the love of adventure and for the hope that pelf and power will be theirs. The more outstanding a personality, the keener the zest for enterprise that is both unusual and promising in results. In this respect profits represent quite often rewards for risk taking rather than wages for managerial skill. If these latter constitute the most familiar form of net profits, aleatory gains are the most conspicuous, although monopoly profits are most in the public eye because of the ethical questions brought to bear upon them.

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CHAPTER 8

THE DISTRIBUTION OF PERSONAL INCOMES

§ 1. What we have so far discussed may be called the factorial distribution of income. We have seen that there are several groups of producers, or factors of production, and that these divide among themselves the whole annual output of a nation *in so far as it is offered for exchange.* The national income, therefore, is restricted to that portion which is sold for money, and the people who help to create this wealth are divided into four classes. Only four do exist because of the peculiar characteristics of our modern economic regime. It was seen that producers either are capitalists lending money, or landlords leasing specific forms of wealth, or laborers employed by somebody else and obtaining a definite rate of pay per time or amount of work done, or enterprisers who as self-employing individuals have functions quite different from those of the first three mentioned classes. The justification for this grouping of all producers into only four classes was not difficult, as long as we were determined to find out about principles of distribution and to draw a sharp line between production for exchange in the open market and production for personal use. As we have noticed, these four major groups claim shares by selling their services at what might generally speaking be considered a price. To be sure, wages and profits did not prove to be prices precisely as commodities represent prices, nor could we apply the rule of supply and demand to rent and interest as fully as to commodities. Some exceptional phases did come up. Nevertheless, our study centered in this formal method of grouping producers and of showing why the payment for their several services followed certain

basic principles. The size of the total annual income of any one nation did not concern us. The amount in dollars and cents going to any one group as a whole was also out of our range of vision. All we asked about was the law of distribution for each major class which in

DOUBTFUL CASES IN THE CLASSIFICATION OF FACTORIAL INCOMES

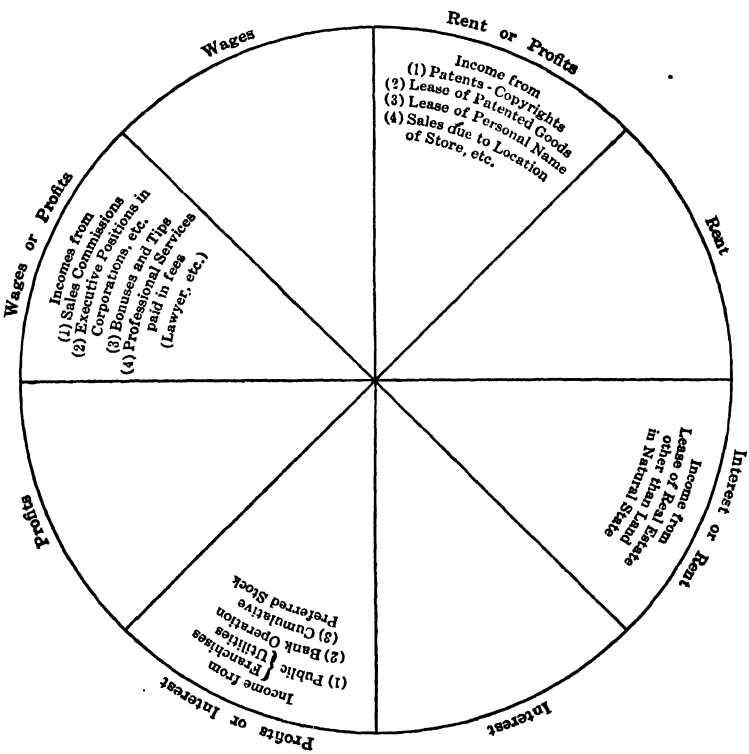


FIG. 1.

selling its peculiar services obtained a certain portion of the grand total.

The percentage of this latter going to each of our four groups of producers has been estimated several times in recent years, since some interest attaches to it for economists, if for no one else. For the year 1910, for instance, one investigator assigned to wages and

salaries nearly one half of the national income, to profits somewhat over a quarter, to interest about one sixth, and the rest to rent.[1] According to these figures property as distinct from personal effort claimed 25% of the grand total, and there is no reason to doubt the substantial accuracy of the estimate. It must, however, be borne in mind that factorial shares are difficult to class sometimes, and besides lose their significance because of one or two facts to be mentioned presently.

As regards classification, the adjoining Figure will suggest again what has already been remarked on earlier occasions, namely that we cannot always draw hard and fast lines between one share and another. A bonus may be called either a wage or a part of net profits. Commissions are wages in one sense, and not in another. A physician's fee should perhaps be called a profit since he employs himself and has no definite income per week or month or year. But on the other hand the fee represents a sum which patients know to be due and usually pay. Similarly, income from legal monopolies resembles rents, to say nothing of a lease of patented machinery. Or take the case of bank profits derived from loans over the counter, not from dividends due upon investments. Are such profits interest at the same time? Or for that matter, are dividends of the cumulative preferred kind really profits, not interest on a long-time loan? And once more, as for differential profits made by a storekeeper who has an exceptionally fine location, are these genuine profits or a part of site rent which the landlord has not collected?

§ 2. It is easy to see that these questions may be answered in more than one way, so that the relative size of shares going to the four factors of production means less than might be surmised. But aside from this difficulty in definitions we must take note of the following points:

In the first place the distribution of factorial shares is no indication of a distribution of incomes among indi-

[1] King, W. I. Wealth and Income of the People of the United States, 1915, p. 158.

viduals or families, for several shares may be combined in one and the same physical person. A wage earner quite often has invested a little sum of money, so that he receives interest in addition to wages. He may also own a house, in which case he can estimate the use value of it either as a form of interest—as interest which he must impute to the money tied up in the house—or as a rent which he gets virtually, since he would have to pay money to a landlord if he did not own the property. So this workingman lacks nothing but profits. Again, a farmer is an entrepreneur and, therefore, pockets net profits. Whether we distinguish between wages of management and monopoly profits or such gains as are strictly aleatory does not matter just now. There is certainly a profit in an average year. Wages there are none, unless we call the normal return for effort in this case a type of wages. But there are quite likely to be rents and interest, for many farmers have money in banks which draws interest at a certain rate, and some of them lease out land to others for a regular rental per acre or per farm. Besides, even if the farmer works his own soil and has nothing else to lease to tenants, he may impute to his lands a rent just as our wage earner imputes interest or rent to the house he owns. Again, as regards well-to-do people receiving a salary, they nearly always have savings in a bank, (thus getting interest plus wages or salary) and not infrequently also stock in a joint stock company or corporation. This certificate of stock entitles them to a dividend which is part of the profits earned by the business. So there are two or three shares combined in one person, even though the most important one is a wage for work done under the direction of an employer.

In general we may say that the more shares of the factorial kind are united in the total earnings of any one individual, the wealthier he or she is. Rich people secure a considerable portion of their annual income from interest on bonds or bank accounts, and from dividends on stock. Incidentally this may be seen from the Table here appended, which is abstracted from a more detailed

one furnished by the United States Commissioner of Internal Revenue for the year 1916. Though we may not be sure just exactly what is meant by investment incomes, interest, and rentals as here mentioned, we shall find the gist of the report sensible enough. Evidently the poor man relies almost entirely upon his wage or salary, while the percentage of the total income based on investment returns (as "returned" to the Commissioner for purposes of taxation) grows somewhat in proportion to the total income itself.

TABLE 2

THE DISTRIBUTION OF FACTORIAL SHARES AMONG DIFFERENT INCOME CLASSES IN THE UNITED STATES FOR 1920

	Percentage of Personal Income Returned from				
Income Class	Wages Salaries	Profits	Rentals	Interest and Investment Income	Dividends in Profits
$1,000 to $2,000	82.06%	10.09%	3.23%	4.62%	1.27%
$2,000 to $3,000	78.18%	14.36%	3.22%	4.22%	1.49%
$3,000 to $5,000	59.71%	29.88%	4.49%	5.92%	4 %
$5,000 to $10,000	41.34%	46.04%	5.09%	7.43%	10.65%
$20,000 to $40,000	30.16%	56.92%	4.06%	9.39%	27.67%
$100,000 to $150,000	15.04%	70.85%	3.73%	10.38%	41.19%
$500,000 to $1,000,000	5.54%	77.50%	3.81%	13.15%	55.26%
$2,000,000 and Over	1.22%	86.4 %	3.06%	9.32%	75.48%

NOTE: This table is condensed from estimates given on page seven of "Statistics of Income for 1920," published in 1922 by the office of the Commissioner of Internal Revenue of the United States. It is here used to illustrate the distribution of factorial shares (wages, profits, interest, rent) among people of different incomes, although the sources of income indicated by the official report do not quite correspond to the four shares recognized by economists.

Secondly, it deserves noting that the factorial shares taken together do not represent the whole annual income of a nation. They comprise much less than this grand total because they refer only to goods and services exchanged in the open market for money, not to such items of wealth as are consumed by the producer in person. This means, then, that everything done for *ourselves* does not appear in the sum of factorial incomes. If father does repairs about the house in order to save money or to while away the time, he is rendering

a service to himself and the family. He is perhaps creating tangible forms of wealth, making new things besides patching up old ones. If this work were done by a professional mechanic, it would have to be paid for. There is undoubtedly an income of some sort in this productive activity of the man at home. Again, wives and mothers, children and grown up daughters staying at home contribute a vast amount of wealth to the nation's annual stock. They are productive in all but a small percentage of cases, and their services are valuable in the market sense as well as in any other. If mother's work could be done by a strange person it would command a good price indeed. Governesses, nurses, cooks, housekeepers, dressmakers, and so forth, are paid fairly high wages these days and are considered to be extremely useful. Now, married women do just this kind of work every day in the year, or nearly so. Their labor consequently constitutes a part of the real income of nations, even though not rated at a price established competitively. In addition to these contributions of members of the family we must also include in our total national income the goods produced on farms and consumed there. Since income is at bottom a flow of goods and services, not one of money, everything produced is income whether measured in terms of money or not. In this country seven million farmers supply a considerable fraction of their table needs. They use up produce, meats, and such raw materials as timber or cotton. They do not perhaps report these items in their personal income, but they form a part of it nevertheless. Hence factorial shares, too, make up but an incomplete picture of national income.

Third, we may again refer to the important circumstance brought out once before that money incomes, whether classified for four producer groups or for many more, do not indicate the spending power of people. If one man has a million dollars a year, and the next one five thousand, it does not mean that the former actually spends as large a percentage of his income for consumables as the latter. That is not so. Men with large

incomes cannot, as a class, buy enjoyable things only. Their purchasing power is really smaller than suggested by the figures, for much of this large income consists of capital goods or real estate values. In effect the big money earner is given a deed to such properties, though apparently he is given money with which to buy consumption goods and services alone, if he likes. In short, whatever our information on the monetary income of a country, we cannot tell from it how much is composed of technical equipment or other values unfit for personal use, and how much of the necessities, comforts, and luxuries of life desired by everybody, for their own sake.

§ 3. These qualifications regarding the significance of a factorial view of national income, then, indicate with sufficient force that a *personal* income analysis is more serviceable from the standpoint of the average man. What most of us wish to know is what percentage of the total national income (in money) goes to what percentage of the whole population or of those gainfully occupied. This is the question asked most frequently, though a few of us may also wish to establish special classes of income, distinguishing between wage earners and business men, incomes under one thousand dollars, up to two thousand, above that amount, and so on. There are indeed many possible ways of classifying incomes and people, but in all cases interest centers in the idea of a distribution which is unequal and yet typical of life and human history.

To give a few figures on personal income in the United States for the year 1918, since these may be considered fairly representative of statistics in other progressive countries.[1]

At that date nearly one third of the population earned less than $900; not far from two thirds less than $1,300; and about 94% less than $3,000, the percentages of the total national income for each of these figures being respectively 13%, 35%, and 72%. That is to say, the people earning less than $900 constituted nearly one

[1] Taken from National Bureau of Economic Research, "Income of the United States," Vol. I, p. 132.

third of the entire population, but together accounted for only about 13% of the entire national income. Approximately one third of the total income, on the other hand, went to two thirds of the population, while over one quarter was claimed by about 6% of the population.

Furthermore, if we analyze *wages* in different fields of production for the same year (1918) we get facts like these.[1] Employees in agriculture earned about $600; in mining about $1,300; in manufacturing $1,148; in the hand trades nearly $1,200; in transportation nearly $1,300; in banking not far from $1,500; in government services $900; and in unclassified industries somewhat over $1,000. While the average for all employees was nearly $1,100 there was plainly a considerable range of variation, and this comes out again in a return of personal incomes *above $3,000* made to the Commissioner of Internal Revenue [2] for the year 1916. We find there that the following percentages of people in certain occupational classes declared their annual income to be in excess of the sum just mentioned: Of all lawyers and judges, 19%; of teachers in every field, less than one half of one per cent; of authors and editors, 6.5%; of clergymen, 1.42%; of medical men and nurses, about 7%; of stock and bond brokers, 20.68%; of insurance agents, 8.19%; of dealers, 4.36%; and of manufacturers almost exactly 10%. So it is not hard to see that incomes are quite unequally distributed even among those whom we might consider to stand for substantially equal intelligence, training, or responsibility in business.

Before we attempt, however, to account for this disparity of incomes in every country we must again take cognisance of certain limitations in the figures presented, just as we did when discussing factorial shares.

For one thing, information on personal incomes is not nearly as full as is usually supposed. It is indeed extremely difficult to gather it from individuals or business firms, especially where backward conditions, a population scattered thinly over large areas, lack of edu-

[1] *Ibidem*, pp. 102-03.
[2] Statistics of Income, Treasury Department, 1918.

cation on the part of those questioned, and prejudices or selfish motives interfere with the work of the census taker.

Secondly, there are problems of a statistical nature which impair the value of compilations. It is not always easy to classify occupations, peoples, or sources of revenue. There are questions of average which no official can solve, for to average time units or variations of income or anything else whatsoever is always a somewhat arbitrary task. In truth, a number of perplexities arise that bid us to be careful when interpreting statistical tabulations and comparisons.

Third, monetary incomes are no index of the flow of goods and services procurable with them, and which everybody has really in mind at the time. In the case of farmhands, for example, it is customary to convert allowances of board or lodging or both into money values, since they do form a part of income as truly as dollars and cents. But it is difficult to do it, none the less. Board and room are not the same in all parts of the country, nor on all farms within a district. The quality of goods and services varies. The costs for them differ remarkably from place to place. In fact, this matter of variation in place reminds us that regardless of the payment of any part of wages in kind, incomes may be incomparable for different regions in any one country, or for different countries throughout the world. To mention a certain salary is not to show what people can buy, unless they live close together. The farther apart they are, the less sure we can be of the meaning of sums of money, for their purchasing power may vary a great deal. Annual earnings of $2,000 in the United Kingdom tell us nothing very definite about the quantity and kind of goods and services procurable with them elsewhere. They may buy more or less in France, Brazil, or China. Indeed, we may take it for granted that the actual level of living of a family cannot be inferred at all from the income just stated.

Fourth, it would be distinctly worth while if we could learn of family incomes rather than of individual ones,

comparing the former meanwhile with the size of the family. Individual incomes are not the most important, since the majority of people gainfully occupied are adults, and most of these are married. The family is the typical unit of social and economic life, not the individual money earner. So we should try to think of incomes as a family affair. But this also suggests that much depends upon the number of members in a household, and upon the ratio of minors or adult dependents to the size of the whole family. The larger this latter, and the younger the children (excepting the first few years), the bigger the expense for the breadearner. An additional item of interest, therefore, might be the number of money earners in any one family, or for all families taken together. In this country, and in some others, too, there are sometimes several earners in the same home. Both father and mother or father and several of the grown-up children are gainfully occupied. In that case the income of all persons involved may be pooled in part for defraying expenses for food, shelter, telephone, and so forth, while the remainder is at the disposal of each individual earner. In several respects the number of adults gainfully occupied, constituting one family in one home, is of importance.

Fifth, taxation may modify our picture of the distribution of personal incomes materially, since a tax takes something without returning usually what is deemed an exact equivalent. If there is a *total exemption* for people earning less than a certain sum annually, it amounts to giving these people government services gratuitously. Whoever pays no taxes, but enjoys the privileges of residence in a country, is getting something for nothing. Municipalities provide police, jurisdiction, lighting of streets and public buildings, parks and perhaps playgrounds for children, pavements, sewerage, sanitary measures of various sorts, libraries, art galleries, a school education, and so on. These benefits are an integral part of income for any person or nation. They must be counted and are a free gift when no taxes are paid. The poor man claiming and getting exemption is, there-

fore, better off than the rest. He need deduct nothing for these services. If he earns a $1,000, while somebody else earns $1,500, paying, however, $50 in local taxes, the difference in actual spending power is less than $500.

But to bring out another aspect of this question.

Even though we know what kinds of taxes are levied, and what the rates for each, we may be in the dark regarding the income of particular persons or families, for some taxes are paid indirectly, while others must be paid directly. An income tax falls on each one according to the size of the income, rates being ordinarily progressive, so that they rise faster than the base or income itself. We can compare the incomes of two persons before and after taxation in so far as taxes are of this sort and their rates known to us. But suppose we are dealing with an excise or import duty paid first by producers and merchants, and then collected later on from consumers? In that case taxes are paid through prices. The business man who first pays them adds enough to the price to recoup himself, and this is allowed by law because the government intended the burden to fall finally on those buying the goods or services. So here everything hinges on what we buy. We cannot tell from earnings what is their real worth. We can find this out only when we know what classes of things people buy, how much of each they buy, and what tax rates fall upon these things. As a rule taxes are the severer, the more they fall on necessities and ordinary comforts bought by the rank and file of people. Small incomes then pay a heavy toll, while larger ones are relatively free from imposts.

§ 4. In view of these facts, we should study income statistics with much care and not read too much out of them or into them. It is evident that they describe the financial condition of people less accurately than might be thought. But this does not, of course, prevent us from being curious about the reasons for the facts of distribution, and more particularly for the marked inequality of incomes noticeable in every country. We

may well ask ourselves whether this results from fundamental principles, or may be changed at will, according to our notion of justice or expediency.

Now, in facing this problem, we might as well admit at the outset that variations in *physical* environment have nothing to do with the earning power of people. They are certainly so negligible as to cause indifference on the part of most investigators. Physical environment is often the same for large areas, for many thousands or hundreds of thousands of square miles, and correspondingly applies to perhaps millions of people. If a country is densely populated, twenty or fifty million people may have substantially the same climate, topography, soil conditions, harbor facilities, mineral resources, and so forth. There is little to differentiate between one group and another. But on the other hand we know from everyday experience that people in the same city vary enormously in earning power, and that even in small rural districts incomes may be far apart. So physical facts cannot give us much of a clue.

Rather, the most obvious reason for unequal incomes is the inequality of people the world over, now and in all times gone by, as far as historical records inform us. Even among primitive people differences are noticeable, though not anything like those to which we are accustomed. Among barbarians and tribes in the early stages of civilization we find on the one side chieftains, priests, sorcerers, and their immediate followers, and on the other the rank and file who accept things pretty much as they are, abiding by the rules and counsels proffered at headquarters. There is no attempt at denying vital differences. Physical strength, prowess, endurance, cunning, foresight, versatility, knowledge of facts, personality as a whole—all these become assets helping some at the expense of those less generously endowed by nature. There is an appropriation of land by the superior men. There is a division of the booty after a chase, or of spoils of war, the abler and braver men claiming a major portion and obtaining it without question. Ideals, too, are moulded by a minor group. What

is good and bad, what appeases the gods or what excites their wrath, what is most needed and what least, how things must be done and what the rights and duties of individuals, these matters are settled mainly by the intellectual élite here in power. What records we have of such primitive types of society prove indisputably that differences among men not only exist, but find implicit or express acknowledgment, one result of which may be a caste system, slavery and serfdom, or an elaborate code of ethics and law which apportions privileges unequally and permanently.

Among civilized men this difference is, however, still more marked. It appears to be a law of nature that the range of variations is far wider in a highly advanced society than in its original stages. We find genius at one extreme, and morons at the other. The moron, to be sure, thrives also among savages. But unusual talent there is far less plentiful than among modern progressive peoples, and what is more, the development of innate superiorities never reaches the heights which we associate with an Aristotle, Moses, Gautama, Caesar, Michael Angelo or Newton. We may assume, then, that civilization operates cumulatively in that it not only tends to preserve its achievements, but also provides increasingly better opportunities for exceptional men and women in all fields of endeavor. That is the noteworthy feature to bear in mind apropos of a problem of income. Great differences exist to begin with, and they express themselves more and more psychically rather than physically, through peaceful methods rather than by force. But not only that. In addition these differences are accentuated by experiences after birth. The congenital variations are supplemented by those of a *social* environment within which each one of us lives.

Occasionally, of course, acquired gifts may neutralize innate inequalities. A mediocre man, for instance, may increase his earning powers sufficiently by a college education to eclipse a more gifted one who lacked the means to attend college. Thus our acquired characteristics become the more important, the farther we move from

brute life, from barbarism among humans. No doubt, a number of factors tend to level inequalities which are given at birth and at the start are quite pronounced.

Still, as a general thing innate superiorities assert themselves successfully, and suffer little from temporary handicaps. What to any one individual is his social environment, does not hold him back long, nor mar his efforts for self-realization seriously, if his capacities are well defined. On the contrary, such superior traits tend to be encouraged and to widen the gulf between a dull boy and a sharp-witted one. Whether the traits are desirable from a social standpoint or not, they help us along the more, the higher the type of civilization of which we are a member. That follows from what was said a while ago. The artificiality of modern life, the complexity of relations, the intricacy and effectiveness of our ways and means for production, for serving our fellowmen somehow—these features put a premium upon gifts of mind, if not always upon those of character. A brainy man is the likelier to succeed and to reap extraordinary rewards, the more advanced his society, and the ampler the resources with which it operates. Indeed, we may add at once that increased personal liberties of a political and economic nature also favor the strong man, the one who displays his capacities in an open fight for all. Our present legal background must not, therefore, be considered a drawback for superior people. If anything it works in their favor. But perhaps it is best to ignore it altogether, for history proves that changes in government and in the legal setting of economic activities affects the distribution of wealth little. Though it is true that the level of living of the masses has risen appreciably during the last few generations, this must probably be attributed to technical improvements and new discoveries rather than to the advent of democracy. Certainly, there was the same pyramid of income distribution during the Middle Ages as now, the same among Greeks and Romans as among moderns, while as between such different countries as China or the East Indies on the one hand and western

Europe or the United States on the other the difference in range of distribution is likewise comparatively slight, except that the numerical strength of the middle classes varies considerably.

Inborn differences among men, then, are always decisive. They have three results that recur everywhere and at all stages of civilization. In the first place they give to some men the power of carving out for themselves what they want. There is no act of legislature that can prevent men of superior brain, tenacity, sagacity, and energy from claiming much more than goes to the average person. They demand it and they get it. Their services entitle them to this preferential treatment, if we care to take this view. But it is just as easy to look upon the problem from the superior man's own position. He has great powers, and is bound to vent them. He has personality and persuasion, insight and courage, concentration and prestige among his fellowmen. He does big things as he sees them, and others call them big. He puts a high value upon his functions or qualities, and the rest of us usually chime in. It is rare that such outstanding figures do not have their own way, provided they do not combat one another and thus open a breach for attack from lesser rivals.

But the small minority exerts its influence also by moulding public opinion, by impressing its valuations of things upon the multitude, by setting up standards and ideals which the rest can follow without difficulty. In other words, a part of our problem of distribution is solved by the principles of valuation and association—of the building of social structure and processes—which were discussed briefly in our study of prices. It is inevitable that we take our cue of what is best or of what is relatively worthless from a minor group. Ideas of value in religion, ethics, politics, and also of things economic, radiate from a few centers. Church, school, government, lawyers, newspapers, scientists, statesmen, and politicians in general—these are centers of social control. The novelist or playwright or artist or man of genius in any field helps to fashion our thought and

our outlook. Through inventions goods are made possible; through our approval their sale is made possible. The approval may be spontaneous in the average man, according to the nature of the new article or service. But it may also be suggested or withheld by an élite which unconsciously guides the actions and norms of the great majority. In this way individual services again are rated often by an upper class, though not necessarily by a plutocracy. What we had to say about wages must, therefore, be repeated here for a more general purpose: Kinds of work done by the rank and file of people receive their rating from employers and from superior persons in all walks of life. When we say a man is worth a big salary, we refer to qualities inborn and acquired which in the estimate of leaders everywhere are relatively rare, desirable, and pleasing. High grade men can judge good and poor qualities bearing upon production. They are not easily deceived or duped by appearances. They compare judiciously and gauge excellencies well. They put their stamp of approval or of disapproval upon this or that characteristic. Thus efficiency becomes much more than mere knowledge, though it is true that some mental gifts alone enable us to master intricate problems, to acquire unusual skill or information of a scientific nature. What the ablest judges proclaim to be a valuable personal asset, is rewarded accordingly and contributes to the distribution of incomes all around.

Even within each class of workers there are differences, and these, too, determine earning power. Efficiency thus is a matter of degree as well as of fundamental types of human traits standardized at the top of society and forthwith demanded from the millions of people at different rates of pay. The hard worker earns more than the sluggard or periodically idle one, other things being equal. Inequality of incomes nearly always reflects industry and diligence within a given class of service, as well as standards imposed by a reigning class. Thus, to sum up: Differences in income based on labor of some sort are the outcome of three facts, namely of

ruling personality, of ideas of worth generated and controlled by a minor social group, and of technical efficiency or productiveness displayed by each worker as he plies his trade. Any one may be used as an explanation of income, though it is best to consider all three in their proper relation.

§ 5. There are, however, still further elements entering into our problem.

A certain amount of personal income, for example, is not due to labor or enterprise, but to casual windfalls which may easily be overlooked. Not all income for any one individual results from a sale of his services. There are unearned incomes which sometimes run into high figures. Some people are rich because they have inherited an estate, or because of insurance money left to them by relatives or friends. Perhaps not far from 2% of a nation's wealth, or 10% of its annual income, changes hands each year in this way, depending upon mortality rates per thousand, upon the distribution of wealth among those dying, and of course upon the terms of the will. In so far as governments do not claim a portion of the estate it is redistributed among private parties.

Again, for women in particular there are, besides the support from their husbands, dowries, gifts, and alimony; for employes, bonuses, compensations for injuries during working hours, and old age pensions; for business men, subsidies and bounties paid by governments, land grants and concessions, damage awards, and prizes received at expositions, fairs, and so on; for institutions of various sorts, endowments of large sums; for people in general, prizes for scholarship, literary work at athletic contests, races, as well as opportunities of winning at bets, in lotteries, or through other forms of gambling. Taken together these various sources become noteworthy, though they yield little of course compared to revenues from labor, enterprise, or loans and leases.

For that matter, we may classify the nonfactorial sources of income still differently. We may attribute

the income of one to chance and luck, of another to thrift and prudent living, of a third to wise investments, and so forth. In the main, however, we have to come back to our original view that natural differences among men and inheritances are the real key to the marked inequality of personal incomes. There is inevitably a concentration of wealth in the hands of the few because capacities and character differ enormously for different individuals. Anything like an equal distribution should not be expected, considering the facts just cited. But on the other hand it is wrong to imagine that the tendency toward concentration can go on forever, or has no offsetting forces with which to contend. That is not true.

Inheritance, for instance, tends just as often to disperse fortunes as to accumulate them in one family. Indeed, the splitting up process is continually going on. Just as likely as not the estate is divided among a number of persons, including some outside of the family. Or if the whole is left to a single person, it may be dissipated gradually because of incapacity and extravagance. It is an old saying that from shirtsleeves to shirtsleeves is but three generations. The great majority of large fortunes are not perpetuated indefinitely. The experiences of this country prove this as much as anything. Again, inherited worth and marked abilities are apt to appear in several forms, not all of which are the best for money making purposes. Sometimes talents are bequeathed by parents to their children, but they play no rôle in business, however valuable to society in other respects. Each generation has a new crop of exceptional men, and as the young one grows up the older one loses its grasp upon economic affairs. New resources are discovered at points to which older men have no access, though they may move about freely and survey the ground. It is a question of chance connections and special aids as much as of knowing where opportunities beckon the right man. Similarly inventions build up new fortunes while business concerns long established find it difficult to adapt themselves to

unwonted methods and requirements. While one firm is developing new ideas and waxing rich on their application, another loses by not being able to sell out or convert its huge investments into mobile funds for new purposes. Or perhaps new commodities and services are offered on the market, people responding to these instead of buying long established goods. Wants and preferences, as remarked, change continually. It is impossible to be sure of a patronage forever. As progress keeps marching, some people fall behind and leave the richest spoils to men of greater vigor and adaptability. Thus a part of the reason for a fairly constant, though highly unequal, distribution of wealth or income is the law of life itself. The greater virility and learning capacity of the young triumphs over the feebler attempts of the old. There is no cure for this shifting of income from group to group or family to family, nor can we be sure that a concentration of wealth is a real and grave menace to progress. The desire to see this world's goods distributed evenly is perhaps natural; certainly it is widespread among the proletariat. While those who have, are anxious to keep their holdings, the rest cast longing eyes at them and pray for a redistribution. But notwithstanding this, it remains debatable whether personal distribution in modern times is bad because favorable to a select minority. In taking a long-time view our judgment about this matter may be changed. Instead of deploring concentration and decrying the tactics of eminently successful people we may rejoice in the one and forgive the other. A careful consideration of our next subject (namely, of changes in social wealth and the irregularities attending them), may suggest this thought among others.

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Book Two
THE GROWTH OF SOCIAL WEALTH

CHAPTER 9

THE LONG-TIME VIEWPOINT

§ 1. Our study of economic facts and relations up to this point has been characterized by one cardinal principle since we have treated them always as if they took place within a short time and came rapidly to a completion. We have shown the bearing upon economic activities of a constant or changing physical environment, of the essential traits of human nature the world over and of legal backgrounds or certain ideals of government. After these preliminary data had been stated briefly, we passed over to the analysis of three main subjects in economic science, namely to that of production and exchange, of price, and of distribution. It was shown that laws prevail for these processes, some of them being valid everywhere and at all times. Trade or exchange proved to be an integral part of production as the creation of values. Pricing and the distribution of wealth, because they bring out the subjective basis of human reckonings, were contrasted with production which gives us a rather objective view of life, of things in themselves, and of rules which must be obeyed if efficiency is to reach its maximum. But later on we also emphasized the close relation between price and distribution as divisions of economics. There could be no doubt as to what they have in common. Both appeared to turn on valuations expressed by human beings viewed either as individuals or as social groups, and these valuations fixed a rate of exchange for tangible commodities on the one hand, and for human services on the other. Though we found ample reason for rejecting the notion that wages, profits, or even rents and interest rates are established with strict regard for a universal law of supply and demand, like ordinary prices for goods, we nevertheless had to admit the pricing or valuating process back of incomes.

All these facts, however, were treated from a short-time standpoint. While we could not doubt the instability of all things human, nor the dynamic effect of inventions or other factors connected with the art of making a living, there was no reason for pointing out the ultimate effects of such changes. Our picture was that which an observer might get by inspecting factories and farm life, or by observing at any given moment the routine duties of traders or transportation systems. It left no inkling of permanent transformations in our socio-economic regime, of marked changes in the wealth of a given country. Indeed, the thought of developments spanning many years or decades, or of disturbances affecting nations seriously, was banished consistently. In spite of keeping before us the variability of ideals and institutions of an economic sort we did not try to discover principles back of them. Change as such was commented on, but fundamentally we were interested in a *status quo,* in things as they are and repeat themselves from day to day, year by year, in the economy of modern nations.

§ 2. But now we must turn to the idea that far-reaching changes do occur and offer further food for thought in a study of economic principles. We must deal now with the well understood truth that social wealth declines or grows from time to time, and that this variation may be considered either by itself, or in connection with other facts of an economic or non-economic nature. Economic principles are not fully grasped until we have traced a chain which leads from production to distribution and price, thence to acts of consumption, and then forward to a new link in production, exchange, and so forth. In short, the three divisions of Production (including Exchange), Price, and Distribution form only a portion of our subject, albeit the largest and possibly the most important. In addition to these we have a problem in the ups and downs of national wealth, or what might for practical purposes be called the growth of national wealth, inasmuch as human history as a whole shows a fairly steady development of productive powers and

of levels of living. The long-time view of economic processes is made necessary because mankind has, after all, moved with a goal in mind, and has achieved definite things which in no mean measure represent economic values.

Historians particularly are conscious of this variety of human life and of the flux beneath all apparent constancies. They make it their task to depict the annals of the past and to show how events happened. We might therefore be inclined to compare our work with theirs. But we must not go too far in this comparison, lest we commit a grievous error. For historians profess to tell only what happened and how. They are really story tellers, though their tales are true enough, or at any rate as correct as scientific method can make them. They give us an account of a single episode in national history, or of a series of occurrences bridging perhaps many centuries. They tell of men and women, their motives, actions, policies, and so on. But they do not, as a rule, pretend to read scientific laws into these events. The warp and woof of their story is thought, emotion, and action amidst varying physical surroundings and social—humanly devised—institutions; this and no more. The ideal of showing why certain relations have to exist whenever others exist, is not theirs. They do not connect or correlate principles of conduct with physical facts. They let each situation speak for itself. If it is said sometimes that "history repeats itself", this is not to be taken too narrowly. It does not mean to a student of the past that the externals of a given situation will occur again, that there is a definite order of progression, or a cycle which is completed every so often, only to be rehearsed once more. That is not the intent of the saying, nor the belief of historians.

As economists, however, we must stress this very possibility of finding genuine laws regarding economic activities and relations. We care little about individual items or unique occurrences, and much about regular connections which constitute our explanation of whatever problems may have been set before us. Thus, if social

wealth grows by degrees, we are inclined to look for reasons and to show that it invariably increases in one way, or in certain ways, under assignable objective circumstances. In studying economic relations we seek principles obtaining everywhere and for long periods, if not for all times to come. We couple processes with lasting elements in the physical environment and with traits of human nature. We show why events do *always* happen so and so, not primarily why they happened *once*. Roughly speaking, that is the difference between the long-time view of historians and that of economists, though we do not wish to imply that the subject has thereby been exhausted.

It follows also that the long-time view does not call for a recantation of points already brought out. What has so far been said is valid enough. It applies to the conditions mentioned. It gives us a considerable fund of information and a fairly solid body of principles. So far, so good. But there are further truths to be revealed, or at least, we should ask ourselves whether they may be found. Since long-time changes are as real as those spanning a few moments, months, or years, we may properly inquire into their significance. If there are additional principles we should endeavor to get a glimpse of them. Granted that what has been said up to this point is acceptable, what else does the science of economics disclose, once we peer far into the past and speak of decades or generations rather than of weeks or months? How do the results of a long-time analysis differ from those attained hitherto in our investigation?

§ 3. The meaning of the long-time view may first be suggested by a few similes. We may think, for instance, of the difference between the use of the naked eye and that of an ultra-rapid camera such as serves sometimes in the taking of "moving pictures". When we take in a single second several thousand snapshots of a galloping horse, we see something that the unaided eye cannot reveal. We can see how each foot is raised or put down, how muscles strain and relax, how the body

of the horse sways, the nostrils distend, the mane flies to the wind, and curves are described by the limbs while swinging in mid-air. All this is a fascinating disclosure and presents a great deal that is true about racing. As far as the film allows, we have learned something. But when we now view the same act in nature, watching a horse gallop with our own eyes, we get a very different impression of its manner of locomotion. To begin with, we can hardly see anything unless we look on for several seconds or minutes. In the second place the details shown by the camera—the ultra-rapid one—disappear. We cannot behold the minute steps by which limbs are moved off and on the ground. In the third place, we find that the steed covers a remarkable distance in a brief time. And most of all, we pay attention to facts of effort and balance that before did not appear. Thus our notion of what galloping in a horse means changes. We must either reject the two pictures as substantially untrue, or accept both as two phases of a process, as complementary data that make one whole.

Again, if we study the daily metabolism of a human being, we find out that food consumed is digested, converted in a large part into tissue and blood, and for the rest eliminated because unfit. Apparently the body absorbs food the same way every day, always supplying materials for the maintenance of health and vigor, and constantly renewing the energy which has been spent in play or work. But if instead of this brief period we take a number of years, say two decades, we find changes, after all. It now appears that there is no perfect cycle of processes, no complete balance in the income and outgo of matter and energy. Instead we notice that gradually human beings grow old, that they lose resiliency and power of resistance, that their arteries harden, the heart beats faster, energy dwindles, and various organic changes occur which spell decadence and dissolution eventually. So the metabolic process is not quite what we first thought it to be; or rather, our original idea must be revised in part. We

must compare the effects of many years with those of a single day and note new relations and laws of life.

Again, a waterfall is an enchanting sight because of the idea of power and timelessness suggested by it. The stream rushes impetuously over the rocks. It breaks up its white glint at the top into a beautiful rainbow of colors below. There is no end of the rush and roar. Onward, and forever ahead, that seems to be the principle! A short-time view leaves us with this impression. But if we were to stay long enough we should feel differently about it. We should find reason to believe geologists who deal with long epochs rather than with fleeting hours. We should understand perhaps that there is a cutting back as well as a flowing forward. Instead of finding the cataract forever at the same place we should notice it moving. Instead of commenting on the rushing waters, we should wonder at their retreat. Such might be the story if we could follow it to a final conclusion.

§ 4. Now, social events in general, and economic ones in particular, resemble these familiar facts in that they give us two different views according to the length of time we spend in studying them. If we treat of broad periods we discover changes and relations that do not belong to short years. We are attracted not only by changes in themselves, but also by principles underlying them, by regular connections between things tantamount to laws, to social or economic laws. That is the first point to bear in mind in taking a long-time view.

Statisticians have long ago recognized the importance of this standpoint and therefore resorted to elaborate calculations in order to uncover laws for this or that subjectmatter. They analyze large numbers and compare groups of events not to be witnessed by our senses, nor readily understood by the average untrained mind. They tell us, for instance, of the relation between birth-rates and the nationality of parents, between suicides per million of the population and seasons of the year, between price levels and the amount of money in circulation in a country, between the rate of crimes per

thousand of the population and the distribution of incomes or the ratio of urban to rural inhabitants, between incendiary fires and business conditions, and so forth. They make it their point to deal with large numbers, to count as many cases as possible, and hence to study long periods of time if these events relate to time at all. Birth rates, for example, vary from year to year, or decade to decade. They rise and fall like prices or the harvests from the soil. It is understood that social life is made up of variables which must be traced carefully if they are to become meaningful. But it has also been found that there is law amidst apparent disorder, and that such more or less permanent relations as birth rates and the nationality of parents can be discovered if enough instances are taken into consideration. Thus the value of long-time standards receives full recognition. The older the records of an insurance company, or of a court dealing with criminals, or of a charity organization relieving poverty, the more reliable they are for purposes of stating particular trends, of showing the constancy of relations in spite of a maze of variables. The unpracticed eye and the casual witness sees variables only, but the trained student who is patient, who waits years if necessary, is rewarded by proofs of the existence of laws hardly less real than those of physiology or genetics.

In the same spirit, then, we may approach the problem of long-time changes and of constancies amidst changes for economic events. We may try to make certain whether the chain of production, exchange, price, and distribution is as firmly welded, as rigid and simple in its make-up, as a short-time view leads us to believe, or whether on the contrary it is weak at points, subject to a gradual transformation, and perhaps also a mixture of many elements, not all of which belong together necessarily. If we do know from historical inquiries and from personal experience that economic activities undergo changes, that the wealth of a nation may either grow or wither, we must aim to describe the outstanding features of such a process, distinguishing between externals and

the reign of principles, just as we do in adopting the short-time view.

§ 5. Furthermore, in following this cue we shall be impressed with the *rhythm of economic life and with the periodic return of friction or maladjustment* which interferes gravely with economic life at certain times.

Change does not occur at an even rate. It is not uniformly fast or slow at all times. Indeed, nothing moves absolutely on a level, as far as our observation informs us. There is everywhere unsteadiness and interruption, a precipitous rush at one moment, and a lagging the next. Life has its pulse, and progress its lulls. As we have seen already in analyzing three fundamental laws of productivity, rhythm appears definitely in the productive effort of every individual. There is an upward and a downward curve of energy and of output. At the start we are fresh and strong, sure in our aim or precise in our reasoning. We do well and know it. Then there may come a little setback, a first feeling of flagging interest or of tiring muscles and nerves. Then we renew our effort and find what is often called among runners "a second wind". At this period we probably do our very best. Both in quantity and quality our workmanship reaches its maximum. But by degrees fatigue becomes real. Moves are less determined, and thoughts less well coördinated. Output becomes inferior or smaller. Accidents may happen, or wrong steps bring waste; and eventually the decline of energy is so marked that we can do nothing better than stop working. Concentration is out of the question. Mind and body need a rest. Activity is at a low ebb. New strength and new incentives must be gathered somehow for the next cycle of endeavor.

Now, if this is true of individual action and experience of any sort whatsoever, it applies also to social life and to the economic activities of a whole nation. It is by no means fanciful to say that here too reigns a law of rhythm. The will and action of a nation is not always pressing forward on a dead level. On the contrary, there are high and low points, crests and hollows pre-

cisely as in the life of any one person. We find society start out determined to accomplish certain things, to fight out a certain issue, to try a particular scheme, to realize pet ambitions, to do so much within a given time. New creeds and policies are adopted. Ways and means are devised for carrying plans into execution. The pulse of economic life beats hard and fast, and bespeaks youthfulness of conception and of capacity. But progress does not march unimpeded. There are halts and retardations, stops or signs of a slowing-up now and then. Activity is fitful to a degree, even though regular from another standpoint. There is an alteration of doubt and faith, of resolute steps and limp hesitancy, of strenuous effort achieving unwonted things and of idleness which in the long run spells stagnation. So economic relations extending over broad periods present a picture that is hidden from us when we consider a few months or years only. They remind us in a peculiar way of the foibles of human nature. They prove that climax and anticlimax form an integral part of man's struggle in every field. They convince us that because of the universality of rhythmic expression national prosperity is less constant than we might infer from a short-time analysis.

Indeed, rhythm is attended by a recurrent maladjustment of things which is just as common in social economics as in the affairs of any one individual. Every so often (it seems) times "are out of joint", or conditions intolerable. It is not merely that enthusiasm has subsided, that activity has reached a nadir, or success become failure temporarily, but also that things and thoughts disagree and end in conflicts of a serious nature. Coördination and coöperation may wane. Harmony is turned into discord. Indifference among men is fanned into open hostility. Instead of a smooth running of the wheels in every department of social life we find friction, and here and there a veritable breakdown that makes rational effort impossible. In this sense periods of maladjustment succeed those of order and efficiency. The ebb and flow of life is marred by an

occasional disturbance which cannot be prevented, nor will end until events have run a certain course.

The sociological aspects of this irregularity have been studied carefully in recent decades. Specialists have come to the conclusion that there is a close and yet also flexible interrelation between creed, conduct, and conditions. We may imagine individuals to be governed largely by their beliefs, to practice in no small measure what they preach or believe, and to seek continually a justification of their ideals and actions in an outer environment. They look to the facts of social surroundings and to those of nature herself. As long as they find it possible to believe and practice certain things without offending others or suffering physically, they may go on doing so. Success in attaining what we reach out for is the finest proof of the correctness of our opinions or policies. But if as individuals we meet with opposition that cannot be broken down, if our fellowmen and the great majority everywhere disagree with us, if we cannot adjust our notions or methods to the external world—if in these respects creed, conduct, and conditions are at loggerheads, friction arises. We chafe and fret and wonder, and seek readjustment somehow. We attempt alterations in ourselves or in others. We test anew our faith, our principles of work and play and of manners and moving, or the worthwhileness of the natural environs into which we have fallen. Most people strike this problem of clashing truths sooner or later. It cannot be escaped unless we cease to think and to strive.

But society as a whole too knows of it, and has its peculiar ways of responding to it. As sociologists see it, large groups disagree continually or periodically on this or that topic. There are external conditions carried over from a bygone age, though no longer in accord with newly emerging ones. It is very much as if we were walking through a section of our city and found new and old in close juxtaposition. Here a street that has just been planned and laid out; fine properties, pleasant homes, and all the evidences of the latest im-

provements in the art of building. There an abandoned thoroughfare, stripped of its respectability, showing neglected pavements and sidewalks, residences unfit for habitation or at any rate unattractive to the casual visitor. Inside and outside the two classes of houses and streets disagree. The people too represent different ages and ideals. The young live in a new part of the district and hold to notions, cultivate habits, master arts and manners suitable to their own surroundings. They seem to be—and actually may be—in harmony with the requirements and opportunities of their day. But in the other section things are not so well. The older people feel less at home in their new external world, even though still clinging to their accustomed style of living. They represent habits and views, principles and policies no longer in vogue with the best, with the demands of the "younger set". In fact, they themselves may be less sure of the correctness of their views and actions than formerly. There is a conflict within them as well as between them and the later generation. So maladjustment is revealed plainly enough. Conditions, creeds, and conduct go apart in these lives sprung of an earlier period, causing perhaps unrest and rebellion, social or political upheavals, waves of reform coupled strangely with a veritable orgy of sin and cynicism. Friction and overlappings do terminate in such revolutions now and then, as historians have shown us in great detail.

But the sociological interpretation of this phenomenon is not the only one to be borne in mind; or rather, we may study it in its purely economic aspects as well as in others such as the religious, legal, ethical, and so on. If we specialize in the study of production, exchange, price, and distribution we find that these principles too comprise stages of growth and decline, of perfect adjustment and of incongruities which impede the march of civilization. As soon as we take a long-time viewpoint there is disclosed to us this irregularity of rhythm, this feverish activity and efficiency of organization at one time which contrasts so strikingly with stagnation or real retrogression at other times. So

far from prosperity unfolding itself in an uninterrupted cycle of effort, output, satisfaction, and renewed endeavor, it appears to be subject to periodic halts, to obstructions which no measure of governments, no panacea of theorists, has up to date been able to conquer. Again and again defects are revealed in our economic organization which bring many people to grief and puzzle the wisest of men. Especially in modern time has this proven to be true and urged a study of various relations which a short-time view can well afford to ignore.

§ 6. The long-time standard therefore may be used by us to accentuate the following groups of facts. We shall first state the general principles underlying the growth of national wealth, linking individual thrift with national economic development. We shall next consider the chief aspects of the rhythmic nature of economic progress as presented to us in these days of capitalism and credit. Changes in price levels, cost of living, and in the scope or intensity of business activity are central themes for this purpose. After these three (or four) phases of economic life have been given space we shall finally turn to the problem of population in so far as it bears upon the economic future of the human race, for in the long run this is bound to be a question of great moment. If we neglect this vital feature in social life our present survey cannot but be incomplete; but having paid some attention to it we shall be better able to rate the present in terms of the future. What a short-time view of economic principles shows us, will then be reappraised in the light of tendencies which are more lasting and of greater import to mankind as a whole.

CHAPTER 10

HOW WEALTH GROWS [1]

§ 1. Mankind to-day is richer than ever before. Throughout history the increase of wealth has been noticeable, and during the last few generations truly astounding.

To be sure, now and then we find periods of stagnation. It has already been intimated in the last chapter that progress of this sort is not uniform at all times. The march of man is not without interruptions and occasional retrogressions. We shall have to study these irregularities of growth which characterize economic history. Indisputably they are marked and of great significance.

Still, generally speaking nations have grown wealthier with every century, and we need not confine ourselves to any one part of the globe or to any one nation to prove this in detail. Indeed, it is better to think of all men as forming but a single social unit, since nations did not exist until about four hundred years ago and may conceivably disappear again after some time. It is convenient to speak of the growth of national wealth only because of late years the nation has become the most important social unit, the largest and also the one most widely thought of in connection with world problems. So we do not go wrong in identifying the question of wealth the world over with that of wealth for any one nation. In asking about the reasons for the growth of national wealth we also ask about the principles underlying the increasing prosperity of mankind. This growth is an accepted fact, a familiar phenomenon to everybody, and something which must

[1] This chapter may be compared with ch. 18 of vol. I.

be explained when we try to analyze economic processes to the fullest.

The problem really is this: How does *individual thrift become national prosperity?* What must be done after individuals have acquired an income of their own so it may help to augment social wealth and make mankind richer in goods year after year? By what methods is wealth multiplied after it has seemingly been consigned to particular persons for consumption? How shall we explain the relation between personal budgets and the assets of a nation of perhaps countless millions of inhabitants? What is saved by individuals, and what by nations, in order that wealth may grow continually up to the limits set by the physical environment itself? These questions cannot be answered in a single sentence, but may be treated in several ways.

§ 2. To indicate from what different angles we might approach them, let us first take the viewpoint of a psychologist or sociologist. An investigator in these fields would probably say that the key to the situation is the mental capacity of man and the process by which the learning of one generation is preserved for the next. He would show that man is the most highly developed of all organisms and has an infinitely complex and sensitive neural system which allows him to take up impressions from the outside world, to react to them, to record them permanently within the system, and to modify and use them ever afterwards in such manner as proves most expedient. In short, man is explained as a rational, self-conscious, and willing being who applies his physical and mental powers to develop a high state of civilization and a wonderfully varied store of goods. What we learn from infancy on by imitating our elders, and what we invent ourselves, these two things together, according to one diagnosis, form the basis of every addition to national wealth. Invention is any thought or deed leading to new types of reaction, to beliefs fitting better into our physical or economic surroundings and their relations. The alphabet and the multiplication table are as important

for the development of wealth as those technical aids which economists stress most of all. Whatever provides new conceptions of the outside world and of the needs arising among the members of one group, that is innovating and a part of the learning process. Because of these capacities man has always been fond of making things not given by nature, of conquering flora and fauna, of building up organizations for diverse purposes, of providing himself with a fairly continuous stream of riches far in excess of a bare subsistence.

But, of course, it is pointed out specifically by psychologists or sociologists that wealth cannot grow much unless the newly acquired treasures of thought, of knowledge and principles of conduct, are also transmitted by one generation to the next. If each one has to find out again by chance or by dint of hard searching what became known to the preceding one, receiving no aid from it, but depending entirely upon its own abilities or luck, progress cannot be certain. Suppose that any one individual has survived the precarious years of childhood and then grown strong fighting for life. Suppose he has learned during his struggles a good many things about nature, the weather and seasons, the wild animals about him which must be warded off or hunted for their flesh. Suppose he has acquired the arts of making clothes or of building a hut in which to seek shelter from the elements and the wild beasts. If this stock of knowledge is then withheld strenuously from any of his children, if they have to begin exactly where their father did, the prospect for a further step ahead is not encouraging. It is good or bad according to whether the children are abler and move ahead faster than their parents, or do as well but not better, or prove less gifted, and that is all. There can be no other test as long as the father does not teach his offspring, as long as nothing of the newly gained knowledge is forwarded by instruction to the next generation.

But suppose instead we have a family in which the mother educates her children for ten or fifteen years, while others give of their knowledge after that

age. In that case plainly the children can learn much of what their elders have come to know in a long life. They may learn most of it in a few years, and long before they are compelled to earn their own living. Thus the instruction of the old to the young becomes a saving in two respects, first, in that it gives them all what is valuable for life without having to retrace the steps of their parents, and secondly, in that it prepares them for success during years of dependence, the years of full physical and mental vigor being now devoted to practical applications and further discoveries. New advances are easier because of ideas already held and reflected upon. One thought leads to another. An association of ideas goes on which for the children is more productive than for their parents who had less to start with. Thus social order and harmony are likely to be maintained with greater facility. The succession of inventions becomes more rapid, while their consequences are more marked. In every way the teaching of one generation by the preceding one must prove useful, considering the cumulative effect it has upon mankind. Surely then, such a habit or custom is revolutionizing. It is a natural arrangement on which everything hinges. Without it society cannot progress, nor can its wealth increase steadily and at a rising tempo.

The sociological interpretation of the growth of wealth therefore is an excellent one which should neither be ignored nor disparaged. There is much force in this fact of a systematic training of the young by the old who pass on to them the treasures already secured. It is not unlike inheriting goods, since something is acquired which was not earned by personal sacrifice or outlay in time and trouble. The process of transmitting knowledge and views has hence been called social heredity. It is social by contrast with organic descent such as biologists study especially. So we may argue that the native intelligence of man and his cumulative powers of social heredity not only further develop his endowments of mind and character, but also enable

him to produce and store wealth in growing quantities. That is what the psychological or sociological view emphasizes.

§ 3. If however we wish to explain the growth of wealth more fully, we must think in terms of economics as well as of sociology, stressing above all, *first, the growing part which nonconsumable goods play in a nation's wealth or annual income, and secondly, the comparatively few channels by which wealth can be increased appreciably, or for long periods of time.* These two principles may be added to what has so far been said about production itself.

The income of every social group consists, of course, of both concrete goods and of services which are not embodied in such goods. Even among the most primitive peope we find personal services as well as food or clothing or hovels for habitation. Indeed, the variety of these services which do not lead to the production of material wealth is a noteworthy item and will be given proper attention when we pass to our main subject. However, apart from them we have two classes of tangible commodities, namely, those destined immediately for consumption, and the remainder known as capital goods. It is this latter class which gains continually on the former as social economies improve and nations forge ahead otherwise. In the United States to-day probably about one third of either the aggregate assets or of the national income consists of capital goods, which bring no gratification other than by serving as means to an end. Indeed, the income of a very progressive society comprises decreasingly consumption goods and increasingly capital goods fashioned by man.

To present the principle graphically by a few lines, as here in Figure 2: If we imagine first a very primitive people, such as the aboriginals of Australia or the Hottentots were before the arrival of the white man, we may start with a very small square comprising nothing but goods for consumption or services of a personal sort. Such a community has no capital goods to speak of. Though some must have existed even in the remot-

est periods, we may for convenience ignore them and assume our square to contain consumables only. But notice that this square is indeed tiny, indicating a very small supply of things for the average individual. Furthermore, supply is undoubtedly irregular and devoid of variety. There are but a few things such as foodstuffs or articles of wear, and so on. Nature dominates man under those conditions, subjecting him periodically to distress and famine, to pestilence and feuds that decimate the population. But suppose in the next place we reach a stage of civilization familiar with handicrafts and a few tools, of which household utensils

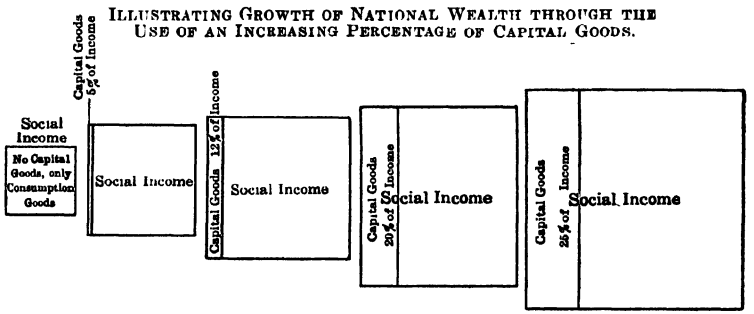


FIG. 2.

would be a fair type. To show the difference between this stage and the earlier we must now draw a larger square with two parts. The tiny portion represents tools or capital goods, while the larger is again for consumables. But because of the advantage of the indirect method we now get a larger stock of consumption goods than before, even though part of our second square comprises technical aids. The third square will allow still more for these aids, but correspondingly also more for consumables. And so the growth of wealth continues until we reach the fifth stage in which capital goods constitute perhaps a third of annual income, while the remainder is made up of consumption goods. These latter now give the average person a much larger allowance, a decidedly higher level of living than the first square which is so suggestive of barbarism and a total

lack of any indirect methods. In this wise social economies change, the net result being always an increasing store of consumables for a given number of people, unless natural resources are being exhausted.

§ 4. If we ask, then, what means are available for developing national wealth, once a certain amount of capital goods has come into use, we may reply as follows: *First,* it is quite possible for some one tribe or nation to conquer others, so that by concessions of territory or by annual tribute its income is increased for some time, if not forever. But needless to say this is not a factor when we inquire into the wealth of mankind as a whole rather than of any one group. *Secondly,* if we believe that a given number of people produce more than they consume, then a numerical increase alone can augment wealth, even though nothing else is changed. In spite of the fact that conditions may be static, technical means and methods remaining the same in character, this need not prevent a growth of wealth, provided the average individual has learned to produce an excess over consumption. Population by itself may therefore be an index of changes in wealth.

Still, we do not expect much from this principle, nor has it perhaps ever been in operation alone. So we pass naturally to the *third* one, which has to do mainly with *decreasing costs of production,* and thus with a growing net output if all other things remain the same. Indeed, most commonly we take this avenue to well-being for granted. Costs fall and income rises per average person or family because of either one of three factors, or more likely because of a union of all three. The first may be a discovery of new natural resources which can be worked more easily and quickly. For instance, additional motive power in the shape of waterfalls or oil or gas or coal speeds up production and lowers expenses, especially if it can be brought into closer proximity of basic materials or of places peculiarly suited to finishing processes. In the second place much depends also upon inventiveness, and this may take either one of three forms. It may spring from the mechanical

genius of a people, so that no particular fund of scientific knowledge is needed, or we may build our apparatus and machinery upon an exact understanding of the laws of nature, in which case research is an essential condition to the advancement of technical means and methods, or in the third place we may think hard upon better ways of organizing our working staff, of arranging materials in a mill or office, of bringing employees and employers into a relation that spells harmony and efficiency. Such improvements too testify to innovations well planned. A banking system or clever scheme of factory administration is as truly an example of invention as the alphabet or the development of communication by radio.

However, costs of production may be reduced independent of discovery or invention in any number of ways such as these: Instead of relying too much upon joint effort and the wizardry of organization we may prefer to teach each individual how to enhance his (or her) personality. A change in our mode of living, in what we eat or drink or spend on amusements may affect our work. Governments and intellectual leaders in private life may further the cause of national prosperity by advocating new pastimes or educational methods, by insisting upon a proper balance of work, sleep, and play, by pointing out the effect of a philosophy of life, of religious creeds, or of associations in friendship. In these ways too the income of nations may be augmented by degrees. Much depends upon character and the cast of personal habits. Whatever the attitude of a man toward the idea of earning a living, toward questions of social or political order, it will react upon him as he is bending over his task as a producer of wealth.

In the fourth place, wealth may possibly be increased by our tolerating fewer loafers and raising the percentage of producers to the total population. Though a large portion of it cannot be productive, age and all sorts of debilities interfering, there are usually a number of people who might work, but do not see the need of it. Even deducting those who have done their share up to old age and hence are entitled to leisure, we still

find a small group which feeds on social income without contributing to it. This percentage of idle drones might be lowered, so that national output grows.

Fifth, we might suggest that people work longer hours per day, or more days per years. This too would add to our national income, all other things being equal. And then of course any one nation may invest its surplus abroad where it brings richer returns than at home. For any one nation this is a possible source of increments, though not for the world at large. But without going any further we can see that, at bottom, the means to increase are relatively few. We shall not hesitate to call growth of population (provided the average person produces a surplus) and lowered costs the prime forces in the situation. Upon these two much depends, and since population may not grow at all times, the most decisive factor is unquestionably the reduction of costs by any one of the channels mentioned a while ago.

§ 5. Our brief review of the technological side of increasing social wealth thus leaves us with certain impressions which may be stated definitely before we go any further. From one standpoint social wealth increases by steps which include human energy, wants of body or of mind, then effort toward the procuring of goods and services, then the acquisition and possession (if not legal ownership) of goods, then use or consumption attended by gratification of some sort, and so a new flow of energy expressed physically or psychically, or in both ways. From another standpoint (and one which does more justice to the progressive nature of economic life) the links in the chain are: First, effort based on want and a store of energy, then wealth of some kind, then consumption and gratification, but as a part of satisfaction also a mental reaction, a flow of perceptions and abstract ideas, a learning by degrees, and hence a discovery of new relations in the outside world which, when expressed practically, become inventions. As a result of using wealth men gradually added new thoughts to the old, besides modifying some of their practices. Reasoning and codes

of conduct were developed. The direct method was supplanted ever and again by the indirect which uses means to an end. Increasingly men depended upon these technical aids, and with them managed to pile up a temporary surplus which further promoted wellbeing by enabling some men to live in leisure, to think long before acting or to teach others what to do. Thus specialization went hand in hand with tools and new methods of production. Property rights were used in acts of consumption which not only maintained the physical vigor of people, but also enlarged their stock of ideas and of objective means for creating the next batch of utilities. In this manner consumption led to superior effort the next time. Efficiency spread among men. Time for output was shortened. The surplus in the hands of producers grew so as to allow each generation or century an enhanced store of values. Though for long stretches of history economic progress was slow, in the main its course ran as stated.

§ 6. To be more concise, however, and proceeding therewith to the main part of our discussion, we may now say that the increase of a nation's incomes hinges mainly on a *proper stock of capital goods and of services taking care of them.* So far as the technological side of production teaches us anything it teaches us to preserve the right sorts of goods and labor energies and to use them in certain ways, lest national income be impaired. The momentous question therefore arises: What must the *owners of personal income* do in order to augment national wealth? In what way are property rights and the growth of wealth linked? What is thrift or extravagance from this standpoint? Ignoring for the present the irregularities and changes attending the growth of wealth among nations, how is it promoted by our mode of living, by our private use of existing goods and services? This surely is the major problem after allowance has been made for facts of government policies.[1] To its solution we must now turn.

[1] Governments play, of course, an important rôle in promoting the growth of wealth. A number of means are at their disposal, of which commercial

When we think of our personal fortune, its growth is connected mainly with our earnings in dollars and cents and with a mode of living known as thrift. We are aware that we can secure funds of our own by only three methods, namely, by working hard as laborers or entrepreneurs, by lending and leasing property we already possess, or by taking gifts from other people. The average man endeavors to earn more by making himself more efficient, the tests of efficiency being given by our present system of individual liberties and valuations. He seeks to add to his productiveness as employer, if not as employee.

Gifts, including inheritances, are a possible source, as has been admitted before, but they do not mean much to the general run of people. The bulk of their income is derived from earnings, and thereafter from what they do with their surplus. In other words, we associate the amassing of a fortune with frugal habits and shrewd investments. To ensure one's self of an ample and increasing income is to forego enjoyment at the moment. Indeed, one must postpone consumption *indefinitely*. If we set aside a certain sum one month, but spend it the next, that does not add to our income. If we wait for a year or two, but spend so much more thereafter, that too is of no permanent benefit to us. We may be constrained by circumstances to do this. We may have good reason for saving for only a short period, and there may be benefits of some sort as a result of it. Undoubtedly. But they do not take the form of an increased income. To increase it to any extent we must save for many years, for a large part of our adult life; and the proof of saving will lie in our having money or its substitute. To buy diamonds or jewelry is not to save strictly speaking, though the attempt is sometimes made to justify this as an invest-

policies, taxation, educational provisions, and the legal protection of inventors by patent or copyrights are perhaps the most notable. It must, however, be understood that here we deal with a private social economy alone. Throughout our discussions the effect of public control is ignored because it belongs to another field, namely, to that of an applied art of political economy.

ment. Particularly if the objects we buy appreciate, or are expected to do so, we are prone to regard such an expenditure an act of thrift. Loosely taken it may be that. But it is better for us to identify saving with an accumulation of money or claims to it such as bank checking accounts. Only in this way can we improve our personal finances. Only by investing a surplus, making loans or renting out our real estate, can we add to income derived from wages or net profits. That is the manifest truth regarding the law of thrift as seen by an individual.

§ 7. As soon however as we take a social standpoint we find that thrift must mean something else than the saving of money. We are now reminded that money is, after all, chiefly a means of exchange, and hence not a good index of the prosperity of nations. We do not judge them by the amount of their metallic currency, nor much less by currency in paper. We also know that mines turn out gold and silver slowly as compared with the increase of wealth embodied in tangible commodities. And again we can also see that it would be senseless for a whole nation to speak of "saving" money, since its total wealth might be produced and apportioned to its millions of inhabitants regardless of the existence of a particular stock of circulating media. So, no matter how we view the question of laying by a store of money, we shall soon be convinced that individual and national or international principles of thrift are not the same.

To begin with, national income is made up not only of two kinds of concrete wealth, as admitted a while ago, but also of services of three kinds the distinction of which is important. *The two classes of tangible wealth are production and consumption goods, and as for the services, these are first those which lead directly to the creation of concrete forms of wealth, secondly those which lead to it indirectly, and third those which are not in any way responsible for it*—as far as economists can prove.

The first class is exemplified by the work of farmers,

millhands, fishermen, miners, mechanics, or foundrymen. These people evidently turn out things upon which we can put our finger, which have weight and volume and are more or less lasting. In general the wealth of nations may be measured by these materials which serve primary needs or may be used over and over again so as to assure us satisfactions for a long time. Indeed, we also estimate the proficiency and speed of workingmen by the amount of such goods coming from their hands in the course of a day or year. Since everything produced is sizeable, comparisons and measurements of efficiency do not seem difficult.

The second group of services, tending indirectly to promote the output of tangible wealth, is made familiar to us by the prominence in modern times of transportation, communication, finance, marketing, research, education, and public utilities. Workers in these fields play a vital rôle in two respects, viz. first, in that they are numerically strong and represent a notable percentage of all people gainfully occupied, and secondly, because without them the rest of producers would be sadly handicapped. It is easy enough to understand that the effectiveness of our modern roundabout, specialized, and capitalistic methods of producing tangible wealth depends upon the smooth operation of agencies here put in the second class. If railroads should suddenly break down, goods could not be properly distributed. If merchants should fail to attend to their duties, marketing would suffer wholly aside from defects in the mechanical means of transportation. If bankers or brokers were to stop planning and mediating between men with a surplus and those needing funds, enterprise in almost every field would be crippled. In short, there can be no doubt of the value of services of the second variety. In their absence mere machines and craftsmanship would become relatively useless. We should have some products in the wrong place; others in wrong hands of ownership; and others not at all. Whoever has speculated somewhat upon the relation between our auxiliary business services and the development of

material wealth knows it to be a most intimate one. The interdependence is striking.

By comparison, the third group of servitors or producers is less important, provided we aim exclusively at an ample supply of economic goods and consider these to be a permanent issue. People who do not help to augment tangible forms of wealth either directly or indirectly, are a negative quantity for purposes of our discussion.

Of course, we need not deny their being producers according to our scientific definition of the word, nor that they promote social progress, *judging by aims other than those of turning out economic goods.* We certainly know that to produce is to create values, and that often such a type and measure of creativeness can be estimated only by the earning power of people. Among members of the third class, for instance, we find public officials of all grades, actors, showmen, musicians, authors of many books or plays, chauffeurs privately employed, personal servants, owners of certain amusement places whether morally harmless or not, professional athletes, and fortune tellers. Such occupations suggest incomes and we must admit that they are productive under present conditions of valuation. Money is received and service rendered. Indeed, some of these vocations are so plainly valuable socially that we may wonder whether they do not rank higher than any efforts of mason or farmhand or miner. Perhaps we should not deem life worth while if they were to disappear or to reduce their activities appreciably. Perhaps we think less of the economic tests of well-being than of the moral or æsthetic. Quite possible! And again, we may also admit at once that some of these workers may be put under either the second or the third of our headings according to whom they serve. Many chauffeurs and garage owners cater to both transportation needs and the pleasures of private families, while others may serve either one. Telephone operators are in part at the beck and call of business, and partly at the disposal of consumers as such. In nearly every branch of

transportation, communication, travel, or journalism, we find a few workers who belong wholly to the third class, or who cater in part to purely personal needs. We must not pretend to be absolutely exact in our distinction, nor dispute the virtue of all the services mentioned a moment ago from a non-economic (moral, æsthetic, and so forth) viewpoint.

Still, in spite of difficulties in classification and the reality of a debatable ground we may admit a difference in principle between the first two classes of workers and the last. As for the first, we know that life without certain quantities of food, clothing, and shelter by way of housing is impossible. We may well call agriculture, mining, fishing, and forestry the primary industries, since in their absence the rest become impossible. We cannot produce manufactures nor develop public utilities nor enjoy the fruits of science or art or literature until we have a foundation in the things taken directly from the earth. The extractive industries are primary in this sense. We must at first hold close to the ground if we would soar far above it later on. The utilitarian facts are the basis for the most useless or apparently useless, efforts of man. This is a law of life which we dare not ignore. So the producers of concrete forms of wealth need not apologize for their existence. What they mean to us is clear enough.

As for the second group, while it has been emphasized that no tangible wealth flows from its hands, we must allow it a conspicuous place in our list of useful folk, for there is no doubt about the dependence of artisans and farmers upon it. We may speak of a direct qualitative and quantitative relation between this one and the first. It is qualitative in that the absence of transportation facilities, intelligent services, financiers, and scientists would before long reduce agricultural and extractive industries to their simplest form, restoring the primitive conditions of a prehistoric age. It is quantitative in that we may trace a more or less fixed proportion between these two major branches of work. The more we develop the one, the more we can do with

the other. It is by no means possible to increase or decrease the number of bankers, carriers, research men, and so forth, without affecting the output of material wealth correspondingly. The reciprocal dependence is too marked for that.

When we come to the third group, however, this sense of coöperation is weakened very much. We can scarcely assert that a reduction by 10% or 50% of most members in this class would reduce the productive powers of the first one correspondingly, or perhaps even in any visible degree. Suppose, for instance, amusement places were closed, or a number of college teachers of the so-called liberal arts lopped off the staff permanently, or social entertainments cut in half, or any number of domestic servants, musicians, and public employees such as policemen, soldiers and clerks taken off the payroll, could we be sure that our annual national flow of concrete goods would be curtailed in consequence? Could we argue that a 10% reduction of the one group would bring a 10% or 5% decline in the other? To be honest, and judging by experiences of various sorts, we must answer this question in the negative. There is no justification for the belief that these services of the third class are a prerequisite of the first two, much less that they bear upon them to a measurable extent. We may *wish* to find such a cause and effect principle, but shall fail in the end.

§ 8. This being so, we come to the second part of our discussion, namely to the influence which money earners may wield over the trend of national wealth. Since there are three kinds of services of the sort stated, the use we make of our money as consumers may decide the future income of nations.

In the first place—though this is by no means the most important point—we may injure the cause of social prosperity by being idle, by consuming without producing, and more especially by living upon our investments. People who own nothing and rely upon the generosity or pride of relatives and friends to see them through are, of course, a loss to society. We need not linger

over their vices or the effects upon their fellowmen, for they are perfectly evident. But even though we do not fall back upon others, even though we possess means of our own, we may be less of an asset to society than we fondly imagine. We may be relatively useless and hurt the cause of national development if we live exclusively upon the proceeds of our investments without contributing to the wants of our fellowmen in any other way.

The phrase "without contributing in any *other* way" must be used because under modern conditions the proprietor of wealth lending or leasing it is undoubtedly productive. We have seen before that a capitalist as such is a producer. Whoever has real estate or cash assets and permits somebody else to use them is paid for the service. As long as such funds are scarce and private property rights include the right of lease or loan, some of us have a chance to earn money without working with muscle or mind. Technically speaking capitalists and landlords are productive. They do render a service to society. Furthermore—and this by way of parenthesis only—aged people who have done their life work and live on their pensions do not, of course, enter into our argument just now. Well earned sinecures in old age or for special causes of disability are not to be abolished, but to be favored increasingly as we make progress. But to return to the idle investor. If a rich man does nothing but clip coupons from bonds or collect rents from his estates, we must consider this an antisocial policy in a degree. It means doing less than is possible or reasonable. It means taking tangible wealth spent for everyday needs without giving a *quid pro quo*. The service of lending or leasing is not, in this case, a full return for wealth consumed if health and training permit further contributions. Sometimes we become keenly conscious of this fact. We divide men of means into two groups, those who work and those who do not. The great majority are kept busy as entrepreneurs or employees in some capacity. Indeed, we might emphasize the indisputable truth that among these men we find some of the most productive of all. Many mil-

lionaires promote the cause of economic progress more by their sustained mental efforts than the rank and file of manual laborers. No need of questioning this fact. But the second class of idle rich exists nevertheless. They may be a source of real concern to us. If they rely entirely upon investment returns, society may be said to suffer from their one-sided and rather artificial way of earning a livelihood. Wealth grows less steadily and quickly than otherwise possible.

In the second place, a great deal depends upon our mode of living as consumers, or upon the *distribution* of personal incomes which must precede the spending thereof. As was noted on an earlier occasion, income consists essentially of goods and services, not of money which serves only as a means to an end. A nation has things for distribution, and next to them services which do not take tangible form. Poor people get all their earnings in the shape of consumption goods. They necessarily spend their money for goods, clothing, rent, fees to physicians, and so forth, comforts and luxuries being quite a detail with them. On the other hand, big money earners cannot be paid entirely in such standard items for personal gratification. Since capital goods are produced every year, somebody must take them, and it is not the man with a pittance. It is the one boasting of five or ten thousand dollars a year—supposing we illustrate from conditions in the United States. He and those still better off are paid partly with capital goods. When receiving their salaries, profits, and returns on investment they have so much money (or rather so much expressed in terms of money) that they cannot take it all by way of food, clothing, and so on. The capital goods or land appreciations of the year mainly go to them. While not told specifically by any one that part of the earnings consist of these technical means which do not leave a direct personal gratification, they are really so rewarded. We see this as soon as we think of the goods produced rather than of the money measuring their value.

So, whoever in this country has more than about $1,500

per annum, is compelled to take his earnings partly in concrete consumption goods wanted for their own sake, partly in equipment which does not yield enjoyments directly, and partly in services which again may or may not minister to personal wants. The most indigent has nothing but the barest necessities. The next class has a few comforts and luxuries "thrown in". The next group has this and also a claim to certain amounts of real estate or machinery or office buildings, factories, engineering works, and so on. The richer a man, the larger his share presumably of these capital goods. We may consider the biggest incomes to be composed in goodly part of these things which cater to no personal needs. But the merely well-to-do people also have a considerable share of services of the third class which do not create concrete wealth either directly or indirectly. Because much money may be spent along this line, because every man with a liberal income above the minimum has an option to spend his money on these services of the third class, his rôle in the social economy is vital.

Most usually we make this clear by pointing to the resources of a wealthy man, say of a multimillionaire. It is always natural to magnify defects in the distribution of wealth, and to show how much the overly rich have to do with the poverty of the masses, with the characteristic faults of a nation. Certainly, there should be no doubt of the powers of a plutocrat either as entrepreneur or as consumer. In this latter capacity he may maintain a large retinue of servants who take care of grounds, function as chauffeurs or messengers, and pander to every whim of their employers. Besides, the purchase of jewelry may here be deemed an instance of misapplied labor, even though it is exceedingly durable and apt to rise rather than fall in value. Again, artists, entertainers, musicians, grooms in the racing stables, caddies on golf links, private tutors, nurses, and many personal services engaged on special occasions—all these may figure in the household of such an estate. It is evident that waste may go to extremes and become a vice to be abhorred by rightminded people.

These possibilities for spending money extravagantly seem obvious enough. However, we need not pillory the millionaire alone in order to show the bearing of the distribution of personal incomes and of their use upon the trend of national wealth. From what has already been said we can readily infer that less affluent people too may spend much money upon services of the third class as against those of the first or second. Every individual with more than, say $1,500 annually, and every family with more than, say, $2,500, has the choice of certain quantities of services in either one of our three main groups. Besides, governments may appropriate money as they like. If we increase the army and navy, or double the number of clerks in this or that branch of administration, the question arises whether the production of concrete forms of wealth is furthered by it directly or indirectly, or not. Clearly, our public officials may be no more vital from this standpoint than a battalion of liveried servants waiting upon the caprices of the ultra rich.

The importance of the manner in which we spend our money, or of how much of it we spend for our personal enjoyment, must be judged by the self-evident fact that all people, however employed or idle, do consume material wealth and that the majority of people gainfully occupied use in addition also certain services which may be made immediately productive. Telephone communication may for instance be used either socially or in the conduct of a business which perhaps helps to create tangible wealth. Since everybody, then, must have so much food, clothing, and so forth, we may assign these staples to producers in the third group (domestic servants, and so on), taking them from those who wish to create material wealth or are actually doing so. Furthermore, raw materials also may be put to wrong uses. We may convert them into consumables for our servants, musicians, and so forth, or we may hand them by way of wages and fees to those rendering services of the third type, instead of leaving them for manufacturers of machines, tools, construction works, and so on.

§ 9. In this way, then, we reach the following conclusion regarding the possible effects of spending personal income. At any given time we may imagine the total number of gainfully occupied to consist of a definite number in each of our three divisions. If then we wish more tangible goods we must increase the first and second class at the expense of the last, while by spending more money than usual on the third type of services we bring pressure to bear upon the first two, or upon either one of them. The principle of demand and supply here asserts itself. If we are bent upon getting more of these relatively usless services (understood, useless from our present standpoint) we shall increase their pay more than that of workers in the other two fields. Thus farmhands and millhands may become rare indeed. Employers in those fields may complain bitterly without realizing that in part they themselves *as consumers* are responsible, though in the main the fault lies, not with business magnates, but with the general public.

But to stress now a second aspect of the situation.

If the average man of means spends more on services of the third kind than the existing ratio between it and the other two permits, he also brings about a reduction of the output of consumption goods to begin with, then of capital goods employed in making them, and then still more of consumables of various sorts. That is exactly the result of a misuse of personal incomes. Every person engaged by us in the household or through our purchasing amusements and other services of the third class may be imagined to have been a potential worker for the creation of new concrete goods in general, or of highly valuable public utilities and of technical equipment in particular. If a nation decides to spend more money on the nonessentials in the present sense of the word, it is gradually restricted in its purchase of tangible goods. As economists often put it: There is a neglect of our productive capital. Instead of replacing it fully, there is but a partial replacement. Instead of augmenting it, so that enjoyable goods may increase more than in proportion to a growth of population, we

may let it shrink year after year. Productivity thus suffers in the end. Our recklessness as consumers has brought grave consequences. The primary extractive industries may fall into neglect and reduce their scale of output. Instead of factories and farms teeming with millions who supply us with commodities of lasting value, fit to be used for many years, we have more pleasures of the moment such as concerts or personal attendance in a restaurant or at home, or a larger army of public employees, or clerical help, and this change may prove a distinct loss. In the United States, for example, the third class of money earners represents to-day about 10% of all people gainfully occupied. We may assume that this is no more than we can afford or than is compatible with a continued growth of our national income, which in recent years has amounted to six or seven per cent—allowing for a rise of price levels. As long as the American people cling to their present habits, this percentage need not grow, nor need we be afraid of diminishing our flow of concrete goods. But enough has been said to prove the possibility of a decline. All nations face this, and fall prey to it at times.

Lastly, and no doubt least important, the growth of wealth may also be affected by a policy of keeping idle the capital privately owned. Instead of spending money for services of the third class, or hindering economic progress by an exclusive reliance upon investments, a wealthy man may "strike" like a wage earner. The latter does this by joining his brothers in the field by unionizing and refusing to toil on conditions proffered by the employer. Such organized bands of laborers may do a great deal of harm, though not necessarily by malice aforethought or because of unjustifiable demands. Similarly captains of industry may injure the cause of national prosperity by withholding from others the use of their property or by leaving it idle for an extended period. They may have funds, but refuse to lend them to others. They may hold on to real estate in the hope of rapid appreciations. They may close plants in order to combat unionism, or because of a temporary

slump which reduces sales and profits below the normal level. They may be intimidated by government interference, by diplomatic relations between different governments, or by a rival concern which has new patents and powers of fighting it in the quest for markets. Whatever the motives—and they cannot easily be enumerated—the effects may be the same. To keep equipment and land idle is to offer obstructions to economic progress. It halts the march of developments which spell a growing income for the average man.

§ 10. Before linking up, therefore, the familiar credit mechanism with consumers' thrift on the one side, and with the growth of national wealth on the other, we may briefly restate the responsibilities of entrepreneurs as seen from our present standpoint.

In the first place, they should, more than any one else except possibly the educational circles, foster research and the practical application of newly found facts. Of all workers in our second group which does not create tangible wealth directly, but is essential to its creation indirectly, professional inventors and scientists are probably the most important. To stimulate discovery, to encourage a spirit of inquiry, and to help original investigators financially so their work may go on forever is one of the first duties of a far-seeing business man. A certain amount of consumables and working materials must be set aside for this purpose. It does not do to save at this point or to allow unconscionable consumers to waste society's wealth from a sheer lust of pleasure. Entrepreneurs can promote the growth of wealth materially by a wise policy in this respect.

Secondly, they may take the accumulation of a social surplus largely into their own hands by not distributing net profits due to shareholders. This practice has arisen already. As indicated elsewhere, a considerable portion of the funds theoretically available for dividends in joint stock companies and corporations is not converted into personal income. It is kept by the directors of the firm who may not even consult the voters on this point. The powers thus conferred upon them or by tacit assent left

with them, are far-reaching and from a legal viewpoint a novelty of no mean import. However, waiving this aspect of the matter, we need merely stress the opportunity given to a small number of business men to fix amounts or rates of saving which shall constitute a business surplus, and the final disposition of which rests at all times with them. The more that is kept in reserve, the more the plant in question may be expanded later on, or the more may be invested in securities which stand for the obligations of other concerns. Just what is an ideal percentage of net profits to be kept from shareholders is difficult to say, but evidently it may be high enough to develop one field of production excessively, or to increase capital assets (goods) in lieu of consumption goods.

Third, since banks too are enterprisers, they should be here mentioned as responsible parties in the development of social income. Investment institutions may do much or little in proportion to their efficiency of organization and of marketing funds received from the general public. Commercial banks more than any others have much to answer for, since they can manufacture credit as well as lend cash funds left with them by customers. As we have seen, they operate with their own capital and surplus, with cash deposited for safekeeping or convenience by outsiders, and with their reputation as financial experts and trustees for society. They can grant huge sums because their promises in the shape of check accounts and bank notes are accepted by most people and circulate in place of real money. As long as this is so, business men may be helped or hindered by commercial banks. Bank currency, like genuine money, is a general title to wealth. It buys anything, not only specific kinds of wealth pointed out. Indeed, money never refers to specific sorts of wealth. It simply represents purchasing power, the choice of goods and services being left with the holder. So we must treat commercial banks in particular as a third example of the influence wielded by entrepreneurs of every class in directing the trend of social prosperity.

§ 11. Besides, their importance appears just as strikingly when we start with individual thrift and connect this with the growth of national wealth through its relation to modern credit machinery. What savings actually mean and how they are transformed into new stocks of tangible wealth is now readily understood. The bulk of the social surplus accumulated during a year still comes from the savings of the average man, or at least from millions of families in moderate circumstances. In the United States we must include in this class all people earning between, say, $1,200 and $10,000. These money earners prove themselves thrifty by not spending everything for enjoyable material things or services belonging mainly to the third group cited some time ago. That is, they are thrifty if they do not buy too much of these things and services, the definition of "too much" varying with the existing number of people employed in those fields and found reconcilable with a further increase of material wealth. The more the average person saves, the more is plainly put at the disposal of entrepreneurs who are the technical or financial experts of society.

What happens is approximately this: When we as individuals say that we have saved money, we mean that we possess funds as a result of not spending everything for immediate personal gratification, and that there are goods or laborers somewhere in the world for us to command. Every man who has a hundred dollars at the end of a year, has potentially wealth to this amount. It may be in the form of real estate or railroad ties or timber or parts of a bridge or factory equipment or anything else we can think of. Since money buys anything, not itemized goods, we may imagine this hundred dollars to stand for whatever kind of wealth we like, or for labor power given in the shape of personal services or of others creating concrete wealth. But whatever our notion of the kind of values to be claimed, the amount is one hundred dollars. The owner of this sum of money has so much wealth potentially. He may procure it by buying the goods and services in question, using them

productively in business; or he may purchase securities (bonds notably); or he may leave the money with banks, building and loan associations, and so on. As we have seen, funds may be loaned out to those needing them directly or indirectly. The roundabout method is the commonest for much the same reason that ordinary staples go through several hands before reaching the final consumer. So the significance of personal savings is their power of mobilizing goods and human energy not used

ILLUSTRATING THE GROWTH OF NATIONAL WEALTH THRU THRIFT

(Goods and Services not Sold for Money are Ignored)

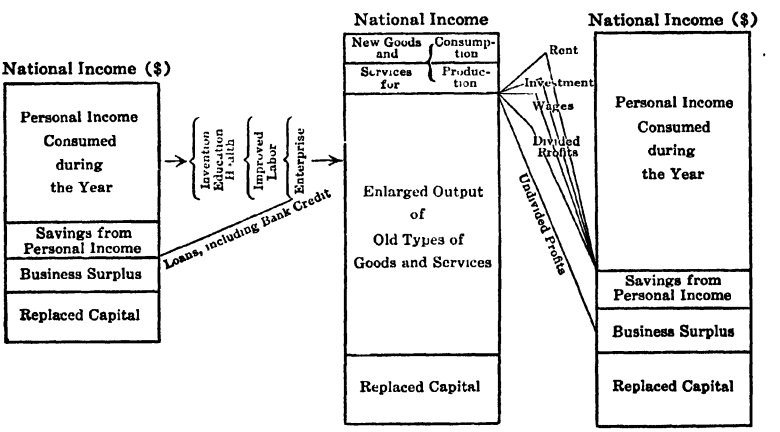


FIG. 3.

by the owner, the saver. They are transmitted to banks and like intermediaries, or to borrowers who do want large sums for their own purposes. In this manner personal thrift, measured in dollars and cents, becomes a gateway to national prosperity measured in terms of goods and services and of their annual increase. *The credit agencies and instruments which we associate with banking and business finance are devices for transforming dollar claims of the saving public into tangible assets which borrowers can use, and the growth of which is the true barometer of national productiveness.*

Hence we may finally sum up our analysis of the

growth of capital and social income in the following fashion. We may make a chart comprising three squares which refer to national income counted in units of currency, or pictured as a sum of goods and services.

The first square may then be divided into four parts, one to indicate what consumers have spent for their personal use, a second what they have saved in money, a third what business men have saved by not declaring dividends up to the full amount of net profits, and the fourth the money which was spent to maintain the existing stock of capital goods. These four items can usually be recognized in the economy of modern nations. It should be understood however that while savings and business surplus represent claims to wealth expressed in terms of money, the *goods back of them* are used during the year, nevertheless. Individuals do have such titles to wealth, but it is presumably used by somebody else. Part of the savings or surplus is spent by borrowers for consumables. Wages may be paid out of the proceeds of a loan, and these buy enjoyable goods and services for the employees. The other part is invested in durable items such as buildings, land, machinery, and so forth. Thus it is safe to suppose that the largest part of what appears as an annual surplus privately owned is none the less used up or in process of being worn out. Indeed, we may go further by pointing (as in our chart) to the effects of our consuming things. Whether we proceed to buy consumables, or whether we loan our funds, thereby passing commodities on to others, the net result is from one standpoint the maintenance of bodily and mental vigor, of educational facilities, and of an army of men and women doing research work or specializing in inventive pursuits. Thus the efficiency of labor is gradually enhanced.

Bank credit constitutes a third source of loan funds in modern times, as suggested in the chart. It makes available funds which business concerns and private persons do not market directly. But on the other hand it is not an addition to the *goods and labor power* already in existence. We must distinguish clearly between these two

facts. Banks serve to mobilize loan funds which might otherwise not be within reach of would-be borrowers. They should be specially mentioned for this reason. Yet the wealth which bank credit buys is an integral part of national income, and more particularly of savings and business surplus. It is again a case of contrasting titles to wealth owned by individuals or firms with stocks of goods or of labor which enter into the social dividend as a whole.

Taking this latter, nonmonetary view therefore, we may draw a second square much larger than the first. It shows how the national flow of goods and services has grown as a result of thrift and loans. Entrepreneurs have really two functions in this connection, first, to multiply goods and services long established, and secondly, to furnish new kinds of goods and services. Capital goods increase and call for a larger replacement fund. The more technical and indirect our methods of production, the more time and trouble we must give to the maintenance of a *status quo;* but in addition the income of nations is improved by a greater per capita output of things in general, and of new types of wealth in particular. The object of thrift and progress is a steady diversification of industries and an ever growing variety of enjoyable things for personal use. The disposition of income shown in the first square leads to this result in the second square which we may imagine to stand for the next decade or the next few years in the history of a country.

Still more, since this process is continuous, we must return to the personal view of income in the third square. We divide the national income here once more into four groups, just as in the first. But we realize now that personal income destined for consumption or for savings is composed of four streams known usually as wages, profits, rent, and wages. These four kinds of income are claimed by producers first, and then redistributed among all members of society, the nonproductive ones included. The same income described in the second square as goods becomes personal income (ex-

pressed in units of currency) in the third square, and this transformation is made possible by the distribution of all goods and services under the guise of rent, interest, net profits, and wages or salaries. The only possible fifth class of income is undivided profits which appear as business surplus. In this way we have completed a circle. We are back at the starting point, except that national income has grown because of the coöperation of thrift, inventiveness, credit institutions, and the control of business by enterprisers.

§ 12. In conclusion, then, we may stress again the necessity of a combination of individual savings with scientific progress or mechanical ingenuity. Thrift itself can accomplish little. If the citizens of a state did nothing but postpone consumption by not spending all their money, they would perhaps accumulate stores of consumption goods for a while. Indeed, they might do this year after year, and thus wax rich in a sense. But these accumulations would be of slight value. Before long they would be a drug on the market. We should have too much wheat or hardware or building material, or whatever the thing might be. To save these is not the primary duty of either individuals or nations. Primitive people follow this principle because they are afraid of a "rainy day". They fear a famine or the ravages of the enemy. But take modern societies as a whole, and you find them saving no consumables from year to year. They add to *capital goods* as means to an end, and because, to begin with, they are durable. Beyond that they grow affluent, not by hoarding enjoyable goods, but by providing steadily a greater variety of them in superior form and quality. More for the average family, that is our slogan as an enlightened nation! We attain this goal by using up consumables, by putting them in the hands of a certain number of producers of the second and first class who augment concrete wealth directly or indirectly. That is the real meaning of thrift seen from a social angle. An ideal rate of saving, therefore, is one calculated to preserve existing stocks of technical equipment and to increase them by degrees,

yet not to increase them so fast that consumers suffer for the time being. The practical problem in this respect is the possibility of a ratio between personal income and a surplus of savings which would keep capital goods continually busy while at the same time leaving consumers a chance to enjoy life and to develop their capabilities. If we were to study the laws of the growth of national wealth with a view to scientific distribution and savings, we should have to take this question seriously.

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CHAPTER 11

CHANGING PRICE LEVELS

§ 1. A price level may be defined variously. It is, for instance, the sum of money prices for units of *all* goods and services sold under competitive or monopolistic conditions. It is also the *average* (arithmetical or other) of all prices paid at a given time. Or it is, in the third place, the average of all prices at one date *compared* with the average at another date—earlier or later—which serves as a basal one, as a standard. In every case, however, price levels are sums or averages of a *number* of prices which differ at a given moment and which are subject to variations in the course of time. They suggest therefore the picture of mountain ranges running parallel to each other. If we are favorably situated we can distinguish the several ranges and make comparisons; but we shall not probably compare particular high or low points in any one with those of the second or third. Instead we shall view each range as a whole and estimate roughly the differences in average altitude. These will interest us most and can be stated most easily.

Now, price levels are compared in much the same way. We take it for granted that there are many prices, and that they change from time to time; but we do not compare one individual price with another at an earlier or later date. We do not ask how much a pound of sugar is worth to-day, and how much more or less to-morrow. Instead we count up all the prices known to us at one time, then take this sum, and compare it with the sum of prices for the same goods and services at another date. Either we do this, or we establish an average for all prices ascertainable, and then compare averages for different times.

To illustrate, as in Table 3. We find there a list of ten goods and services, six of them tangible commodities, and four intangible services, to wit, rent for shelter, fees for a consultation at a physician's office, a ticket to a theatre for a particular type of performance, and carfare for a ride in an urban trolley. We may assume for the sake of convenience that these ten items stand for *any* number of goods and services sold for money, and for all of them. Obviously, the more complete our list of prices, the truer our picture of changes in the level, other things being equal. Hence it is, incidentally speaking, important that we include services as well as goods, for the former too are bought and sold at fixed rates of exchange. We are tempted to think only of money paid for concrete articles, but we have seen already that there is also a price for labor, enterprise, and the leases of land or capital. Whatever is bought and sold, has a price; hence wages and other kinds of income must be included in a comparison of price levels.

TABLE 3

THE MEANING AND MEASUREMENT OF CHANGING PRICE LEVELS

Article or Service	Unit Quantity	Retail Prices in 1875	1900	1925
Bread	One Loaf	$0.10	$0.05	$0.10
Pork	One Pound	.20	.15	.30
Rent	One Week	5.00	4.00	7.00
Medical Attendance	One Consultation	2.00	1.00	2.00
Street Carfare	One Ride	.10	.05	.05
Cigars	One	.10	.05	.15
Theatre Performance	One	1.50	1.00	2.00
Shirts	One	2.00	1.00	3.00
Hard Coal	One Ton	3.50	3.00	15.00
Books	One	1.00	1.00	2.00
Total of prices		$15.50	$11.30	$31.60
Arithmetical average of all prices		1.55	1.13	3.16
Index number (year 1875 as base of 100)		100	73	204

We see further that our table gives three dates, and that a price is recorded for each item at each date. The prices here are fictitious. They are not to suggest actual

rates paid for the items in question. But that is not, of course, important as long as we merely try to illustrate a method of computation and comparison. We note then, next, a total for the ten items at each date, and this is itself the price level. But instead we may also reduce the totals to an arithmetical average by dividing them by the number of items, namely, ten. Thus the price levels in the Table are $1.55 for 1875, $1.13 for 1900, and $3.16 for 1925. This is one way of finding changes in price level.

Still, quite often levels are expressed, not in amounts of money paid for goods and services, but in so-called index numbers or indices. Suppose that we wish to find relative changes only, not actual average prices paid at the three dates given in our Table. In that case we may make the price level for 1875 (or either one of the other two dates) a base or standard. We may substitute the figure 100 for the price $1.55, in order to have a percentage scale which makes calculations easy. Then, with this understanding the corresponding number for 1900 is $113 : 155 = 100 : x$, or approximately 73; and for 1925 about 204. Index numbers may thus be defined as numbers indicating relative magnitudes for different things at different places or times, or more especially for present purposes as numbers stating differences in price levels at different times and places in percentages of a standard, any figure, date or place being perhaps a suitable standard. Differences in price levels for different countries, or in a price level for any one country at different times, may be measured by one of several statistical methods and then be expressed conveniently in indices or index numbers based on a percentage scale.

A variety of questions, to be sure, arises in connection with the making of these indices. We must decide how many data are essential to a complete survey, how we can make unit quantities of any one commodity comparable for different times, how we shall classify or define these commodities themselves, and so on. Much care must be exercised in statistical measurements of all sorts, including those underlying the construction of a series of index numbers. That can easily be understood. But if

we pass over these technical matters, since they do not belong to our subject, we may next consider the remarkable change in prices which has taken place during the last few centuries. As everyone knows, levels rose greatly for the period as a whole, though quite unevenly in all countries of which we have a record. If, for instance, we use the year 1800 as a base of one hundred points, the index numbers among western nations are estimated to have been, in 1500, 35; in 1600, 75; in 1700, 90; in 1900, 125; and in 1920, 360—this last year representing a sort of climax of the upward trend of prices. Again, if we take the period 1840-1920, we find changes as follows: Index number for 1840, 117; for 1850, 100; for 1865, 145; for 1870, 115; for 1890, 88; for 1910, 99; and for 1920, 244. From these and many other data at our disposal it is easy to see that, whatever the temporary effect of falling prices here and there, generally speaking levels moved up throughout the world, not merely in this country. The last few generations particularly have witnessed a greater rise than all earlier ones taken together, and it has been more rapid since the middle of the nineteenth century than in the hundred years immediately preceding it.

One naturally asks therefore what causes these changes. In a general way we may be interested in either a rise or fall, and we may study such a movement either for short periods or for quite long ones. It is for us to decide how we are to approach the problem as long as we aim at nothing but a change as such. But we may also narrow our question down to cover only the upward movement of the price level in the last few hundred years. Or to put the matter more definitely, we may wonder whether this—on the whole—steady rise of prices has anything to do with the economic process at large. Instead of looking into fluctuations covering only a few months or years, we may concentrate our attention upon this long upward trend which has been going on for so many generations, hoping to find for this an explanation.

Thus we may be interested to know whether the as-

tounding growth of wealth among modern western nations has been accompanied quite accidentally by a marked rise of price levels, or whether a causal connection between the two exists. Suppose for instance we ask: Can price levels change without affecting national wealth? Or on the other hand, can this wealth grow greatly without involving a corresponding increase of prices? Could the economic development of the last century and a half have come without raising price levels to any extent? Are these latter really only significant as such, or do they lead us back to facts of production, exchange, and the principles underlying the growth of wealth when it occurs at a certain rate, say, as swiftly as during the last half dozen generations? Looking at the subject from this angle, we may attach new significance to it without prejudging the case. We are still free to explain any change and any rate of change as the data before us demand, but meanwhile we receive an added incentive for investigation.

Of course, one approach to it suggests itself at once. We may start with the indisputable fact that price levels presuppose the use of money. If we did not use money we could not have price levels. A barter regime would know nothing of such movements. If farmers—to take a simple case—exchanged their produce for manufactures, or one kind of produce for another, a change of individual prices could occur, but not one of price levels. The price of a bushel of wheat would be perhaps a pair of shoes or ten pounds of cotton. If wheat went up, shoes or cotton would go down relatively. Less wheat would buy the same pair of shoes and more pounds of cotton. Or the shoes might become dearer, commanding more cotton, but perhaps retaining their value relative to wheat. Individual prices, in short, could change as much as if money were used, but we could not add all the prices or average them. That would be impossible as long as we had no standard to which to refer all goods or their values.

The use of money, then, also reminds us that we are dealing with a question of relative values between money

and all goods or services compared with it. If at one time it takes one dollar to buy a certain number of things or to state the average price of these things, and if the next time it takes twice as much money, we can say that a change in the value of money has taken place. The movement of price levels is equivalent to a change of the value of money, or of its purchasing power. *Hence we have a right to use three phrases interchangeably, namely, price level, purchasing power of money, and value of money.* They mean substantially the same thing, except that the last two are the reciprocal of the first one. If the price level has risen 50%, the value or purchasing power of money has been halved. If the price level falls, the value or purchasing power rises. That is the arithmetical relation. But aside from this aspect we may treat our three expressions as identical.

§ 2. To explain price level changes, therefore, we might apply the general principle regarding prices of commodities. We may argue that just as the price for an article changes because either demand or supply has changed, or because both have changed, but unequally, so a change in price levels must be due to a change in the demand or supply of *money* relative to the *things* bought with it. We may conclude that *money is a commodity*, although a peculiar one because of its dual rôle as a medium of exchange and a raw material used in the arts. Or we may be able to prove that in spite of a constant amount of goods and money people changed their rating of the two, so that the latter had to be offered in larger quantities to buy a certain volume of goods. This may have been the case in the past, and may be possible at any time. Or we may hold the opinion that, while the amount of money in stock or in circulation increased quite fast, that of goods and services exchanged in the markets of a particular country grew slowly, the net result being again a rise of price levels. All these are possible ways of explaining changes in the value of money relative to commodities, though the essence of the argument is always a ratio (and a change of ratio)

in the supply or demand of money to that of goods and services.

This view of the question which has often been called the *commodity theory of money* is plausible and in fact demonstrable to a certain extent. For in the first place we can point to the general principle that stocks of goods are subject to the law of diminishing utility, that the use of added amounts of them does not, after a while, bring a proportionate return in gratifications. We have seen already that the principle holds everywhere and goes back to essentials of human nature.[1] As far as the consumption, use, or possession of goods is concerned, increased amounts do not always give corresponding gains in enjoyment, hence we do not value the average unit of a large supply or income as highly as that of a small supply or income. Wealthy folk are clearly less concerned about a dollar than the poor ones. They spend more easily and think less of a unit such as a dollar in this country, a pound sterling in England, and so on. Well then, if this principle applies generally, why should not money uses show it too? Why should not the value of money increase less than proportionately to its increase, after a certain quantity has been acquired by a person or has entered a country? Money may be a commodity precisely in this sense, and thus lose in purchasing power as quantities grow. Indeed, we may immediately grant this proposition to be a true one, although it will be better to restate it in the next chapter, after the real meaning of money and price level changes has been discussed.

Secondly, whatever our interpretation of the law of supply and demand, it clearly precludes the idea of prices varying in exact proportion to changes in either supply or demand. We do not expect a bushel of wheat to sell for twice as much because its stock has been reduced to one half; neither do we notice anywhere in the world's markets a fixed ratio between changes in supply or demand and those in exchange rates. A slight increase or decrease in supply may affect prices pro-

[1] Vol. I, ch. 22.

foundly, and vice versa. We cannot tell beforehand what will happen, nor do statistics suggest the existence of any definite relative change. So, this being true, it seems instructive that in modern times price levels did actually change more or less than the amounts of money in circulation at different periods. We find again a lack of fixed ratios, and thus something which agrees with the rules governing the valuation of ordinary staples.

Furthermore, and in the third place, there can be no doubt of the marked growth of stocks of money (metallic money being here in question) during recent centuries. Since the discovery of the New World they have piled up at an unprecedented rate. There is more gold and silver than ever, and so the prevailing trend of price levels may be seemingly explained by this fact alone. As the volume of our medium of exchange grew, so did its purchasing power fall, the level of prices rising thereby. That appears to be the situation. The treatment of money as a commodity is quite reconcilable with these data.

§ 3. Nevertheless we are obliged to give consideration to a number of points which go far to upset the notion that price levels may be explained fully by the treatment of money as a commodity. For one thing, namely, it is widely conceded that the output and exchange of goods and services have grown more than the yield of gold and silver which form the bulk of our real, intrinsically valuable currency. Whether we think of money as a medium of exchange or as something convertible into bullion or into raw materials usable in industry and the arts, we must acknowledge that its supply relative to that of ordinary commodities or services has become scarcer. We should consequently infer from the principle of diminishing utility or of supply and demand in general that the purchasing power of money has risen, hence price levels have fallen. As far as the commodity theory of money is accepted we may insist upon this conclusion. Price levels apparently should have fallen, instead of rising at a fairly rapid rate.

For another thing—and this fact is much more signifi-

cant in our argument—money is not really so simple an item as we have hitherto implied. It does not consist merely of gold and silver or other metals circulated in the form of coins. Rather, it comprises several things which must now be mentioned before we attempt to state the causes back of changing price levels at length.

Money for present purposes consists, *first* of all, of metals such as gold, silver, nickel, copper. *Secondly,* there has come into existence in modern times a considerable amount of paper issued by governments and passing as money, though intrinsically of no worth. This paper circulation forms an integral part of the currency of almost all progressive nations. *Third,* we have bank currency of two types, as already pointed out earlier. There are bank notes which resemble government scrip in that they possess no inherent value, but circulate only because people have faith in the promise of the issuer, or are willing to let tokens take the place of treasure. Tokens or symbols stand for values, but are not values themselves, while treasure is a real value, gold and silver being the best known form of it in the currency of modern nations.

Fourth, banks are also responsible for the issue of drafts, bills of exchange, and checks which circulate in place of real money. As we have seen, they originate in credit transactions at commercial banks, and this point will have to be brought out again from a different angle later on. But if we rest satisfied for the moment with the mere reminder that such items of currency exist, we realize that much money among progressive people the world over is not genuine. We may distinguish between real money consisting of metal, or issued by governments or banks as "notes," and between virtual money which is made up of checks almost entirely in some countries, and of checks and drafts of various sorts in other countries. Virtual money, then, is bank currency other than bank notes. It arises mainly from loans, although not necessarily so. If we wish to use the term "money" loosely, as is expedient in studying its bearing upon price levels, we must recognize the constituents here

given. It comprises metals such as gold, silver, bronze, nickel, and so forth, government paper, bank notes, and checks or drafts instantly cashable at a bank or placed to one's credit there. Hence sometimes this last class of money is defined as "bank deposits subject to check," meaning the accounts at banks which may be drawn against without notice, so that checks and drafts are just as liquid assets as cash.

But even this is not the whole story of money for present purposes, for we must next remember that money has a rate of turnover, or a *velocity of circulation* which affects price levels by determining how much money is needed to transact a given amount of business in a certain time. Both virtual and real moneys have such a rate of turnover.

The principle may first be suggested by our comparing the usefulness of money with that of two wagons or auto trucks of different size employed by us for transporting goods. Other things being exactly equal, the larger vehicle of course does the more work. It is considered more efficient, more valuable in the business. But suppose this inequality in size is offset by a greater speed in the smaller truck, or suppose this latter is used more frequently, more regularly in whatever period of time we have in mind. In that case plainly the two trucks may carry like loads and be equally efficient, though not of equal size. Speed or frequency of use has counterbalanced the greater capacity of one vehicle.

Now, what is called the rate of turnover or the velocity of circulation of money resembles this efficiency of our two trucks. Money may be used often or seldom in the course of a time unit, say a week or a year. We may keep a great deal of it on hand in order to buy and sell goods, or we may habitually "run short," that is to say, find but little cash in our pocket and in the till on business premises. Obviously, the less we use money, the less work can be done with it. The volume of sales is in proportion to the number of times we use a particular coin or unit of currency, or in proportion to the amount of cash we average day by day. Whether we are

thinking of real or virtual money makes no difference, except that the latter is not strictly speaking cash, but rather a credit account at banks subject to checking. In both cases the question of rate of turnover arises. We may imagine two merchants to have each a hundred dollars at a bank in check accounts, and to use these for exchanging goods to the value of a hundred thousand dollars per year. Each sale transfers credit or virtual money from one account to the other, and this transfer occurs so frequently that at the end of the year a large amount of business has been done. On the other hand, the same deposits on the part of each merchant may be used only once in a while, say a few times each month, so that the grand total of sales is not impressive. Virtual money in that case has remained relatively inactive. It has not moved back and forth very fast between the two accounts in question. It has not "circulated" at a lively rate. Its efficiency is low in the second case as compared with the first.

Rates of turnover do vary with times and places. Different classes of people use their money with unequal effectiveness, for some keep much more on hand from day to day than others. Rates vary for classes, for nations, and for individuals. But it is extremely difficult to compute them with even approximate accuracy. Indeed, for most purposes we need to know no more than that each nation has a rate at a given time, and that this affects the quantity of money required for business. The higher the rate, the less money is needed. The volume of money in circulation therefore tells us little unless we know also its rate of turnover. And besides, it should not be forgotten that circulating money is here defined best as money used at least once or twice in the course of a year. If we make the year our time unit, and the nation our territorial or social unit, we must exclude from real money such sums as are not transferred at all by one party to another in an exchange of goods. If a private person hoards a hundred dollars, burying it or concealing it somewhere so that it is withheld permanently from trade, this sum does not constitute a por-

tion of our circulating medium. Again, if banks keep large reserves of metallic money from year to year, never giving it in payment of services or debts, never letting those have it who borrow, never permitting it to enter markets anywhere, these reserves cannot be called "money". They do not form a part of that money whose quantity and rate of turnover affects price levels.

§ 4. Bearing this in mind, then, we can see that "money" for purposes of studying price levels is quite a definite thing, and above all, that it is a composite rather than a simple factor. It comprises at least four items, to wit real money, virtual money, and the rate of turnover of each. If we wish to understand the movements of price levels, we must pay attention to all four items, although particularly to changes in real and virtual money. Some economists therefore have presented the arithmetical aspects of the problem in the form of an equation—of what has been called an "equation of exchange"—and have furthermore sought to explain price levels by establishing certain cause and effect relations between the several factors involved. Thus, if we let the letter M stand for real money, M' for virtual money or bank deposits subject to check, V and V' for their respective rates of turnover, T for the total volume of trade or for the total number of units of goods and services sold for money, and P for the price level itself, we get the following formula:

$$M\,V + M'\,V' = T\,P, \text{ or}$$
$$\frac{M\,V + M'\,V'}{T} = P.$$

As far as the second equation itself is concerned, then, we may agree to the following points. First, changing any one factor on the left side will change P. If either T or M or M' or V' or V decreases or increases, P will show it. Secondly, if the divisor (T) rises, P falls; and if it falls, P rises. Third, if the other four factors increase, P does so also, and if they decrease, so again does P. The change of any one of these four magnitudes

affects P in the same direction, provided T remains constant. These three propositions follow automatically from arithmetic, and need no proof.

We may however in addition seek to account for a change in P by connecting it *causally* with any one, or with every, factor on the left side of our second formula. Indeed, this has been done by some economists, as intimated above. It has been held that price levels can be explained by what happens to real and virtual money, and speaking more generally, by the causal interrelation between the five magnitudes M, M', V, V', and T. In the first place (it has been argued) the amount of virtual money depends upon that of real money, and especially upon gold which is the standard for the various kinds of currency in use. Bank currency or deposits subject to check rise if the quantity of real money in circulation does this, and fall if real money declines. Real money is the cause and virtual money the effect, as far as their amounts are concerned. Secondly, the quantitative relation between M and M' is a fairly fixed one. The change in one is approximately proportionate to that in the other. There is a fixed ratio in the long run, so that the effect upon the price level may be forecast, and estimated, if nothing else changes. Third, as a rule the other three factors are not influenced much, if at all, by what happens to M and M'. The velocities of circulation do not vary to any extent because more real or virtual money is being used. Neither is T (the volume of business done) influenced by changes in real or virtual money. The only qualification to be made in this connection is that an increase of T tends to raise velocities of circulation, while it may be supposed that its decline is accompanied by a fall of rates of turnover. But barring this rather unimportant item, the facts are as stated. Fourth, then, money quantities are decisive for price levels. If these latter display pronounced changes we must look for the explanation in the varying amounts of real money used, which in turn govern the volume of bank deposits subject to check. In this way the answer to our question, what the meaning of price

level movements is, can be read out of the fluctuating quantities of circulating media, and of the precious metals more particularly.

Now, whether this account given apropos of the analysis of money is correct or not, need not be stated immediately. We may however be inclined to ask why bank currency has entered so prominently into the money of modern nations, whether it does depend passively upon real money or is itself an active force, and how price levels are related to the productive process already studied. In short, can we explain price level changes without considering the economic activities back of prices? The consideration of these matters will be attempted in the next chapter and will help us to secure further light on a vexing problem.

CHAPTER 12

CHANGING PRICE LEVELS *(Continued)*

§ 1. If we are willing to study price level movements from a long-time standpoint, considering decades rather than a single year, we can hardly fail to be impressed with the fact that these changes became most marked during the very period that instability in other fields too reached its height. Never have changes wrought such miracles as during the last few generations, and at no time have price levels moved so rapidly up or down as in this epoch. Everywhere we find an increasing complexity and flux of relations. Everywhere organization has become more elaborate, and interdependence more pronounced. If new kinds of money were devised in modern times, thus complicating the problem of price changes, these developments found a counterpart elsewhere, in virtually every field of human endeavor, and certainly in all those branches of activity which we call the economic. A reasonable approach to our problem, therefore, is to review briefly the salient features of the modern economic system, to show its main characteristics, and eventually what these must have meant to national currencies and prices.

§ 2. That profound changes occurred since, say, the middle of the eighteenth century, has already been mentioned on earlier occasions. We have seen that, in the first place, new natural resources were discovered and made available for human utilization. To the virgin tracts of surface soil found by pioneers circumnavigating the globe, were added huge stocks of minerals, coal, oil, natural gas, and other raw materials valuable for manufacture and use by producers or consumers. Precious metals too became more common, indeed, were produced in such gigantic quantities that all prior

achievements seem eclipsed completely. National currencies for this reason alone could expand more than ever before, but in addition a fair percentage of the output benefited also the industries and the arts.

In the second place, the uncovering and exploitation of new natural resources was made possible partly by the progress of mechanical invention and scientific research, and these furthermore led to revolutionary changes in the means and methods of production and exchange. As we have seen, the advent of the so-called Industrial Revolution in England meant also the ushering in of the era of capitalism in both a technical and financial sense. Instead of manu-facture we now get machino-facture. Instead of the use of muscles as driving power, coal and water supply us with steam and electricity which turn the wheels of countless engines and machines. The present epoch has been called that of iron and coal. It stands for mechanical improvements and the use of physical forces. It has developed productive processes on an enormous scale. It has made us realize the advantages of a minute subdivision of labor while at the same time favoring an integration of successive stages, so that to-day every move and act aims at a single result.

On the one hand, then, this has brought to a climax the trend toward indirection or roundabout methods of production and trade. We have become used to the lapse of much time between the starting of an act of production and the completion of it, and more especially between the first step in creating utilities and the last step in marketing them. Months and years may go by before the entire process is finished, and correspondingly risks are taken of which an earlier age knew nothing. The time intervals required by modern technique and uncertainties attending business as a result, are outstanding features of our modern economy. On the other hand, we have also the development of world markets which contrast strikingly with the narrow confines of a more primitive barter. Trade long ago began to encompass the world and to conquer markets embrac-

ing hundreds of thousands, even millions, of people. A single manufacturer or public utility corporation may now supply a whole city with a certain article or service. Instead of distributing goods in the immediate neighborhood, the fashioner of articles seeks an outlet hundreds or thousands of miles away. The inhabitants of the whole globe have become acquainted with one another by means of the new methods underlying commerce and communication. A number of mechanical and scientific inventions have produced startling changes in our methods of conserving and disseminating knowledge. Telegraphs and telephones are familiar instances of modern speed in transmitting news and views. Newspapers and magazines bring the masses in touch with current events or latest achievements in research. Education up to a certain point has been made compulsory so that the percentage of illiterates is rapidly declining. Professional traders now have at their command railroads and steamships and further aids for marketing their wares. New and higher levels of understanding regarding the supply or demand of goods have been attained in consequence. More pain is taken to do justice to possibilities of salesmanship, so that larger numbers of consumers are being reached by the use of advertising or other means of solicitation. The standardization of staples has been brought about partly in this way.

What is equally significant for our present purposes, output and marketing have been made continuous so that it is difficult to distinguish seasons for supplies. In this respect too our own times differ from earlier ones.

Until the sixteenth century agriculture was the mainstay of almost every nation of which history gives us a record. We find farmers on the center of the stage, and other vocations relatively unimportant. After the harvest had been brought in, the bulk of consumables had been accounted for. Mining usually played a very subordinate rôle. The handicrafts, while far from negligible did not furnish commodities as regularly or

in as large quantities as we might be inclined to infer from the statements of chroniclers and casual observers at the time. Indeed, since large portions of manufactures were still made in the home for eventual consumption by the producers themselves, we could not expect a strong development of crafts of the professional sort. Specialization had not gone far, nor was it possible to secure raw materials at any moment so that work might be carried on. Guilds, and artisans in general, provided manufactures somewhat spasmodically. They gave now much, now little. They sold on orders or circulated their output so leisurely and haphazardly that the majority of consumers could not count on it. That was the usual situation from earliest times up to the dawn of the modern era.

But now behold the great change in matters economic as well as non-economic. Instead of farmers holding the middle of the stage, they have gradually been shunted to one side, if not to the rear where one can hardly see them. Though the total yield of the soil has of course grown steadily and is now more impressive than ever, it has really declined relative to developments in industry, public utilities, and mining. In Europe the eclipse of agriculture can be observed most easily, but there are signs of it also in this country and among Asiatics where the march of capitalism has been rather swift in recent decades. Thus our level of living has been enriched by a multiplicity of goods and services, while correspondingly new fields of work have sprung up and given a means of livelihood to untold numbers of people. The several branches of mining and quarrying have by this time developed so fully that we cannot imagine any nation without some income from them. Their output is primary like that of farming, and a prerequisite to much of the wealth turned out by mills and public utilities. Again, without the services of transportation and communication systems, of light and power companies, of construction engineers and promoters of education and pastimes of many sorts, we should not consider our life worth while. All these

producers constitute a part of our modern social economy and add materially to the total national output.

The flow of goods and services has for this reason become steady and huge. While farmers supplied the great bulk of wealth, supplies could not help but be irregular. Nature gives but once or twice a year. Climate alone would prevent work at one time, and urge feverish activity at another. The crude technique of marketing too made regular deliveries over extensive areas impossible. But mines can turn out products throughout practically the entire year. Factories need not be closed unless defects in human organization make it advisable. As soon as agriculture is diversified enough, raw stuffs will come forth to keep busy a number of industries, or else foreign markets may be drawn upon, as is indeed done to-day. Public utilities too represent continuity of output. Our demand for education, news, amusement, and travel has no end. We want such things or services forever and get them because they depend upon an abundance of nonorganic materials which the mining world gives us from day to day in a ceaseless stream. Merchants have become an element in our social economy somewhat in proportion to these new developments which date from the middle of the eighteenth century. There must be a steady flow of goods and likewise a rapid turnover which ensures both consumers and dealers satisfaction. The former delight in having an abundance of wares in ever changing styles, and the second are glad to increase their net profits as sales multiply and come more frequently. Thus merchandise must move forever and bring new joys to all members of society. That is the ideal now before entrepreneurs, and that is the achievement made possible by the progress of invention since the handicraft system was dealt its deathblow. Continuity in this sense deserves special mention when we are considering the rise of new types of currency and hence of price levels.

For it is evident that as a result of this stupendously enlarged output and distribution of goods and services

of many sorts more money was needed. It was demanded in larger quantities for two reasons, first, by entrepreneurs short of funds, and secondly, by the general public which bought everything instead of producing it at home. The first group could not furnish the whole capital essential to the foundation or operation of a plant. Because of the newer features of the technique of production and trade just mentioned, very few individuals could possess sufficient means of their own. The coöperation of outsiders was bound to be asked. Joint stock companies and corporations filled the financial bill in part since through them huge sums could be gleaned from thousands of people who had a surplus. But in addition, as has been remarked before, funds had to be borrowed, and they were needed for short periods as well as for long ones. Even the marketing of wares now required large assets, especially when the stock was turned over several times annually. So here was a manifest demand for money as capital, as the source of net profits.

But consumers, of course, too, had their wishes. For them in general, and for business men in particular, currency served as a medium of exchange. A certain quantity seemed to be essential to the marketing of goods and services from the moment they left the plant to the time they reached the final consumer. Money consequently became a popular article because it represented both a circulating medium and capital in the ordinary sense. This is a fundamental truth which we cannot emphasize too strongly. If price levels changed, it was thanks to the dual function of money just pointed out.

§ 3. As for a nation's currency, we may imagine this to be sufficient at any time or at any rate to have been adequate on the eve of the Industrial Revolution. People then used the average coin a certain number of times per year, that is, they gave it a certain velocity of circulation. Whatever this rate, it probably was high enough to make the number of coins in circulation appear sufficient. If there were a hundred million francs

or marks on hand, they answered the purposes of trade satisfactorily. So much may be assumed.

But now we must take into consideration several new points.

In the first place, the rate of turnover of either real or bank credit money is not nearly as elastic as the growth of production and trade demands. There are limits which cannot be overcome, whether we are dealing with long or with short periods. For a while, to be sure, this velocity of circulation may rise, and rise rapidly. Recent years have shown us that its response to changing needs of business may be generous and automatic. It seems that people behave in this matter as they do regarding their personal health. They do not make the best use of their powers or organs. They take less exercise than perhaps is advisable, and they make money to work less than is actually possible. The average rate of turnover of any one epoch and territory can perhaps be increased 50%, or even doubled. Data on this subject are neither comprehensive nor very definite in so far as we possess them. Still, against this elasticity we must set the very real limit to expansion, and this the more emphatically so, since we are dealing with price level movements extending over many decades. Thus we come back to the indisputable fact that neither cash nor check accounts in banks could be made to multiply their efficiency as a medium of exchange enough to take care of an ever expanding output and commerce in commodities.

Secondly, mines did not fully offset this defect (if we may call it that) in spite of what we might naturally expect from them in modern times. True, of course, that yields increased amazingly, surpassing all previous achievements and reaching a peak only in our own day. Nevertheless, the additions proved inadequate. Producers in most other fields did even better than mining corporations and their employees, in fact, very much better if we except agriculture. Metallic money consequently could not satisfy both the fine arts and the average man buying and selling merchandise.

In the third place, governments could not furnish extra supplies, for the drift of public opinion was strongly hostile to such functions, and besides, money so issued would almost certainly be inelastic. These two reasons, then, proved decisive. The rise of democracy meant also that of individualism. As has been shown, we have erected our present economic order upon a belief in the rights of the individual and his willingness to promote peace among his fellowmen by mutual concessions. In a sense that is what our ideal of non-interference means. We have learned to trust in common sense, fairness, and knowledge socially applied. As the age of capitalism was born, the collectivistic schemes of earlier epochs collapsed. Although we still preach collectivism, urging the greatest welfare of the largest number, we advocate the utmost freedom for the citizen so that he may accomplish this end. Our ideal has for several generations been private property, freedom of contract, and freedom in choosing a vocation, a residence, or associates for purposes of business organization or mutual aid (as in the case of unionists). Thus the spirit of the entrepreneurial age ran counter to extensive government functions. Though they were by degrees enlarged, now directing many of our economic activities, the issue of paper money was not granted to be a legitimate one. To be more exact, it was expected at first and is still made use of for increasing the volume of currency. We have scrip which has nothing to do with banking, and it was particularly common during the first half of the last century. But we have long ago refused to depend upon this expedient alone.

As intimated above, another reason for the comparative unimportance of government money was, and still is, the inability of public authorities to gauge the needs of business. As long as we preach private property in all or most of the means of production and exchange we cannot expect governments to know what exactly the trend of economic activities is. They are ignorant of vital facts and hence are but poorly qualified for taking

charge of the expansion or contraction of currency as desired by business. Whatever their duties otherwise, the issue of nonmetallic kinds cannot be naturally theirs.

§ 4. So far as we have gone, then, we come logically to the conclusion that the growing demands for a medium of exchange could not be met by any of the methods which at first seemed feasible. We can hardly be surprised that special measures and agencies were invented, and that these eventually supplied the bulk of money in progressive countries. But before we can state this more definitely we must ask ourselves what currency has to do with credit, or how the ever insistent cry for capital was met after the present economic regime had gained a foothold.

To answer this question we must revert to views expressed on an earlier occasion. We must bear in mind that both producers and traders needed all sorts of things and needed them, not merely once a year, but in part several times a year. In so far as money was spent on finished goods to be resold at a profit, capital was desired the more frequently, the greater the turnover per year. If stocks could be turned over four times, or if they passed through several hands in the process of being marketed, loans were frequent in proportion. The development of specialization and world trade thus was in itself a powerful reason for a large volume of short-time credits, though in addition funds were required, of course, to produce tangible wealth and to make improvements in real estate.

To state this thought in different words, we must not picture the accumulation of land or capital goods to be the only basis for loans. We must not think that real estate improvements or tunnels or machinery or buildings produced in the course of the year represent the sum total of funds loanable during that time. That is an incorrect impression. While it is sometimes convenient to speak of a surplus which becomes visible only at the end of a year, and while it is true that the surplus in goods consists of the durable things just

mentioned, loans are as a matter of fact made every day, and they are spent in the purchase of all kinds of goods and services. Even merchants have in recent decades learned to borrow funds for investment purposes. In many cases they do not buy goods but equipment. They improve the premises within which business is conducted. They buy real estate or securities with the funds borrowed. They do not literally pay back the principal from profits on such investments, but rather from other sources of income. Loans of this kind became possible long ago because output and distribution is continuous, because income flows from several sources in an almost steady stream, because borrowers are at the same time also creditors. Most men going into debt for carrying on their business have reserves to draw upon, are well-to-do rather than poor. So we can see that loans grow in volume and frequency in proportion to the development of trade and industry the world over.

If we like, we can stress the increasing need of a mechanism of some sort for mobilizing all the wealth not used by the owners of it. As has been stated elsewhere, whatever we own but do not use we may permit others to have. We may let them have specific forms of wealth such as land, or we may give them money or titles to money which can be spent in buying specific forms of wealth. In the latter case we become creditors who lend capital. All wealth is usually claimed by us in terms of money. A large part of it we loan out by buying securities or by putting money (claims) in savings banks, and so forth. Some of it goes to commercial banks in the shape of cash which can then be placed at the disposal of entrepreneurs in need of funds. But a fourth part of our capital is not marketed either through cash deposits at banks or by a purchase of bonds. Instead commercial banks themselves give others the right to make use of our belongings, of goods we might own or labor power our money might buy. They issue bank notes and open credit accounts which serve as a part of the currency of the country. In this way

they make solid assets liquid, as it were. They indeed are the mechanism which modern times have evolved to make the volume of loanable capital as large as possible.

Business men go to them and ask for a loan either for a short while or for perhaps years. (The latter is made possible by an automatic renewal of loans as well as by a sale of long-term securities.) The banks do not have the cash probably, nor are they expected to furnish this. Rather, as shown before,[1] the borrower is pleased to take bank notes or to draw against the bank by writing checks which the general public accepts for many purposes in lieu of cash. Commercial banks are able to make vast loans because of this circumstance. The public puts faith in them and has, on the whole, had good reason for doing so. Instead of working chiefly with their capital stock and surplus, or with money left by patrons, they depend upon this widespread confidence of the people. They act as bookkeepers, giving credit to borrowers, to those who present checks drawn in their favor, and also to cash depositors. As long as bank notes or checks and drafts circulate freely in lieu of money, no large funds of metallic money are necessary. Virtual money—called M' in our equation of the preceding chapter—is at once an ingredient of the national currency and a result of credit extended to business men. Since money is a universal title to wealth, and since wealth is the real object of borrowers, the credit granted by commercial banks in the guise of check accounts or notes answers most needs. On the one hand producers and merchants are now able to secure funds any time they like, and in adequate amount, for blank forms (checks) and bank notes are quickly printed. With an exception to be mentioned presently bankers are in a position to expand credit indefinitely. They can meet all demands made upon them. They supply every new need springing from a further specialization of labor or from a further increase of the scale of operations chosen by producers and traders. On the

[1] See Vol. I, ch. 18.

other hand the general public gains by this evolution of commercial banking and of a new source of loan funds, for it now obtains the added volume of currency which conditions call for and which is unobtainable otherwise. If we look back upon a hundred and fifty years of industrial development we can see that it was very important to have this additional medium of exchange provided. Since the rate of turnover of money is relatively stable, and since the precious metals could not be increased *ad libitum*, nor governments assume the responsibilities attending the issue of an adequate paper currency, private tenders were the only logical refuge. Something like their work had to be done sooner or later if the stream of goods and services following in the wake of inventions was to be produced and marketed so as to ensure the public an ample and continuous supply throughout the year.

True, of course, that bank credit and currency do have certain outer limits at any given time, for any one country. It has already been emphasized that people do not trust exclusively to paper money. Bankers and public authorities have discovered long ago that a little gold or silver is needed to buoy up large quantities of intrinsically worthless money. Furthermore, this fact reacts upon the possible size of the loan fund offered by commercial banks at a particular moment. Since a small part of loans are probably demanded in cash, and since bank currency results in most cases directly from loans, both credit and currency must vary with cash assets. The bigger these latter, the more banks can lend and the more checks or drafts may be in circulation. The limit for loans and virtual money thus appears to be set by the amount of cash within a country. We may say that an increase of the first is made possible mainly by that of the second. There are legal reserve requirements and also voluntary reserves to convince us of this fact.[1] In general it is well to stress the quantitative relation between changes in the supply of precious metals and in the actual or possible volume

[1] See this volume, ch. 3, latter part.

of bank credit and currency. However, instead of this truth we may also point out the elasticity of the ratio of reserves to demand liabilities. We have found that with a growing appreciation of banking principles, and in proportion as the probity and efficiency of bankers was demonstrated, the majority of people came to rely less upon intrinsic values such as coins, and more upon mere promises made to them in the shape of paper money. The greater their confidence in bankers in particular, and in each other as members of society at large, the lower the metallic reserve could be. Leaders in business and public life could do much to promote a friendly feeling between banks and the general public, and did slowly help to build up a sympathetic understanding which spelled safety in these phases of business finance. The amount of outstanding loans and discounts and of bank currency is not, therefore, fixed rigidly by stocks of gold or silver. From a *long-time standpoint* the ratio of reserves to liabilities is variable, and this the more so the more progressive the nation with which we are dealing. Exactly because this is true, commercial banks could provide countries with an adequate and ever increasing amount of virtual money.

§ 5. If we have traced, then, the development of credit and currency to definite needs of a new productive system, we may next ask ourselves why this led to such a remarkable rise of price levels for the period in question. In other words, instead of consulting price level changes in general, we shall restrict ourselves to a movement in one direction, since this in itself presents all aspects of the problem. If the level of prices did, on the whole, rise ever since the introduction of the capitalistic system, what had the expansion of currency to do with it? How are the two related?

Now, as a preliminary we may first cite some matters of common knowledge.

Credit given by retailers often induces customers to buy more than they would otherwise, and to be less particular about the prices they have to pay. The grocer or drygoods man anticipates this attitude engendered

by his charging things on the books, and therefore is not loath to do so. Long experience has taught him that what he loses in interest on deferred payments he may gain through selling more goods, or possibly by raising prices or giving less of incidental services usually connected with sales. In cases of this sort credit itself tends to encourage buying and bidding at higher rates because the sacrifice to be made is not immediately apparent, or is easily forgotten by people. In other cases the actual increase of money *in pocket* is the spur to expenditures, whether in the end purchasing power is improved or not. A prospector for instance is reckless when he has suddenly "struck it rich." The find of pay dirt or of large nuggets of gold takes him off his guard as a consumer. He probably squanders money as quickly as he makes it. Mining camps are proverbially good places for traders and panderers to amusements. In the long run everybody earns and saves more than the digger who sweats over his work.

Or take the case of a family inheriting an estate and an unexpectedly generous income with it. When fortune so favors it, ordinary standards of living are soon overthrown. Money is spent lavishly and with scant regard for its purchasing power at the best markets. To begin with, goods are bought at more fashionable and expensive stores, and if necessary, an effort is made to procure them immediately even though a temporary scarcity of this or that leads to higher prices. A little more is now of no consequence, indeed a great deal more may be paid cheerfully. But in the next place things are purchased which formerly were frowned upon as absurdities. Most people adding appreciably to their wealth in a short time betray these foibles on one occasion or another. They seek to cultivate new habits and preferences, to give of their means freely, and to rise thereby perhaps in the esteem of friends and relatives. The naïveté and crude ostentation of the *nouveaux riches* has been made the target of many a joke in modern times. We take it for granted that people do not know what to do with their newly

acquired wealth, nor how to establish a new scale of values for personal needs. The same principle obtains here that we observe now and then in the conduct of the masses who suddenly increase their income beyond the ordinary. The recent World War was as good a time as any for studying this psychological phenomenon—at least in the United States. Millions of workers fared better at that time than perhaps ever before in American history. They received more per hour and were employed longer hours per day in many cases. The weekly pay envelope therefore bulged with good money which fairly begged to be spent. It was clearly made to circulate and the average man acted on this slogan. He bought things he had never used before. He bought more of them, or a better grade. He spent more freely chiefly because he received more dollars by the month. It could easily have been proven that purchasing power in the long run did not grow much, if at all. But meanwhile more was bid for goods, and more was paid, because the quantity of money received rose temporarily. Some things were foregone so that others might be had in larger amounts or in superior quality. The best of food, clothing, amusements, musical instruments, and traveling comforts seemed barely good enough. As fast as wares came from the mill they were sold to the wage earner who could not save. Prices went up and kept on doing so until wages began to lag perceptibly. In this way the effect of increased receipts illustrated again a universal principle.

If we wish to get back of these rather humble and familiar facts we must, to begin with, remember the *law of diminishing utility* of which something was said in our analysis of the pricing process. At that time we saw that increasing amounts of goods are not appreciated as much as the first ones acquired or used by us. After a while our powers of response decline. If we consume things internally, as is true of food, we soon find a limit to our capacity. We enjoy eating and drinking less and less, until finally we want no more, indeed consider it a punishment to have to take more.

In this case the reason for a sense of dwindling gratification is a physiological process which we call simply the abatement of our appetite. The same rule holds however also for the external use of things, and what is more, even for a mere state of possession. We do not have to eat or drink in order to observe the law, nor do we have to use things at all actually. We may find it exemplified in wearing clothes or playing a piano or reading novels or attending a concert or simply in a fact of ownership. This itself is a satisfaction, and hence we may be desirous of owning, say, a piano. But manifestly we do not value a second piano as much as a first, nor do we want a third or fourth in our home. Nothing seems more obvious than that our ability to enjoy things is limited. Similarly with houses and acres of ground about them, with pictures on the wall or pleasure yachts or canes or strings of pearls or whatever the article may be. Services too lose value on this principle. One servant is likely to mean more to us than a second, and the first half dozen more than another score. Without exception successive numbers or parts or doses of any one item of wealth arouse our attention decreasingly. We think less of them, find the use or possession of them less interesting and worth while, in short, respond with less animation and satisfaction to them. Up to a certain point increments are welcome, may even bring us more than proportionate returns in pleasure or happiness; but thereafter each added unit loses in use value. That is the substance of the law of diminishing utility.

Now, this law applies to money just as well as to goods. It applies there too because money is either wanted for its own sake or as a medium of exchange. In the former case we value increases beyond a certain amount at a declining rate, as long as our money has no other function. If we imagine it to be used as bullion only, to be wanted for its glitter and pleasing ring, but not because it can buy other things, our appreciation of successive increments falls because money then is purely a commodity like wheat or stickpins. On the

other hand, if we take money for what it is worth in progressive communities, namely as a circulating medium, it obeys the law of diminishing utility because of this particular function. Money in fact is everywhere a means to an end. We want goods and services, not coin or paper notes in some form. We value money because of the utilities purchasable with it. To have a dollar is to have a certain number of things or units of utility such as railroad fare, meat, a physician's advice, and so on. As long as money is exchangeable for these items we esteem it highly. We value increasing amounts of it exactly in the same manner as we value increasing amounts of some one commodity or service to be bought with it, that is, we wish more and more of it, but none the less evince a falling rate of valuation for the average *unit* of the growing stock. We see every day that the first thousand dollars is used more carefully, valued more highly, than the tenth or the thousandth. A millionaire thinks little of such a sum because he has it a thousand times over, but the average person respects it because it constitutes probably a large part of his total annual income.

We should not be surprised, then, that a growth of currency in excess of the output and exchange of goods of all sorts led after the seventeenth century to a decline of its purchasing power or to a rise of the price level. To be sure, from one standpoint, more money had to be used precisely because prices rose. We may state the causal relation in this order. But it *is more accurate to say that in certain quarters money became more plentiful because of an extended use of credit demanded by leaders in production and marketing, and that as a result of this monetary expansion people valued the average unit of money less highly, that is, spent more of them.* We must remember that bank credit went first into the hands of entrepreneurs who used it for creating goods, for improvements, and for the purchase of finished goods to be resold at a profit. When such loans were made the wealth of the borrower was seemingly increased. Indeed, it really was in the long run,

because profits as a rule grew. But waiving this aspect of the matter for the moment, let us note merely that loans for business men as well as for consumers leave often the feeling of an increased income, of greater riches acquired and actually owned. Individuals or firms borrowing at banks thus felt justified in buying what otherwise would have been out of reach. They not only spent what they borrowed—for that was the object of the loan—but they also bid for goods and services more eagerly. When bank credit is cheap and abundant, bidding for producers' goods runs high. Business as between different producer classes is brisk. Much is bought and paid for. Much becomes scarce temporarily and fetches a higher figure than usual. Employees are engaged in larger numbers and frequently offered higher wages. The desire to employ funds at once and to get ahead of a real or imaginary rival stirs the entrepreneur to greater effort and prompts him to disregard economies for the time. In this way the principle of diminishing utility asserts itself. There is a penchant among borrowers to give more freely for their wares even though they are debtors rather than owners, even though they do not buy things for personal gratification, but instead to conduct a business. We can see the law in operation almost any time, but the last ten years were a fine opportunity because credit financed the war and helped materially to inflate national currencies.

Besides, we must not overlook a *second* aspect of the situation. We should note that higher prices are paid by producers dealing with one another because it is expected that the consumer will finally compensate them for everything. Loans are most in demand when inventions bring improvements and the prospects for lower expenses relative to existing prices are good. Under such circumstances much may be offered for a loan, and much for raw materials or technical equipment. Interest rates run high and prices for particular types of goods and services go up. There is a widespread belief that reduced costs will soon follow because of

improvements, so that the margin of net profits will be widened. Many enterprisers, starting on this supposition, inaugurate a long series of price changes upward. Novelties fetch high prices relative to costs because people are curious to know what they really amount to, what new comforts or conveniences are in store for them, what may be had for purposes of display and because of the sheer pride of exclusive possession. This in itself influences bidding among producers. And then, of course, there is the lag of wages behind prices which may raise rates of net profit considerably for some employers. Instead of hiring labor at once at higher rate, they may take it at the usual figure, paying more only for some types of goods which have become scarce for the time or are imagined to be scarce. As the price of finished goods then goes up, laborers suffer in the measure that they use this particular article or service. Profits maintain themselves easily or rise, but wages lose out correspondingly. This might be a first stage in the circular rise of prices. In the second stage wages rise proportionately, or more or less, thus driving the entrepreneur to new improvements or forcing him to obtain higher prices from consumers. But in all cases capital would then be needed in larger amounts.

§ 6. In concluding our survey, therefore, we may first reiterate that growing scales of production and exchange necessitated increasingly a resort to loan funds, banks assisting greatly in this work. Because of this development currency tended to be composed largely of checks, drafts, and bank notes, and to grow faster than either output or trade in commodities. Secondly, bank currency was on the one side a by-product of a loan fund demanded by enterprisers and provided by commercial banks, while on the other side it proved to be an essential because metallic money could not be increased sufficiently, nor could be turned over faster at will so as to take care of an ever growing volume of trade. Though the velocity of circulation of real and virtual moneys did rise—for reasons not here important—it could not rise enough to counterbalance the rapid growth

of commerce, domestic and foreign. Hence we may regard the introduction and rising popularity of M' (bank deposits subject to check or drafts) an inevitable result of a new economic organization.

Third, since bank currency and the expansion of currency in general originated in the need of loan funds which the savings of the average man could not supply, we must not suppose the former to be governed absolutely by the amount of precious metals existing in a country. We cannot say that bank credit or currency varies directly with the rise and fall of gold and silver held by banks or available for any one nation. We have seen that the ratio of reserves to demand liabilities in commercial banks is flexible, has steadily fallen, and may at any moment be altered by special measures which governments not seldom have sanctioned. So it is evident that the volume of bank currency is not determined rigidly by that of metallic stocks. We may insist only that in a loose way the two are linked, since a certain amount of gold or silver has so far always been desired by people for currency purposes or in borrowing at banks.

Fourth, it follows that the equation of exchange which we mentioned in the preceding chapter is less useful than may have appeared at the time. It is serviceable for picturing the elements involved in "money," and for showing the arithmetical relation between these and the volume of trade on the one hand, and the price level on the other hand. But we should never forget that such a computation refers to magnitudes existing for the moment, or assumed to exist. It shows what price levels are at a time, while there is so much money, rate of turn-over, and so forth. It does not help us, then, to understand marked changes of price level covering a broad period, nor can it ever reveal the forces at work back of changes in currency or commerce. If we wish to become clear on these ultimate data we must treat price levels as something inseparable from the whole economic life of a people. It is always best for us to associate them with credit and its mechanism, with the

history of loan funds as distinct from capital goods, with developments in theories of government, and most of all with the vast change characterizing modern annals of production and exchange. When we think of credit, capital, and currency as phases of this revolution in our use of technical means, we are able to understand the trend of prices during the last two centuries. Nay, we may then proceed to explain all price level movements, whether up or down, as external signs of hidden economic forces and of varying modes of living for any one nation or for the world as a whole.

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CHAPTER 13

BUSINESS CYCLES: THEIR NATURE AND COURSE

§ 1. That business cycles [1] are a striking and interesting example of a rhythm in economic life is conceded by everybody and seems indeed obvious enough; but it should also be noted that we may think of them in two different ways, judging their results accordingly.

If, at first, we consider a *series* of these ups and downs in social activities, we shall be impressed favorably with the general outlook, for the longer the span of time involved, and the greater the number of cycles embraced in our study, the clearer it would become that mankind has made wonderful progress. Even though we should detect unmistakable signs of an occasional fall in prosperity for some one nation or for several of them; even though there could be no doubt of the persistent return of lulls or of upheavals in economic organization, yet on the whole the picture unrolled before us would be encouraging. In other words, we should take an optimistic view of the situation and feel fairly satisfied with it. The human race would appear to be bettering its lot by degrees. There would be an abundance of data to prove the worthwhileness of sustained effort and the virtues of such rational procedure as only man is capable of. Slowly (we should argue) affairs have improved. Each epoch is an advancement over the next one, and this the more surely so, the wider the intervals with which we reckon. The whole history of man is, in truth, one

[1] The term "business cycles" was introduced, or at any rate very much popularized, by Prof. W. C. Mitchell whose book by that title (1913) influenced thought not only because of its intrinsic merits, but also as a pioneer attempt at quantitative analysis and inductive method in a field theretofore somewhat slighted. See in addition the same economist's "Gold, Prices, and Wages," 1908.

of ever growing achievements. There is evolution as well as change, since by many stages and ordeals of trial and error we have finally marched from utter savagery and helplessness to masterful enlightenment. Business cycles in themselves would remind us of this fact.

If viewed over an extended period of time, then, they cannot suggest the lines drawn in the upper three figures

THE MEANING OF BUSINESS CYCLES AND OF ECONOMIC RHYTHM

NOTE: The first three figures do not represent real conditions.

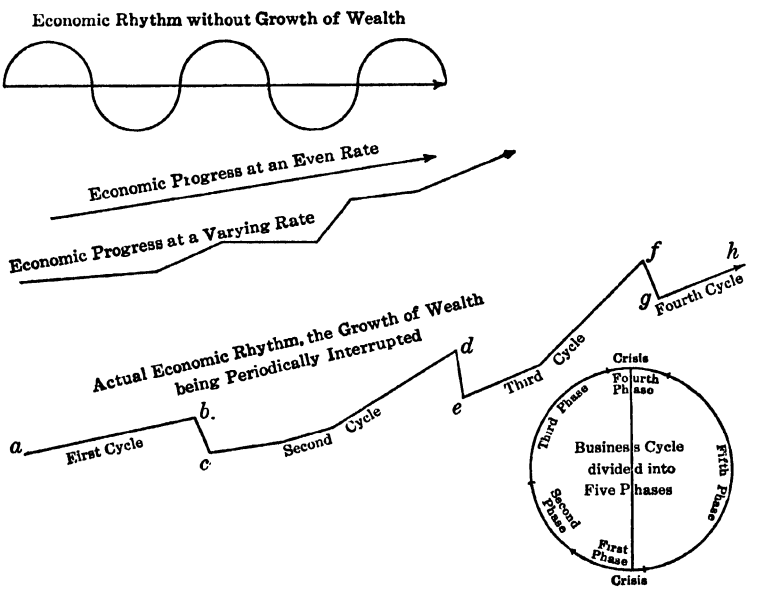


CHART I.

of Chart I. We should not imagine them to signify essentially stationary conditions. They do not mean merely a rise of activities or of prosperity above an average indicated by the horizontal line *A*, then a return to this average, then a fall below it, then a rise back to normal, and so over and over again the same thing. Of course, to picture economic life in this way is also to imply the existence of a law of rhythm and of change in itself. To this extent our wave line is satisfactory;

but it is misleading because human history does not tell us of a prevailing stationary state. We cannot infer from it that economic systems have come and gone, have heightened and lowered productive powers without modifying people's mode of living or their income permanently. That is not so. On the contrary, the fluctuations which we are familiar with have nearly always brought qualitative changes in methods of work, levels of living, public policies, and so on. Hence the symmetry of the wave line in our first figure does not correspond to actual records.

Neither should we imagine economic changes to run continuously in one direction, as if human effort and productiveness were being intensified by stages without experiencing any moments of relaxation or rest. Granted that in the course of centuries mankind has moved forward, adding bit by bit to his riches and knowledge, this improvement has none the less been accompanied by pauses and relapses into temporarily less satisfactory conditions. Thus the second and third figures in our chart do not tell the whole story, for they suggest a perfect continuity of progress of two kinds. In one case the rate of advance is the same throughout, while in the next the variability of the rate is shown by a change in the slope of the line. If we must choose between these two representations, therefore, we should take the second one, since it brings out at least one feature in economic activities, namely, irregularity or rhythm. Yet even this is not sufficient, since there is in reality no uninterrupted line of economic progress. Instead we must picture a zigzag line somewhat like that in the fourth figure of our graph, for there we have a curve representing four complete cycles, of which the first extends from *a* to *c*, the second from *c* to *e*, the third from *e* to *g*, while the last begins at *g*. Together these cycles might possibly cover a half a century, or twice that much time, or any number of years we care to mention. That is of no importance just now. But it should be plain that the ups and downs of economic life do include retardations, stops, and moments of decline

as well as an uneven rate of activity. There are breaks in business activities similar to those indicated at *b*, *d*, and *f*. Whether the setback is marked or slight—and our graph serves merely to show differences, not an historical order of variations—it is something we must expect in every social economy. On this understanding alone can we accept the intimation of the fourth curve that for the entire period (from the first to the fourth cycle) progress is real and appreciable. We can see that the end of the line is higher than its starting point, and if we let this trend stand for a rise of economic levels or of business activity, our impression is fairly correct. We now see the significance of business cycles judged by long-time standards. There is nothing disheartening about such a movement, except that it shows depressions now and then, the maxima of output in goods or services being offset occasionally by minima. Maxima at *b*, *d*, and *f*, and minima at *c*, *e*, and *g*! That is the first possible interpretation of our subject.

A *second* view would be quite different because it would concern itself with only one cycle. We should become pessimistic perhaps, or at any rate stress features which in themselves are unpleasant, which treat of what may be called the pathology of production. Instead of pointing out that social economies rise in the long run, giving us better technical means and methods, disturbances being short-lived, even though disagreeable at the time—instead of doing this, we shall in the second case dwell on the defects of all things human. Any one business cycle taken by itself reminds us that maladjustment occurs, is perhaps unavoidable. We linger over these imperfections and compare the decline of economic activities with their rise in immediately preceding years. A single cycle does not cover many years; we may say, not more than twenty years, judging by events since the middle of the eighteenth century. So any one of these cycles divides itself naturally into two halves, one presenting a growth of wealth or a heightened economic effort amidst harmony of interests and forces, while the second discloses slackened effort,

losses, conflicts, and a reduced output of useful things. Thus our verdict is severe, because we prefer a steady development to one with pauses. We look at this cycle of a few years and deplore the fall which follows the rise. We might be willing to admit that the fall does not take us quite back to our original position. Probably we do not deny a slight net gain after all. None the less this temporary setback annoys us. We call attention to it and complain because of facts like these: At times there is much unemployment of people capable of work. Goods cannot be sold at a fair profit, that is, at a price yielding the enterpriser an income above expenses, and sufficient to fill his own needs. Nay, we may define "fair" here as a net profit enough to permit an expansion of the business which our entrepreneur represents as well as to supply a personal income. When profits are reduced materially below either one of these points because of tardy or inadequate sales, when wages cannot be paid at a prevailing rate, when output and trade slump below the average for all the years in the cycle considered—when this happens, then the social economy has failed. For the time being we feel this weakness greatly. We give it serious thought and may not improperly compare it with a sick man whose organs do not function normally. That is the notion of a pathology of production which students have sometimes hinted at in talking about cycles.

Now, we must of course acknowledge the evils of this periodical relapse with its state of disorder. It is natural to take some one cycle—presumably the one we first strike in our personal experiences—and forget about the long-time trend, the secular trend to which we referred a moment ago. No doubt, this retrogression in economic life is a price we are loath to pay. But we may ask ourselves whether it is not perhaps as "natural" as progress itself. If business cycles have occurred in recent times, the question may be whether they have not always occurred; or to put it differently, what exactly it is we mean by "business" in our phrase.

Even if we go back far in history, we find something

akin to business cycles. We note that the most primitive people have had variations in economic activity caused by variations in the physical environment. In all epochs men have been subject to the weather, to climatic changes and to those affecting the fertility of the soil. Output and consumption under such circumstances depended upon what nature would not or did give. At one time there was plenty of wild fruits and herbs, of fish and game, and so on. At another time these necessities were scarce, and perhaps in addition there came a defeat at the hands of an enemy, so that land and chattel were forfeited. When such mishaps took place, conditions were bad. If those savages had grasped our idea of a business cycle, doubtless they would have spoken of upward and downward trends, of booms and depressions, just as we do. At any rate we may to-day draw a parallel between this fluctuation originating in the physical surroundings, and our own; for those primitive tribes did suffer a real economic decline now and then because returns from the hunt or from the use of the soil diminished. Besides, as soon as animal husbandry and agri-culture (that is, tilling of the land) superseded the barbaric stage, diminishing returns became important, and might have been called a business depression. But let it be added that in this case bad times were not due to a reduced employment of workers so much as to the stinginess of nature.

Coming now to more advanced social economies, we find output further diversified and enlarged. Besides fruits of the soil there are riches from mines as well as many services that take no tangible form, that are rendered by personal servants, by agencies of transportation and communication, and so forth. In other words, the organic products of nature are supplanted by inorganic ones from the interior of the earth, and also by services valued as technical means or for their own sake. We find mechanical trades flourishing among people long before the advent of the Christian era. Manufactures become increasingly important, and finally give way, for the most part, to machino-factures.

More and more inconcrete values are created. Amusements and education, government and science, hygiene and sanitation, art and religion, all these claim a growing share of our energy and time. Economic life becomes wonderfully complex, being supported by an organization and by technical methods that savages know nothing of. When this change has taken place, the income of a nation consists of much more than the annual harvest. *Hereafter it is not so much what nature bestows or withholds that matters, but what man himself will not or cannot do.* Marked variations in economic activity occur because a higher or lower percentage of capable workers are thrown out of employment periodically. Not diminishing returns in industry or agriculture, but a reduced working staff and capital is responsible for bad times. Cycles of economic life deal with varying degrees of intensity in productive effort and in powers of consumption. That is the meaning of cycles nowadays. The modern world has this in mind. We speak of "business" cycles because the non-agricultural basis of our income is affected most of all. To this extent they may be treated as something peculiar to the present age, and more especially to the organization which arose since the Industrial Revolution at the end of the eighteenth century. Cycles have occurred more often, and more distinctly, during the last hundred years than ever before. So much may be said at once.

Whether this pathology of production is abnormal may be hard to decide. If we mean by "normal" the regular employment of all but a very small fraction of the adult and physically able population, or if we identify it with a continuous sale of commodities at a fair profit, as suggested a while ago, then business cycles certainly include abnormal or subnormal times, and these times recur often. In the United States, for example, we recognize depressions of a more or less serious nature for the years 1819-21, 1837-40, 1857-59, 1873-78, 1893-96, 1907-08, and 1920-22. These periods show a decline in economic activity, some of them affecting the whole civilized world, while others have been essentially

national in scope. But we cannot prove these cycles to have covered invariably the same length of time, or to have always brought depressions of equal duration. As is seen from the dates cited, the years of depression in the successive cycles are not separated by equal intervals, and we may add, that they have not always coincided for different countries. All we can grant is the rhythmic nature of economic activities, the prevailing upward trend of levels of work and living the world over, and the need of studying cycles individually so we may find out what (if anything) is typical of all, and what is peculiar to each one. Regardless of whether in the end we consider these periodic perturbations avertible or not, we must be interested in the characteristic features of a cycle of business as observed in modern times.

§ 2. If we turn to details for any one cycle, we shall probably notice first of all the rise and fall of production and trade, or of business in a wider sense. We see that there are high and low points of activity, and also that a cycle passes through certain stages or phases which are quite distinguishable, indeed have been proven to repeat themselves over and over again in all cycles, barring minor points. They represent the qualitative side, so to speak, just as fluctuations of output or of activity in different fields of business indicate quantitative changes. Both ways of studying cycles are open to us and have merits. Indeed, it is best for us to take them up separately, to begin first with a consideration of phases, and then to give a passing thought to the quantitative variations which can easily be expressed in figures.

As indicated in the lower corner of Chart I, we may divide a business cycle into five parts in order to bring out the qualitative changes or the varying states of mind, policies, and types of economic relations following each other in a definite order.* If we begin with the

* To be sure, a dissection of this sort is more or less arbitrary and objectionable. Three or seven phases might do just as well. It depends upon the purpose of our investigation and the number of details to be

time at which business is just recovering from a serious shock, the first phase is characterized by a spirit of hope and courage tempered by much caution. Entrepreneurs look ahead rather than back, but they are not over sanguine. Banks will make a good showing because their coffers have been replenished from circulating moneys outside, because of mutual aid and perhaps an unusual concentration of funds at strategic places, and also because all overdue loans have been called in. There are few uncashed items and few risky loans or discounts, and this applies just as much to inter-bank accounts as to relations between banks and their private customers.

Outside of banks too conditions are favorable for a revival. Merchants have disposed of most of their goods, especially of those whose marketability is doubtful. Consumers are not likely to have large stocks on hand, since in the period immediately preceding many of them lacked cash. Although here and there reserves may be expected, in general people buy in small lots at a steady rate, as far as income allows. Thus retailers have to place orders with wholesalers and these go back to producers in many fields, according to the nature of the article desired. Workers do not earn much, nor are all of them probably employed fully. Instead we find half-time schedules, large numbers of idle men and women, and in addition a potential reserve of labor which a boom brings out in due time. Finally, we are impressed with the conservative rating of all capital values in industry, mining and public utilities. Business magnates have taken inventory, putting equipment, real estate, and other assets at a low capitalization. Thus all things considered, the outlook for the immediate future is fairly bright. The stage is set, so to speak, for a new play.

There begins then a second phase which people sense as a revival of business in many fields, although not by any means in all. Just where things will improve cannot be always foretold. From what has just been said

considered how far we go in our subdivision of the whole cycle. But five parts will be distinguished so as to point out its principal features.

we may expect developments first of all in wholesale trades, in manufacturing, and perhaps in building, provided that much of this was left uncompleted during the preceding decline. But it has also been contended that mining and public utilities feel the rebound toward growth first. Whatever the fact for any one cycle, consumption goods are turned out in increasing volume. New inventions may bring savings and new classes of goods or services.

Not that inventiveness belongs especially to a period of booms, or is injured directly by a shrinkage in production and trade. By no means. But during the early stages of revival inventors find it easier to get the ear of entrepreneurs. These latter themselves, through corporation bureaus or laboratories of research, may spend more money on experiments *after* the ebb of business than while it is impending or in process. Furthermore, the chance for applying technical improvements on a large scale is better at this time than during years of decline. Hence invention and the possible use of new natural resources are most effective in the second and third phases. Unemployment decreases rather rapidly. More and more enterprisers resume their normal functions, so that the aggregate of profits grows even though the rate of profit per individual person or corporation does not rise very much. For some people, to be sure, the rate of profit also moves upward. Inventions and enlarged scales have this result. Hence security values are apt to soar. Bonds and stocks in particular are more in demand, returning to something like their original value. Indeed, it has been noted that trading in these items is often quite brisk, especially when advance news secretly obtained convinces certain groups of the possibility of a further marked appreciation. The spirit at this time, then, is one of optimism. People forget about the catastrophe they have just survived. Memory is short, and the wish to do well, strong!

The third phase accordingly opens with a spread of prosperity in most or all fields. That is, sales are easy,

profits high, the level of living tending upward, and activity nearly everywhere more regular and intense. Agriculture, of course, is not particularly affected by this return to normalcy. While crop reports and the harvests themselves do bear upon a decline of business in some measure, farmers do not adjust acreage or work schedules or methods of production to any one phase of a cycle. So far at least there has been no evidence to this effect. Their work is fairly steady and represents a passive rather than an active element in the situation. But in practically all other fields the resumption of work and schemes for development can be plainly observed. Here and there plants are enlarged and new funds find investment. More capital is sought because output and trade grow in physical volume, to say nothing of an appreciation of values.

But as a matter of fact this too may become noticeable. Barring exceptional circumstances making further deflation necessary—a conversion of paper currencies into metallic currencies, or the substitution of gold or silver being good instances in recent history—there is a tendency toward rising prices. As loans increase, the circulation does so likewise because of check accounts resulting from them, which in turn give rise to a large bank currency. Either checks alone add materially to the medium of exchange, or bank notes in addition help to multiply its volume. Thus the price level is sure to reflect changes in bank credit and commercial finance, whether the advance is slow or is brought to our attention at once by current statistical reports and the comments of the press. As a rule it is safe to associate rising prices with the second, third, and fourth phases of a cycle, though we must not dwell on it too stubbornly, as if it were inevitable and true of all times.

Furthermore, we find quite commonly also an increase of net profits because prices tend to rise faster than wages which constitute so large a portion of producers' expenses. The most efficient entrepreneurs benefit by this fact as well as by their technical advantages,

patents, secret methods of lowering costs or bettering quality, and so on. Thus the average man to some extent (and a minor group most distinctly) is impressed with the trend of waxing prosperity. The largest part of profits may be distributed as dividends and then reinvested by the recipients or savers, or it may be withheld by companies and corporations as an undivided surplus. In either case the prospects for enlargement of business are fair. There is a general inclination to put winnings back into the plant. Improvements are made, and systematically planned in research bureaus. Much money is sunk in questionable undertakings, either the equipment or the product being of uncertain value. But meanwhile new stocks and bonds may be thrown on the market. Many firms are not able to proceed on the strength of their annual surplus alone. Outsiders therefore are asked for help, stockholders contributing here, and lenders there. The general public lends directly or through insurance companies, trust companies, and banks which collect huge funds in the normal course of their business. Reorganizations of business concerns have gained in prominence during this phase in recent decades, notably in the United States and western Europe. Speculative dealings in securities may be featured by the press. There is a marked activity among public utilities, shipping concerns, merchants who need offices and warehouses, and among mining companies and manufactures.

Indeed, economic life now throbs with action and anticipations. Consumers increase their demand for all kinds of goods and services as employment becomes regular, ending with "over-time" work and extra pay for it. In some occupations wages rise perceptibly because of a relative dearth of workers. Big orders for raw materials and complete equipments come in and cannot be filled at once. They are placed in advance and are welcomed because they bring employment and profits for some time ahead. Thus the attitude among most producers is one of unconcern. A spirit of independence or indifference to please by traders arises.

Money is easily made and lightly spent. In a word, the third phase engenders extravagance and overconfidence.

The fourth one begins with a crisis in the literal sense. That is to say, we meet now a turning point in the flux of events. The peak of activity has been reached. If we picture the cycle as indicated in the full circle of Chart I, the present phase is that at the top, the indications of business pointing to a decline. It has received most attention because we always react most vigorously to a turn for the worse. While matters are improving we do not notice it particularly or comment on it. In modern times we seem to take an upward trend of output, of efficiency, and of levels of living for granted. The turn for the worse however is felt and resented. We soon realize that a halt has been called. Progress, we now say, has come to an abrupt end, albeit only for the moment. There is a break in the line of progress which appeals to us as a calamity when we live through one cycle only, caring about no others.

The surplus reserves of banks now are being depleted rapidly. They may shrink to the minimum set by law or by banking experience. Loans have bounded ahead of cash assets and perhaps even of readjustments which brought a tentative lowering of the ratio of reserve to deposits. As a consequence loans cannot further be extended sufficiently to suit some business men. Renewals are difficult, if not categorically refused by banks. Interest rates on these short-time loans reach a maximum, especially if a central banking institution raises the rate at which individual local banks may have their paper rediscounted in order to get more paper money for their clients. The distress of bankers—if one may call it such—is due to the ever growing cry for funds by entrepreneurs who have steadily enlarged their output, their sales as professional traders, or their orders which presuppose a sale later on. Domestic commerce indeed has expanded both in point of physical volume and in point of money values, seeing that prices have

kept pace with credit expansion and with possibly new stocks of precious metals from mines. Besides, many dealers have indulged in excessive purchases in the hope that they will thus gain after prices rise further, or for fear that later on there will be a shortage. The eager demand for goods by consumers in the past has created the erroneous impression that similar sales will be made forever. Yet that does not necessarily follow. Rather, it may appear that the general public has spent to the limit of its capacity, so that it is over-stocked with goods of all sorts. A considerable portion of the population is in this position, and most probably the masses who spend as fast as they earn. Wages during this phase of the cycle still rise for some workers, or rise for the first time for others, say for professional classes whose salary usually lags behind that of men paid by the week. Rents too now move upward, producers suffering as well as consumers. Landlords are glad of their chance which now reconciles them to the higher price level. As old contracts expire, new ones call for bigger payments in rents and royalties.

But this also means a reduction of net profits in many branches of industry. The rate falls somewhat in proportion to the gain of employees. Output therefore is not so sure a sign of income among entrepreneurs, neither is it so great, since orders from customers fall off or stop. Retailers take less from wholesalers, wholesalers from producers of finished goods, and these latter from producers of raw materials. Similarly producers of machinery and of construction works suffer because other business houses begin to wonder about ways and means of footing bills incurred by such enlargements. Again, in many quarters credit accounts are unsatisfactory. Instead of paying regularly and promptly, some concerns beg for extensions or stop their remittances unceremoniously. Some seek postponements at the place they buy, others ask for it at the bank, but the result is pretty much the same everywhere. All in all the outlook thus becomes drab. There is an undercurrent of distrust and pessimism. A growing number

of business men look about for relief from financial pressure which seems to come upon them suddenly.

Thus we enter upon the fifth phase which again leads to a crisis. From now on the motto of most bankers is *liquidation.* They demand a "showdown," a payment of notes due or overdue. They in many cases refuse absolutely to renew short-time loans which ordinarily are expected to be extended, the proceeds being invested in fixed capital goods as well as in merchandise for sale. Loans are called regardless of interest rates offered by patrons, although these rates rise, reaching a phantastic height in certain financial quarters. Under circumstances this may mean a so-called money panic which ends in a mad scramble for cash, but rarely helps those most legitimately seeking it. A panic of this sort therefore is as undesirable as it is avoidable.

Furthermore, the decline of business necessitates a settling of accounts among producers and merchants themselves. Debts must now be extinguished at almost any cost. Nobody takes his goods or equipment items at the value so far assumed to reflect market conditions. As fast as affairs turn for the worse, these values collapse or dwindle. The financial readjustment therefore leads commonly to forced sales at greatly reduced prices. Manufacturers and dealers sell far below cost, if funds can so be procured speedily. People who have a little reserve of cash may take advantage of this plight among business men, and in a measure do so. Retail trade hence may actually grow in volume, though the fall of prices hides it by lowering money values.

Simultaneously, however, bank deposits shrink. As savings are withdrawn, or as entrepreneurs everywhere reduce operations, thus accumulating funds, banks are the first to feel the salutary effects of widespread liquidation. Business failure caused by the depreciation of securities, by ruinous sales of commodities, or by pressure from creditors, is offset elsewhere by new solvency and efforts at recuperation. Though trade in stocks and bonds does not yet indicate clearly the drift of economic events, except that many are eager to sell, and some

most willing to buy, the majority of employers before long recover from the onslaught. Wages are now reduced materially. The dismissal of men for want of orders is expected and widespread. Rents too decline, when new contracts are made. And so the latter part of the fifth phase is plainly one of a transition. For many workers it means unemployment and genuine hardship. Their lament at this point is natural, whatever the inability of governments or well-to-do folk to end it. But the middle classes of highly skilled laborers, professionals, and public employees do not feel the brunt of the battle. Neither do business men flounder long in a state of depression. On the contrary, after losses have been written off—that is, after the capitalization of equipment has been lowered and bad debts or worthless merchandise disposed of somehow—the majority of enterprisers face a better day. This second part of the fifth phase, then, brings a new crisis or turning point, but this time it augurs well. The turn henceforth is for improvements all around. As banks pile up new reserves and inefficient producers are eliminated or driven to saner policies and superior methods, rewards loom in the distance. The spirit of thrift and moderation justifies itself, for before long the depression is brought to a conclusion in spite of all misgivings on the part of cynical observers.

§ 3. In so far as business cycles denote merely a more or less regular sequence of certain groups of economic events, the course is as given. But before passing over to a consideration of their causes we do well to note also some of the *quantitative* changes taking place at the same time.

The extent of changes occurring during the successive phases of a cycle differs of course with different periods of history, and with different countries. We must not suppose that decline and development are the same always and everywhere, and much less that for any one item like agricultural output, trade, bank credit, and so forth, it moves up and down evenly from one cycle to the next. By no means. No more than the phases them-

selves are identical in their details for all times or places, can the range of variations be fixed or uniformly elastic. On the contrary, since business cycles connect intimately with given stages of economic organization and efficiency for any one nation, and since non-economic factors, too, bear upon the trend of economic activities at any one time, we may be sure that quantitative fluctuations are quite irregular. Besides, there remains the importance of distinguishing between seasonal, secular, and cyclical changes, as has been pointed out again and again in recent years. Some increases we may take for granted as long as inventions continue and natural resources keep pace with population. In some fields the peak of production may have been reached long ago, so that a temporary shrinkage amounts really to less than surmised. Some of the ups and downs, furthermore, spring from seasonal factors which recur regularly and mean nothing else, though they tend to accentuate or to neutralize cyclical variations, according to the class of activity and the months of the year which we are studying.

We do know, however, that changes of a measurable sort take place, and for the last few decades our information on this subject is fairly conclusive. Thus all cycles, practically, have been accompanied by price level movements. This we may regard as an established fact, whether their causal relation to business disturbances is clear or not. If in the United States we except the two intervals of 1818-21 and of 1872-74, which led to peculiar effects because of war conditions and monetary inflation, we find times of depression attended by a collapse of high prices. In days of rising prosperity the level tends to rise, while during liquidation it is likely to fall perceptibly. Between 1836 and 1838, for example, the index number for wholesale prices, according to one observer, dropped from 125 to 116, if we rate prices for the year 1914 at 100. Between 1856 and 1858 the level fell from 119 to 105; between 1907 and 1908 from 97 to 92; and between 1920 and 1921 from 244 to 165.[1] These figures

[1] See *Annalist*, July 4, 1921, article by R. G. Hurtin.

relate to wholesale prices and show plainly that a decline is common during a depression.

Yet it must not be imagined that it is the same for all kinds of goods and services, for that is not so. There occurs usually what is called a dispersion, some prices changing before others and rising or falling much more. Unequal and successive rather than equal and simultaneous changes should be expected. During the recent depression from 1920 to 1921, for example, the wholesale price indices were the following: For farm products 218 and 124 respectively; that is, prices fell from 218 in 1920 to 124 the next year; for foods 220 and 144; for cloths and clothing 295 and 180; for fuel and lighting 241 and 199; for metals and their finished products 192 and 129; for building materials 264 and 165; for chemicals and drugs 200 and 136; for house furnishings 254 and 195; and for miscellaneous items 196 and 128.[1] Thus different groups of producers and consumers were affected differently, according to when the drop began and how far it went. But the downward movement was general none the less, and it covered retail figures too. Most consumers benefited by this drop which came rather suddenly. Though we have no estimate of the average, we know that for some lines of goods the drop amounted to over 50%, while for most of them it probably equalled that of wholesale quotations.

As regards the output of producers, the decline also is noticeable in many cases. Though some depressions or panics have been no more than a brief local flurry of excitement among big business men and financiers, (as for instance in 1893 and 1907 in the United States) we know that as a rule the last stages of a cycle mean a pronounced decline of activities as compared with its apogee. Just how great this difference is we cannot say. We lack the data for such a generalization.

But one thing may be admitted at once, before we give some details, namely, that it is easy to exaggerate the decline of national income. When we talk about these "bad times", we nearly always point to factories, mills, mines,

[1] *Wholesale Prices*, U.S. Bureau of Labor Statistics, 1922.

or stores. The annual income of a nation seems to be made up of concrete products only, and of *non*-agricultural wealth in particular. That the soil yields regularly and without regard for *business* disturbances; that much of our national income consists of services not sold in the open market, and of others which, while sold for money, nevertheless do not take tangible form, is easily forgotten. But we must include the work of married women, of men in their own homes, of farmers and farmhands, of professionals such as physicians, teachers, lawyers, journalists, of government employees in all branches, and of still other occupational groups in our survey. If we wish to measure the output of a nation for two different years or phases in a cycle we must by rights take count of everything serving to gratify our wishes, whether of a concrete nature or not, whether marketable or consumed by the producer.

Thus our idea of the decline of economic activities is moderate compared to what it would be if associated with the output of mine and mill alone. It appears that the reduction is not as great as imagined. Instead of estimating it at about fifty per cent or a third, we find it to be much less. Indeed, it seems extremely doubtful whether the difference in output of *all* goods and services between the highest point of activity and the lowest is more than one tenth. The peak of production is not as far above the average for the whole cycle as might seem at first thought, for annual growth since the middle of the eighteenth century has been steady and appreciable. Some authorities have estimated it at 3%. Each average year, it has been said, added 3% to the income of the preceding one among western nations. Thus the year of maximum prosperity should be expected to show a decided increase only over the year initiating the cycle; or we may contend that it is a true peak year only when its output of commodities and services exceeds even what a normal rate of development leads us to expect.

This is one side of the question of output or income. The other however is our inclination to magnify any

slowing-up of progress along certain lines. It is not the percentage fall which makes the output of a period of depression so disappointing, but the fact that some classes of people feel the consequences most and are especially desirous of running their plants at full capacity. In other words, we might not hear so much of reduced production and shrinking supplies if we did not live in an entrepreneur world which largely shapes public opinion. What newspapers, magazines, and orators impress upon us is the dissatisfaction of the employer who must dismiss men and leave his capital idle. This capital is plainly before us. One half of us live in the city, and a quarter of the American people in big cities; hence it is natural to comment on unemployment and reduced output. The captains of industry do their part to inform us and keep us well abreast of further losses. They are quite right in doing so, and should do even more to train us for the next cycle. But meanwhile our view of retrenchments and decline of output becomes distorted. We incline to judge a vastly complex situation by a few outstanding factors such as mill activity or wholesale trade. Conditions are not nearly as bad as some of us believe, though perhaps worse than others in a spirit of apathy would grant.

Regarding special fields of production, then, we may add this: Agriculture does not usually indicate the turn of business affairs very well. Its yields may be as large as ever, though in this country they fell from 103 in 1920 to 87 during the next twelve months in the opinion of one authority.[1] Manufactures however regularly show the break in the line of economic progress. During the last depression, they fell off about thirty per cent. The larger the establishment, the more evident the reaction. The increase of unemployment is a convenient measure of the shrinkage in output of such commodities. According to one investigator the number of employees in the United States decreased approximately 15% between the third quarter of 1920 and the same period of the next year. We are also told that the total hours of work

[1] Persons, W. M. Papers & Proceedings Am. Econ. Assoc., March, 1922.

actually performed by employees in all industries, as judged by liberal samples, fell over 15%.[1] For concerns employing less than twenty men the decline was about 3%, for those employing from twenty-one to a hundred men nearly 14%, for those employing over a hundred men each nearly 30%.[2] Throughout the country big producers were hit harder than little ones, if we may accept the figures before us. In agriculture the smallest farms showed a shrinkage (in employees) of 2%, the largest of 26%; in factories the respective losses were about 8% and 38%; in construction works 15% and 47%; in transportation 4% and 33%; and in trade 1% and 10%.[3] Thus there can be small doubt about the wide differences in curtailment of employment and output for business firms of unequal sizes.

The volume of commerce too shrinks much or little according to what part of it we have in mind. Generally speaking, of course, there is a lull. Sales fall off materially, as conceded in our account of several phases in a cycle. But they dwindle less than is popularly supposed, since much of the loss is caused by the fall of prices. We must distinguish between a physical volume and a money value. In terms of dollars and cents the reduction is great because both wholesale and retail prices fall as a rule during the depression, and especially soon after the crisis has been reached. Hence it is not incorrect to say that domestic trade suffers grievously from the disturbance. It surely does. Yet things do not look so bad if we turn to retail transactions, if we try to compare quantities of goods rather than money values.

If we accept freight carloads as an index of market conditions, for instance, sales in this country between 1920 and 1921 fell off not more than 12%. Sales at retail have been estimated at forty-one and thirty-six billions of dollars for the same dates, which means practically no shrinkage of physical volume if we remember

[1] King, W. I. Employment Hours & Earnings in Prosperity and Depression, '23 (pub. by National Council for Economic Research).
[2] *Ibidem.*
[3] *Ibidem.*

the marked drop in retail prices. However, it must be repeated that our information on this point is far from satisfactory. It is not easy to compute internal commerce when we desire to be thorough, including services of all kinds as well as concrete goods. Much of our information amounts to only indirect evidence, as for example bank clearings, actual output at the sources, traffic through canals, postal receipts, shares sold at stock exchanges, and so on. These and other items may be used, and have been suggested, as possible indicators of the physical volume of domestic trade; but even if we assent to this method, there remain still further exchanges of which we have no trustworthy record. In short, both the movement of prices and the dearth of reliable data make it difficult for us to measure changes in production and commerce correctly. We may be sure only that there is always some decline, and that it is not quite as great as we are tempted to infer from our personal observations.

When we test the extent of damage done to incomes, and more especially to wages, we are on safer ground. Our information is more adequate and less subject to criticism. The widespread collapse of the price level in the heyday of prosperity leaves no doubt of the shrinkage of net profits. Neither can the dismissal of employees and the reduced work-schedule mean anything else than a temporary loss in profits and wages. During the last cycle even farmers suffered greatly because their produce had to be marketed at low prices, war demands having disappeared. Thus the decline of profits covered virtually every form of enterprise. Business failures meanwhile increased, as they usually do in the last stage of a cycle. In this country there were ten thousand in 1918, 6,500 during the next year, nearly 9,000 in 1920, and about twice as many in 1921. Either at the end of a depression, or in the initial stages of a new cycle, such admissions of bankruptcy grow more common and reflect, to a degree, the trend of profits elsewhere.

Wages, too, are reduced whether we continue to work

full-time, or not. The average employee is distinctly worse off, and is seldom enabled to repair the damage by employment in a new field. In the United States the grand total of wages in all industries is believed to have fallen about 23% between the peak and the trough periods of 1920 and 1921. For establishments employing each more than a hundred persons the drop in wages and salaries amounted to over 30%.[1] Millions of men remained out of work for months at a time, and this plight befell unskilled workers even more than the highly trained ones. In fine, periods of liquidation in business cycles are also periods of a redistribution of personal incomes. Nearly everybody loses something, though certain professional classes may benefit in effect, since their salaries remain at the old level, while price reductions and the increased purchasing power of the interest rate they gather on bonds guarantee them a better living.

§ 4. Precisely because of these quantitative changes attending the course of a business cycle economists and shrewd business men have sought to apply their knowledge practically. It has been noted that certain leading features in the realm of economic activities recur again and again and present changes that can be measured with some pretence to accuracy. That is to say, instead of comparing all changes quantitatively in all fields of business we may content ourselves with a relatively few, observing these closely and using them either as proofs of other changes already effected, or as intimations of changes yet to follow. We should then have *barometric and forecasting data.* The former would be useful as indices of current conditions, the latter as signs of impending events in the business world. Those most familiar with this subject do not agree on what is the best barometer, and what a satisfactory forecasting fact, but we may admit none the less the importance of the discussion and the possibility of taking samples. At the present date of economic research it seems reasonable to select some data as symptoms of many others moving

[1] Taken from News Bulletin of National Bureau of Economic Research, Aug. 1, 1923.

in the same direction. Gross receipts of railroads, the output of coal and iron ore, wholesale prices and the ratio of cash to bank deposits—these among others may be mentioned as suitable material for a testing all along the line. The rhythm of economic life in modern times is sufficiently marked and regular to allow such an analysis of specific changes, of their trend and their rate of development. However, we must now turn to an equally interesting question, namely, to that of causes or occasions. Granting that cycles take place and display fairly constant sequences, how shall we explain them? What is the key to cycles as contrasted with seasonal movements or the trend of social economies in the very long run? To face this problem is worth while, even though we may not feel able to solve it definitely.

CHAPTER 14

BUSINESS CYCLES: THE CAUSES

§ 1. The causes of *business cycles* must be distinguished from those of a rhythm of *economic life in general.* We have already seen that life everywhere means change and rhythm. At one time we meet with development, at another with decline. Just as our beliefs and customs are now built up gradually and perhaps deliberately, only to break down somewhat later because of new conditions and ideals cherished by us, so economic systems and successes rise and fall, presenting at one moment the picture of intense activity and rapidly growing wealth, while in the next men are seen to relax or to fail in their endeavors, possibly due to their own fault, but just as likely because of forces in the physical environment which they cannot conquer. Thus the history of mankind becomes an alternation of growth and decay. Civilizations come and go. Empires appear and disappear. Now this, now that social economy rises to power, but forthwith crumbles in order to give way to still another one. The longer the stretch of time we behold in our survey, the clearer the impression of a wave-like line of ascent and descent. We call it the ebb and flow of human affairs, the transiency of our institutions, the law of progress which includes pauses and setbacks as well as forward leaps that often are startling in their effects.

§ 2. If we then think of centuries at a time, we are not misled by the more frequent and peculiar repetitions known as business cycles. We do not doubt that whatever the nature and causes of these short periods, there is also a much longer one which bridges the distance between one age and the next. After all, our business cycles are of small amplitude. They do not embrace

many years. A man now ninety years old has witnessed in his own life practically every noteworthy cycle recognized by students. He has gone through all cycles but one since the Napoleonic epoch. No two of them have been more than twenty years apart, and some of them are much closer together than that. So our real business cycle is a detail in human history. Indeed, even for modern times starting with, say, the discovery of America or the Reformation, these rounds of boom and depression constitute a minor event. If we could live eight or nine centuries instead of so many decades we should doubtless be impressed most of all with those fluctuations in the history of mankind which cover generations and spring from factors largely beyond human control. We should then think of the upward trend of civilization as a whole rather than of the ups and downs which we now experience in the course of a brief span of time.

Economic rhythm itself, in short, differs from the short cycles to be discussed presently, so that the causes for it must be sought in physical conditions no less than in events of our own making. To begin with, there are the catastrophes of nature which recur at variable intervals, bringing instant ruin or a first step toward decline to millions of people. Earthquakes, floods, and sweeping climatic changes have again and again laid waste huge tracts of land, transformed fertile stretches into arid deserts, exterminated vast numbers, and led eventually to the blotting out of civilizations. When such cataclysmic changes take place, man is powerless. He cannot prevent his own extinction nor even stave off a wrecking of his works. He may only accept the facts and thus let rhythm hold its imperious sway. Pestilences, too, have stricken populations from time to time, leaving misery and despair in their wake. While millions of people died, the survivors often faced lowered levels of living, as may be seen from the annals of antiquity or of the Middle Ages.

In the second place, natural resources are at all times a somewhat indeterminable and variable element. Though we may safely consider the actual existing stock

a definite quantity for any one century, since mineral riches and land areas or soil fertilities do not change very much within so short a span of time, our knowledge of them is nevertheless so incomplete that we must be prepared for possible further discoveries. On the one hand, then, we have the spectacle of periodically growing (known and commercially available) resources on this earth, while on the other hand they are being depleted by our use of them. We cannot always combat the erosion or deterioration of soils. Natural resources represent a variable which we cannot steady to suit our needs. We must anticipate a decline here, and new accessions there, in spite of recent developments. We ourselves have lived in such a marvelous age of discoveries that we shall be prone to overrate the liberality of nature in the future. For us new treasures have poured forth in an almost continuous stream which seems to have no ending. But taking centuries in a lump we need not be struck so much by an upward trend all the way as by an alternating rise and fall.

Similarly the inventiveness of man or of special races may be regarded as a variable over which we have no command. Though the last hundred and fifty years have been incredibly prolific in this respect, the preceding century has not quite so much to boast of, and during the long stretches of medieval history and antiquity man's ingenuity blossomed only at rare intervals. At least so we may infer from known records. The question thus arises whether inventions themselves follow in waves like crops or business activities. We may argue that some eras are more blessed than others, judging by technical improvements or scientific contributions. The weal and woe of nations hinges on such rates of technical betterments, and these rates are now most gratifying, now inconsequential. Of what is back of the inventiveness of a people we cannot be quite sure. There are many ways of accounting for it, of showing why it should decline or increase at an astounding rate. But the rhythm itself of activity in this sphere can hardly be overlooked. We have evidences of it everywhere, and

it speaks the more eloquently, the longer the period of time we are studying.

Finally, it goes without saying that economic conditions are ever and anon affected by events in other fields. The political and religious creeds of man are as influential as his efforts at earning a living. If we discard one doctrine regarding individual rights and espouse a new one necessitating new policies, the conversion finds an echo in things economic. History is replete with examples of economic rhythm caused by upheavals in non-economic fields. Wars in particular shape the life of people grouped under one flag. They bring normal activities to a standstill, or reduce them appreciably. Economic systems are tested under this strain as at no other moment. There are profound changes in centers of stress and the direction of aims. The last Great War was a striking instance of this appeal to readjustment in all things economic. Along some lines progress is impeded; along others it receives a marked impetus. The total annual output in goods and services is nearly always reduced somewhat because of the demands upon labor power at the fighting front. But offsetting features may be cited, so that the significance of a protracted war lies, for our purposes, in the qualitative rather than in the quantitative changes. So also other disturbances such as civil strife, strikes and sabotage, departures in religion and morality and so on, modify our mode of living more than our productive powers or economic organization. In the long run human history discloses these ups and downs of economic means and methods clearly. If we mean by cycles these far apart maxima and minima of social well-being, we must seek the causes in the above data. This more enduring succession of progress and decay is as old as civilization, and will probably only end with it.

§ 3. But there still remains the smaller cycle whose phases we analyzed a little while ago. We may ask ourselves how this is made possible, and what particularly gives it such prominence in modern times. In wondering about its origin we may intimate that it is avertible,

or at any rate may be reduced so as to affect our economic level of living much less than has so far been the case. *A cause, in this looser sense, is anything the absence or removal of which ends also the situation associated with it.* It is natural to suppose that specific causes can be located, and that thereby the means are provided for ridding mankind of the evil. Business cycles certainly are an evil when judged by the universal slogan of maximum production in a minimum of time at least cost. What then is our verdict as to the roots of this evil?

One thing occurs to us readily enough when we ponder on our problem, namely, the fact that business cycles as here defined date approximately (as already noted) from the rise of the modern industrial regime. If they existed before that date, we have heard very little about them. Though we read of panics due to speculation and financial failures among certain business concerns, there is no intimation of nation-wide crises or prolonged depressions such as our own. The very circumstance of our defining business cycles as recurrent peaks and troughs of production, exchange, price levels, bank credit, and rates of return for employers and employees suggests that they could not have been known to earlier days; for then the organization and technique characteristic of them was lacking. So we arrive logically at the conclusion that, to start with, the *explanation of business cycles rests on a proper regard for the essential features of our modern economic world, while later on specific causes may be found, but again only by our keeping within this economic system.* In part the cycles spring from the general make-up of our economic regime; in part they go back to certain strategic principles dominating this regime, the entrepreneur being more of a factor than anyone else.

Among the salient characteristics of our modern economic system should be mentioned first of all the rights of private property, freedom of contract, and freedom of vocation and association for business purposes. These rights have not always belonged to the individual,

nor are we entirely satisfied that their unrestricted exercise is the best thing at all times. On the contrary, we have advocated restraints by government, especially since technical advance has more and more complicated human relations. However, broadly speaking, the individual is at liberty to do as he pleases. The downfall of the feudal regime had this result among others. We may acquire private property by gift, inheritance, or earnings. We may sell it or lease the use of it to others. We may include in it real estate or movable goods, securities testifying to our absolute or partial ownership of wealth employed productively by people not known at all perhaps to us personally, and it may comprise also special legal claims to income such as patents or copyrights. In short, there are few things that may not be either owned or controlled by us as private citizens. To enjoy the freedom of making contract means to deed or lease away particularly rights in chattel, in tangible or intangible wealth in accordance with law or certain broad principles of social welfare. (The burden of the proof, if our rights are disputed, lies more nearly upon the state than upon us.)

Contracts may call for future delivery of goods or for immediate exchange of real values. They may concern the purchase of services rendered by employees or the hiring of cash funds needed in the development of a business. They may be closed between physical persons or corporations acting as a legal person responsible at court. Workers may organize and enter into pacts with their employers. To associate to this end has long ago been declared lawful, though subject to a few limitations. Each one of us is free to adopt any profession he likes, to learn any trade whatsoever, to change his occupation at a moment's notice or to move from place to place as his interests dictate. In this way we have become self-directing and able to make or mar ourselves. As philosophers put it, we are dedicated to the cause of individualism. We approve of self-determination even where the consequences for the state cannot be foretold. We are equal before the law, however different by birth or be-

cause of nurture amidst different physical and social surroundings, amidst opportunities and obstacles too numerous to mention. In spite of the complexity of modern life, in spite of the density of population and diversity of interests so evident to-day, our freedom of action and choice is great. As the average individual sees it, he is an end unto himself. Nobody dare molest him as long as he abides by the law of the land. What he does with wealth and with his own time and abilities is for him alone to say. Public authorities will not counsel him, nor much less interfere in the decisions made.

§ 4. With these and certain political liberties as a sort of background, the modern social economy has arisen and unfolded itself to its present dimensions, and this has led to the development of certain other features which must be understood if business cycles are to become intelligible.

In the first place we have a world of capitalistic means and methods in both a technological and financial sense. The former is suggested by the use of machinery and tools, of motive power artificially generated, of buildings for housing workingmen, raw materials, finished stocks of goods, clerical help, and so forth. There must be these technical aids and also facilities for transportation and communication. Without them little can be accomplished. With them production and trade may go on forever, provided men in their organization know the right way and are firmly resolved to continue their labors.

One of the arresting facts of the modern regime, therefore, is the lapse of time involved in the roundabout or capitalistic method in its purely technological aspects.[1] We find that months and years may go by before a productive process is completed, or at any rate before the article is finally placed in the hands of consumers. If we judge the amount of time spent by the number or volume of goods and services turned out per year, it is short indeed. We always comment on the rapidity of production, on the tremendous output of mines, mills,

[1] See also Vol. I, pp. 269 ff.

and public utility plants. Efficiency is the watchword and does miracles in sight of the casual spectator. But if we consider the span of time between the purchase of materials, of power, or of labor energy and the receipt of moneys for the sale of finished commodities, we may find it much longer. In this sense quite a few weeks or months may pass before the productive process is brought to its logical conclusion, before the enterpriser regards his work as done or his aims as realized. And if again we take into our reckoning all the subsidiary means essential to the making of a concrete good or to the manufacture of such an intangible item as light or power, if we imagine all these preliminary steps to be taken in proper order, as parts of a single process of production, if we count the time it takes to mine ore, to make machinery out of it, to use this machinery to make engines or machines for creating a consumable like hardware or furniture, and then include the months spent upon preparing a marketing campaign and upon actually selling the goods or services in question—*if* production and exchange are integrated in this way to form a single chain of events, we certainly have a very long period between the original steps and the final ones leading to the satisfaction of either consumers' wants or of a business man's needs. Whichever way we may look at the situation, we are impressed with the time element in modern technology. While formerly a consumers' article could be supplied in a few days or weeks, nowadays several years may go by.

In the second place, there is also a financial aspect of modern capitalism. Since production has attained such magnificent proportions and necessitates the employment of such intricate and costly machines (to say nothing of incidental aids like instruments of measurement, scientific apparatus and so on), it is natural for entrepreneurs to fall back upon outsiders in financing their undertakings. As regards this particular topic, we saw that funds had to be procured partly by way of certificates of stock issued by joint stock companies or corporations, and partly by an appeal to nonparticipating

classes. Some of the money was furnished by savers directly. Some of it came from other business houses which had accumulated a surplus from past earnings. But most of it was offered either by investment houses and brokers, or by commercial banks which arose in large number and developed undreamed of facilities for handling a delicate situation, for meeting needs as exacting in their nature as they were urgent from the standpoint of enterprisers. Finance thus came to the fore and overshadowed other phases of business, including the technological. Everything hinged on the supply of adequate liquid funds, on the continued renewal of loans with the proceeds of which merchants and producers could meet their daily and annual obligations, or their requirements of new stocks and labor power.

As a result of this development a third characteristic of our present regime gained prominence, namely, the universal resort to currency as a medium of exchange, and the instability of both this and of price levels. Money became a dire necessity because producers specialized increasingly and looked to sales for a return on either their labor or their investments. Inventions and discoveries of various sorts promoted the growth of the new technique described above, and this in turn involved trade on a large scale for the movement of goods of every imaginable sort. The use of money consequently ceased to be optional. It was a logical prerequisite as long as the supply of commodities was to be ample and regular. But with the increased reliance upon money, national currencies also proved less stable than in earlier days. For one thing, the output of mines added to coinage periodically in spite of large amounts of precious metals absorbed by industry and the arts. For another thing international trade and shipments of gold and silver tended as much to vary currency as to balance supply and demand for banking or speculative purposes.

But more especially was instability accentuated by the gradual introduction, and eventually rapid growth, of bank credit and such substitutes for real money as bank checks and drafts. The popularity of these two new

media of exchange not only solved certain problems of finance already discussed, but also led to violent fluctuations in the volume of money circulating in any one country. Viewed from one point it meant elasticity and a scientific balancing of supply with demand. Looked at from another angle it meant extreme variability such as has been noticed particularly in the United States, where bank deposits subject to check assumed greater significance than anywhere else in the world. Thus it goes almost without saying that the new types of money put into circulation unhinged prices every now and then. Their level moved up and down with much speed, and more so during the last half century than at the inception of the modern epoch of capitalism. To-day we have grown so used to it that it would be difficult to imagine even a proximate stability. It seems self-evident that levels must change, that degrees of change will be uncertain, however marked they prove to be in the end.

Fourth, from what has been said about the evolution of the capitalistic system, we infer readily that commerce too entered upon a new phase. Development in this field was as astounding as at any other point. Specialization presupposes trade, or may be said to further it because its advantages lead to an excess of goods which the producer himself cannot utilize. In order to benefit by these principles of large scale output and of the technique back of it enterprisers must be able to sell what they have. They must exchange their own for something different, and this the more so, the greater their productive powers. Thus the growing division of labor itself presaged the development of trade between individuals, communities, and nations. But in addition there was the influence of improved means of transportation and communication, of advertising in ever subtler forms and more effective appeals, and not least of all of banks which provided cash or credit instruments, besides gathering much useful information and safe channels for transmitting funds over long distances, between parties separated by alien customs and diverse obstacles of a legal and political sort. Because these specialists

came to the rescue of professional traders, world markets could be built up and kept from year to year.

The interdependence springing from this growth of machino-facture and trade is a fifth feature of our prevailing economic system. There is mutuality of feelings and of needs. There is a regard by one class of producers for a second or third. Indeed, it deserves emphasizing that interdependence concerns different types of enterprisers rather than individuals in their private life.

The latter, of course, saw it too. Consumers the world over depend upon one another for news and views, for goods and services necessary to life or desirable as comforts or luxuries. Nothing can happen to one country, but another perhaps thousands of miles off hears of it. A short crop or a plague or great flood or earthquake, a change of political ideals or in modes of living—these react upon possibly hundreds of millions of people scattered over the whole earth.

But more particularly must we bear in mind the strong ties binding different groups of entrepreneurs. Producers of rawstuffs supply manufacturers. Both turn to bankers for funds. Bankers expect cash deposits from the general public or rely upon the help of such institutions as insurance companies and brokerage houses. Farmers need the implements and fertilizer produced by manufacturers, but in return give foodstuffs and primary materials such as cotton, lumber, rubber, jute, and so forth. Dealers can do nothing without the concrete forms of wealth flowing from mine, mill, and farm. Advertising agencies, fire and title insurance companies, underwriting syndicates floating a huge loan, newspapers and statistical bureaus gathering market intelligence, accountancy firms and purveyors of confidential information as to the financial standing of a business firm, public utility corporations selling power or light, elevator companies, common carriers and shipping concerns, telephone and telegraph systems catering to all classes of people—here are instances of specialization that need only be mentioned in order to prove the

reality of a many-sided world-wide interdependence among entrepreneurs in general. As long as this state of affairs lasts, the happenings in any part of a country or of the globe will interest men elsewhere. Any turn of events for the worse or better becomes significant to business men, whether operating on a grand scale or earning a livelihood in a humble style.

Sixth, in view of these intricate methods of production and the cosmopolitan character of business at many strategic points, it cannot surprise us that the enterpriser is the central figure in modern economic life, the cynosure of attraction, and the pivot upon which national issues turn. Since the rank and file of men cannot attend to their own needs, producing whatever they consume, specialization was sure to give a great deal of power to exceptional persons. Talent formerly manifested in war and public administration alone now could unfold itself in the realm of production and exchange. The introduction of machinery and power, of factory methods and ramified industries involving gigantic outlays of capital, put men of genius on their mettle. It provided an outlet for inexhaustible energies and for indomitable will which, coupled with imagination and an engrossing interest, achieved as great things in peaceful pursuits as military leaders had in earlier ages displayed on the battlefield. In this sense the business man, great or small, became a dominant figure on the stage of economic activities. With employees we contrast the employer or the self-employing person. With producers or merchants in the general sense we contrast financiers who supplied the sinews of business as well as of war, when such a one broke out between nations. On the one hand we find the majesty of enterprise in industrial corporations, in boards of directors, in headquarters where goods, public utilities, and motive power are turned out, or where huge aggregates of merchandise are concentrated to be transported and ultimately retailed to the consumer. On the other hand we find bankers and financial houses take a place alongside of producers and traders, disputing the supremacy with

them, and at times proving superior to them in every respect.

But whether we think of financiers or of corporate combines and outstanding personalities in the sphere of industry and commerce, we are impressed with the grave responsibilities delegated to this small minority of the whole population in a country. We realize that here is power and prestige, a right to command and an understanding of principles quite different from those ruling in the factory or on the farm. To know the laws of nature underlying the effective use of materials and physical forces, is one thing; to master the art of organizing men and materials, of inducing people to want and to buy, of regulating human relations and focusing attention upon new needs or goals, is yet another thing. Captains of industry and trade, and the great majority of business men for that matter, must see to the managerial side of production and trade. For them everything depends upon sales and gain through sale. Men and materials receive their worth through markets. That is the axiom, and the loadstar guiding enterprisers in every branch of their work.

A seventh and final element in this modern regime of ours is consequently the emergence of risks of a calculable or incalculable sort. Risk must be faced and dealt with according to the best knowledge obtainable. There are some uncertainties which can be roughly estimated or offset by special measures familiar to speculators, legitimate traders, and producers in general; but for the most part uncertainties have no calculable basis. This we have seen already. Events must be taken as they occur. Responsibilities must be assumed without exact information on all phases of an undertaking, and without guarantee of commensurate rewards.

Indeed, one of the proofs of risk is the absence of a contrast which assures the business man an income of definite size, at a set moment. Another is the specialization so characteristic of our modern social economy, as a result of which nothing avails if sales are not realized. The enterpriser cries forever: Sales, sales! He must

market his wares or suffer. What he owns is useless unless it be a technical means to an end or something exchangeable for money. *The test of value therefore is always salability.* Capital goods depreciate and lose all their worth if the products and services created with their aid are not bought by consumers. Consumables have no value whatever if not wanted by those for whom they were originally designed and manufactured. If a business man wants to prove that he has assets he must be able to point to goods that can be marketed regularly, at a certain price, at a certain net profit adequate for maintenance of plant, for its expansion, or for the provision of a personal income. Every dollar of wealth in the hands of entrepreneurs is thus a *contingent* value, a dollar on the supposition that buyers will be found, that with this sale go net receipts as well as a cover for expenses already met.

Another way of demonstrating the risks of the enterpriser is thus the fact that expenses must nearly always be incurred before revenue comes in. The former are certain and in the main calculable, but the latter is problematic and not to be gauged very closely. For this reason, too, risks are genuine and well-known even among those not engaged in business. But lastly we have the time lapse already referred to in connection with the emphasis upon capitalistic means and methods. Because of the interval between initial steps and the final ones compensating the producer or dealer, there is plenty of chance for mishaps and ruinous losses. Uncertainties supervene because change is endless and the unexpected a proverbially common experience. A change in politics or moral ideals may come within a few months or even more quickly. People's demand for goods and services is always in flux. It is subject to revision and to cancellation. Now this, now that article gains favor and displaces something in our affections. Valuations are so unstable and frequently so capricious in their nature that no manufacturer or merchant can either foresee them or take precautionary steps to forestall them. Besides, there is the even more important

influence of changes bearing upon the supply of goods and services produced by any one concern. Rivals arise and offer combat on new lines. One idea supplants another and leads to the development of new forms of wealth, if not to the elimination of an older kind. Inventions and discoveries, strikes and labor troubles of various sorts, changes in known natural resources, in the geographical distribution of raw materials relative to power plants or to industrial centers or to markets—these and many other items affect the technique and costs of production, or the prices at which things can be marketed and sold to the public. In view of these variables risk is continuous and pronounced. Our modern world is grounded in risks and thrives on the deliberate assumption of them by enterprisers who can do naught but hope for a reward from prices secured by a sale. But whether markets respond to this cry for compensation is, of course, a second question.

§ 5. We may finally, then, sum up the broader aspects of our existing economic order, and hence indirectly of the causes underlying business cycles, by stressing the psychic rather than the physical data of life. If there are general causes of the sort so far enumerated, we must give them a human tinge, a basis which is psychical much more than physical. We must not try to explain cycles by a literal breakdown of the technical aids figuring in production at any quarter, or in the marketing of goods and services. We must not think that machines fail to act of a sudden, buildings crumble ever and anon contrary to expectations, or means of transportation and communication give out at a critical moment. Depressions and crises of a pecuniary sort are not occasioned thus. Neither is there any evidence that the organization in individual plants weakens periodically so as to reduce output or sales. As far as these elements in business are concerned, they remain undisturbed on the whole; or in so far as they undergo modification, it is done at leisure, without fatalities to the owners or the consumers outside. Cataclysms of nature or devastating wars might, to be sure, prove disastrous. They are ob-

viously forces of a unique character and of abiding effect upon the life of every nation. But these rare interferences with business need not be included in our present analysis.

Instead, it is the inability of man to hold all the threads of business in hand or to disentangle them speedily when confusion arises that hinders production and exchange. The breakdown is among different classes of entrepreneurs more than between departments and workers in any one concern. It relates to conflicts of aims and interests, to faulty judgments and errors of policy which ever and anon affect business at crucial points. The incredible complexity of the entire system calls for supermen which we have not yet found. It brings stress and strain which at times leads to a gross maladjustment between means and ends, between capital values and consumers goods, between one group of producers and another, between estimates of wants and actual wants manifested by the public in its purchases, between the prices of different goods, and also between wages and net profits. In a word, the causes of the business cycle exist in *states of mind* which are reflected back to concrete things known as wares. First, a procession of ideas, feelings, and desires in producers and consumers, then plans and procedures, products and pauses in effort. If all valuations and relative ratings of things or thoughts agreed, business men would have nothing to fear. Consumption could go on forever, and workers might hold their job as long as they cared. But the objective uncertainties mentioned a moment ago are both cause and effect for the realm of business which suffers from periodic declines. On the one hand our entrepreneurs make mistakes and thus injure their prospects. On the other hand external circumstances change without notice, prompting beliefs and actions that further upset the course of events. Thus the psychological factor is necessarily the most important. If we wish to understand cycles, we must look to the human side first of all. This alone reveals why our modern productive mechanism is rendered useless every so often.

CHAPTER 15

BUSINESS CYCLES: THE CAUSES (*Continued*)

§ 1. After a depression in business has set in, people naturally begin to speculate about its causes and to wonder where most of the blame lies. There is much discussion of the matter in newspapers and periodicals, at conventions called for the purposes, or at the regular meetings of different classes of producers. All sorts of ideas are brought up, only to be rejected or to be compared with others which seem just as good. Incrimination and recrimination are common at this time. Each seeks to explain the breakdown of the economic system by watching the errors or weaknesses of somebody else. One occupational group points to another and honestly believes that prosperity might have continued indefinitely were it not for blunders by the other fellow. The human origin of cycles, in other words, is not denied; nor are institutional practices examined with anything else in view than to locate guilty parties back of them.

Now, whether the responsibility should be placed with any one class of people in particular is a question we may perhaps feel qualified to decide after we have gone a little further in our inquiry; but some groups we may exonerate at the outset. For instance, few would probably accuse employees of causing a widespread decline of business activities, unless we meant that strikes on a large scale hindered operations in this or that field. Such disturbances do of course occur, and they tend to lower the level of living of a whole nation if sufficiently extensive and lasting. Yet we have no reason for connecting them especially with the downward trend of a business cycle. Except that strikes are more frequent at the peak of prosperity or on the eve of a decline, nothing

indicates their causal relation to the cycle in its entirety. Workers are affected directly by every change in economic conditions, but do not occasion it or shape its course.

Neither can we attribute it to landlords or farmers who till the soil and produce our crops. The former as such do not withhold land periodically, thereby bringing about a dearth of raw materials. Nor do they raise rents in flourishing times so as to raise expenses of production for tenants producing or consuming wealth. The share of the rural population in business cycles is in nearly all cases a passive more than an active one. Harvests in themselves are not decisive, though they might be conceived as starting a depression in one of several ways.[1]

It may occur to us, for example, that the crops of this fall bear upon national income in the ensuing year. We harvest now, but consume most of it during the next twelve months. If then there is a marked shortage, or on the other hand a very great surplus, will it not affect the general productive process in the following calendar year? May we not have irregularities in agriculture today, and worse ones in other fields to-morrow? Is that not a likely relation of things?

If we take first the possibility of a pronounced shortage, we may ascribe this either to a low acreage as compared with former years, or to an exceptionally low yield per average acre. The first is not our natural explanation, for there is nothing to show that farmers vary areas under cultivation because their caprice or business instinct dictates it. True, since the Great War such a policy has been taken under advisement. It has become patent to many farmers that variations of demand, as reflected by prices, should be consulted before putting so and so many acres under corn or cotton, and so forth. Indeed, in the future this adjustment of supply to expected needs may play a notable part in our social economies. But so far little has been attempted along this

[1] For opposite view see, for example, Moore, H. L., Generating Economic Cycles, 1923.

line. So it is natural for us to associate an appreciable reduction of the harvest with unfavorable weather. The physical environment rather than the tiller of the soil has been held responsible, and justly so.

Viewed from one angle therefore the periodic return of a shortage suggests a lower level of living in terms of foodstuffs and manufactures prepared from raw materials grown by farmers. Undoubtedly such a fluctuation exists and affects most consumers if imports from abroad cannot offset the loss. But this relative decline in our allowance of some goods is not in itself a sign of bad times. It has seldom been construed as the substance of a business depression. Neither can we argue that as a result of a shortage in one year fewer men are employed in the next one, as if farmers lacked funds to carry on business in the usual way. If produce other than food is extremely scarce because of a bad harvest, this may react upon some manufacturers. They may have to buy their supplies from foreign countries, paying more and raising prices of finished commodities correspondingly. This necessitates smaller purchases by many consumers, besides delaying somewhat the output at the factory. But enterprisers need not have their net income reduced because of it, as extra costs are counterbalanced by higher prices.

Furthermore, if we look at the situation from still a third angle, we are impressed with the compensatory action of the law of supply and demand for farmers. If crops fall far below the average, they are worth more per unit quantity. It may very well be that the shrinkage in volume is more than offset by a growth of values. The producers consequently have no regrets. They may enjoy as fine an income as ever and continue to buy goods as freely from shops and factories. They lose little or nothing. The general public alone is the worse off, and yet the reduced output may affect so large a number of people so evenly that no one class feels a shock. Agricultural decline thus has no cumulative evil effects.

An over-abundance of produce, to be sure, may harm

farmers somewhat. Nature may be so liberal that prices tumble rapidly and cause deficits among producers. If that happens, their purchasing power temporarily shrinks, leading to greatly reduced orders for manufactured consumers' goods or for machinery, and so on. It has been stated that lowered net profits among farmers react upon industry in this manner, the final result being a slight slump in business. We may accept this interpretation without a demur. But we must also remember that farmers are less easily injured by falling net profits than entrepreneurs elsewhere, for the nature of their occupation renders them immune to a degree.

If we except the land itself, capital is not a conspicuous item in agriculture. It is significant that in the United States in 1920 the value of all products for agriculture was twice as great as that of investments in barns, sheds, implements, tools, and so on, while manufacturers had almost twice as much money sunk in equipment as the value they added to their raw materials. In other words, industrialists have a large capital outlay per unit of product, while farmers have a light one, if we do not include the value of the land itself; and this latter may very well be excluded in our computation since on the one hand it represents gifts of nature chiefly, while on the other hand it is capable of being used in many ways as compared to factories or machines which must be used for specific ends, or not at all. The farmer need not be afraid of finding his acres useless in the spring, for if he does not want to grow one crop, he can resort to another. These staples are always sought in large quantities, whether consumption of other things falls or not. Thus his investments are relatively secure. They are rarely in danger of melting away entirely, or of shrinking for a long period of time. Farmers for this reason do not suffer very much from low prices. We may agree that crops rise and fall rhythmically, being succeeded by similar changes in prices. It may be possible to prove a close correlation between surplus crops, falling farmers' revenue, reduced purchases of manufactures, such as an agricultural popula-

tion uses, and a setback for some business people. But this is not the essence of a nation-wide decline which completes a clearly marked business cycle.

Again, we cannot blame the general public on the score that every now and then it fails to save enough money, so that a dearth of capital from this source impedes economic progress. For nowadays our loan funds are not built up mainly from such accumulations of the average consumer. The more modern the cycle we are considering, the weaker our argument for a periodic shortage of consumers' savings as the origin of business depressions. If the masses of people are in any measure responsible for cycles, it must be in their capacity as buyers of particular goods and services or as savers rather than as nonsavers. That will become clear presently.

§ 2. So the consideration of special groups of people as possible instigators of a business decline, directly or indirectly, leads us to infer that wage-earners as producers, consumers as savers, or landlords and farmers are not the real culprits for us to seize upon. *If we like to think of the causes as persons, we must turn to consumers and to non-agricultural entrepreneurs; bankers and employers in industry being especially responsible.* These two or three classes may be regarded as strategic points in the situation. They more than anything else set in motion policies or events which terminate in a crisis downward and upward. In a word, the causes are personified in the three classes just mentioned.

§ 3. *To begin with consumers,* they have much to do with business cycles because they are the ultimate object of all productive endeavors. If we do not buy what has been turned out by specialists, we disappoint and impoverish them. There can be no other result, since the goods produced cannot be used by the entrepreneur himself. Specialization is beneficial only if exchange is uninterrupted and profit satisfactory. It is for the millions of consumers to say whether a small minority of producers is to prosper or not. At any rate, for present purposes we may take this view. It is one approach to

our problem, and discloses an important truth, for consumers are the end aim of every producer. They are supposed to have money to buy. *If* they possess the means and do not exercise it, producers are inconvenienced, and perhaps crippled financially. The course of the reactions and the extent of the damage depend upon the speed and scope of decline in consumers' purchases, but in general the rebound for business men is governed by one fact, namely, by their technical and financial interdependence. Step by step a halt among consumers rebounds to the last producer instrumental in turning out the goods no longer in demand.

Producers may be divided first of all into two main groups, and then further into minor ones. The two principal ones are those of primary and of secondary goods. The former create raw materials of various kinds, foods and other produce on the farm, timber and water-power, minerals and stone from the quarries. The latter provide us with technical aids such as machinery, buildings, and accessories for manufacture, some of them coming in finished form from the plant, while others undergo only a few preliminary processes, the goods then being passed on to other producers. We distinguish between half- and full-manufactures for this reason. But there are also consumption goods for us to include in this broad group of secondary products, and these again may be either edibles or inedibles such as cutlery, textiles, and lighting fixtures.

Furthermore, buyers too are of several kinds. Not all of them buy for personal gratification, though as a rule we think so when speaking of a purchase. Consumer buyers undoubtedly make up the great majority. But in addition we have entrepreneur buyers who spend money either for production goods such as engines and tools, or for raw materials and half-manufactures to be worked up into finished goods, or for goods to be resold in exactly the shape they were bought. Thus we have producer sellers whose main task is to fashion first, and to market afterwards, and professional sellers whose function it is to supply others with merchandise, but not to

fashion it or improve its material form and content. In short, business men belong to different subgroups of producers of concrete or inconcrete goods, and to different subgroups of sellers, some of whom are traders pure and simple, while others are manufacturers primarily. In this way many types of enterprisers are interlinked and mutually bound to one another for prosperity. If consumers fail to spend their income freely, not all producers or merchants feel it at once, but ere long they do, unless there are compensating elements. Dealers at retail become aware of the change first; wholesalers know it soon afterwards, when reserve stocks dust on the shelves; and manufacturers of the articles in question are affected last. There are no new orders, and this leads to reduced purchases of raw materials, auxiliary supplies, and so forth.

If consumers hold back long enough, the demand for production goods also declines or stops. Concerns furnishing machinery, scientific apparatus and fuel are in need of orders. Public utilities and especially common carriers have their revenues reduced. Construction stops and mining or lumbering faces an uncertain future. The progression of jolts may therefore be compared with that from a locomotive which halts suddenly and passes the impact on to every car back of it. Only, the simile does not hold altogether, for in the first place the shock in business may be as violent at the end as at the beginning, and in the second place it is imparted laterally as well as longitudinally. The tremors of an earthquake therefore may suggest to us a more accurate picture, for these are transmitted in all directions, and may cause upheavals as severe many miles from the seat of origin as at its very center. And that applies also to our shocks due to consumers' retrenchments. Eventually all sorts of entrepreneurs become involved, and not merely those producing the raw materials or half-manufactures, or selling the goods in question, or providing accessories in tangible or intangible form. Hotels for instance do not get their usual quota of commercial travelers. Terminal and storage companies may have more or less to do, ac-

cording to circumstances. Office buildings may be less in demand, and finally even purveyors of amusements or summer resorts lose money because certain business classes work at reduced profits, if not at a deficit.

One noteworthy aspect of this situation, consequently, is the depreciation of capital values which goes on whether physical equipment is actually used or not. Since production goods are useless in the absence of a demand for the consumers' goods made from them, consumers effect a gradual decline of equipment values, if their economies continue long enough. Securities fall, and credit transactions shrink perhaps in proportion. But whether that is so or not, a shrinkage of capital assets is certain in due time. This particularly is the feature we stress in describing business cycles, and it is important in modern times because every business man expects a certain minimum return on his investments. He calls it profits, though actually it represents interest on money sunk in the plant. Let this interest decline, and great losses become unavoidable. Employers everywhere suffer, excepting only the farmer who, as noted a moment ago, has no big funds invested apart from what his land represents.

So the natural vent for entrepreneurs is a reduction of operating expenses. If consumers persist in their policy of not buying, they are ultimately punished by losing their earnings. That is the paradoxical effect of their apparent desire to save, or at any rate not to pay what they are asked when looking for goods. Of course, those dismissed from their positions are not always the ones responsible for curtailed purchases at retail. The goods they help to turn out may not be the ones they refuse to buy, and may not be for personal use in the first place. Nor do some classes lose anything by the change, for public employees and professionals rarely have their income lowered through unemployment or a shortened day of work. Nevertheless, the final effect of nonconsumption is as stated. Unemployment and reduced wages follow. The accumulation of unsalable commodities and the nonuse of

capital funds capable of producing services such as transportation or amusement, rebound sooner or later upon the earnings of the masses. Aims at economy—if refusal to buy may be so called—end in inability to earn. There is generated a vicious circle, beginning with a valuation by consumers, and ending with one by employers who may hire labor or not, as they see fit.

§ 4. The question of motives in consumers thus becomes an interesting one. We naturally ask: Why do people curtail living expenses, if in the end little or nothing is gained by it?

The first answer, of course, is that consumers individually and collectively suspect nothing of the sort. They do not know that refusal to buy can have bad consequences for them. Neither are they disposed to believe us if we admonish them to that effect. However, on second thought we must admit that consumers may reduce their purchases for several reasons which to them seem quite sufficient. They may, for example, start upon economies because their ideas on the relative value of things is undergoing a change; or they may actually have less to spend, in which case the responsibility for reduced business profits lies with entrepreneurs more than with wage earners.

If consumers curtail expenditures of their own accord, the occasion for it may have been provided by a rapidly rising price level. This upward trend, we have seen, is common enough in modern business cycles and may go a long distance before anybody objects seriously. There is an elasticity of demand for most goods, since they are worth more to people than is paid for them. Technical progress and our modern methods of production make things cheap in this sense. We are asked to give a dollar, but would perhaps pay twice as much if necessary. Since a big portion of our level of living turns on nonnecessities, this feeling of a net gain by exchange, of receiving utilities greater than the pain we incur in spending money, is a natural one. Economists have called this difference in benefits a consumer's *rent,* since it represents an unearned increment, so to

speak. The elasticity certainly exists, and may be traded upon by entrepreneurs. They may raise prices more than proportionally to expenses. They may push up the general level of prices for consumers' goods, and do this for quite a while. But eventually this climbing is resented by the victims. They wonder whether the top has not been scaled. They hope for a pause in the trend, or for a drop. Sooner or later therefore rising prices provoke comment and lead to retrenchments. Retailers may be confronted with the reversal of people's attitude rather suddenly, and if so, find sales declining.

Still, movements of the price level are not always the reason for a slump in business. Possibly consumers have stocked up too well, buying for months at a time more than they need, so that a lull in purchases is to be expected. Or perhaps we lose our tastes for some types of goods, for comforts and luxuries which we bought formerly at excessive prices, considering our income. Certain groups may show a revaluation extending over large classes of merchandise. Amusements may mean less to us. We may become surfeited with them. High-grade articles of wear or house furnishings may all at once seem too expensive. Services such as light or housing facilities may be less in demand at one moment than at another. Educational standards may rise at the expense of producers turning out tangible goods or various kinds of intangible services. If such a change of heart covers many classes of goods and spreads among millions of people, dealers surely find receipts falling.

Indeed, one cause (or on the other hand, effect) of this instability of valuations may be a spasm of thrift which overwhelms entrepreneurs who apparently should welcome it. The precise rate or amount of savings best for economic development is always a very difficult thing to figure out. It is best not to commit one's self too dogmatically on this point. But there can be no doubt about the possibility of excessive economy; that is, of restraints among consumers which leave large stocks

of commodities on the hands of traders, and ere long bring industry to a standstill. If great masses of people suddenly decide to save more and to spend less, the first consequence is a surplus of concrete wealth made for personal use. Then this is followed by idle production goods, while in the third place producers of amusements or transportation, communication, advertisements, and construction works likewise suffer in the end.

What happens is, roughly speaking, this: The employer pays out cash or orders on banks which may be used to buy goods and finished services of an enjoyable sort for consumers. But these latter do not so use their funds. They leave accounts at the bank, or hoard cash. They fail to buy the output of farm, mine, mill, and other producers. In huge quantities these goods pile up, subject to deterioration as if really used, and of no value to entrepreneurs because they made these things in the first place for a market. They understood that their wares would be sold at a decent profit, and approximately as fast as turned out. They went on the supposition that materials and labor were to be converted into finished products, prices, and profits. Thus they hoped to obtain further funds. Cash is the goal they had in mind. Goods at the factory are useless, but money or its equivalent is valuable and vital because it buys anything needed. Money is a universal claim to wealth, not an order for specific sorts of riches. Thus it becomes precious far more than goods of like value.

Strange as it may sound, this is true. Business men even more than consumers must have cash. This alone answers. To accumulate unsold merchandise is to court disaster in the long run, as producers cannot turn their own products to good advantage Farmers may for a while withdraw their wares from the market. They may feed much of it to live stock and thus offer a new kind of product or let it take care of itself for several years. Besides, they do not have to renew their equipment as regularly or often as many industrialists. Wear and tear, although just as rapid perhaps, impairs the

efficiency of farm implements less than of many other forms of capital goods. Hence farmers are here, as elsewhere, to be set on one side as a favored group. But the bulk of enterprisers must sell or suffer. If consumers spend too little, leaving their claims to goods in the bank, they may prevent business men from using these funds for buying raw materials and setting in motion the next round of production. In this manner markedly reduced purchases incommode not only dealers, but finally quite a few producers. Consumers in this case have funds to lend, but entrepreneurs do not ask for them because they have not yet sold finished goods and services on hand. Now and then consumers' tactics may lead to such a peculiar *impasse*.

If this happens, however, we do well to inquire whether the fault lies primarily with consumers or with the employers themselves. It may be that the former cannot buy as much as before or as was anticipated. Quite likely their income is not as great as during an earlier stage of the business cycle. We must reckon with this possibility. Since cycles have in the last century coincided with price movements, and since prices move at different rates for different goods and services, we must expect a redistribution of incomes as well as a dispersion of prices in the strict sense. That is to say, not only do some commodities rise or fall more than others, and do so in succession rather than simultaneously, but what is more, different classes of services fare differently. As we have seen, wages are much less mobile than profits. They lag behind and rarely increase more than prices for things. Rents too follow prices at a distance, while interest on bonds running many years is bound to lag since such contracts cannot be altered at will, on the plea that the purchasing power of money has changed. Furthermore, wages may again be subdivided into several kinds, viz., those affected first and those adjusted to price level changes last. In this way the incomes of various classes of people expand or shrink. Wages in general do not keep pace with price, nor with net profits. This has been our

experience during swift flights of price levels. If then the so-called good times are characterized by rising prices in most fields, a large part of the population does not really benefit by this development As the peak of a cycle is being reached, many millions of employees are less well off than formerly, judged by the purchasing power of their earnings. Professional classes especially lose by the transformation and readjust their family budgets as best they know how.

§ 5. The *second* principal source of business depressions should therefore be sought in entrepreneurial policies rather than in measures originating among consumers. In pointing out the above lag of wages behind profits, we have hit upon a second main cause of business cycles. We must emphasize this rôle of the producer who employs labor and may pay much or little, as seems most advisable to him. If he advances wages less rapidly than prices charged for goods sold, he reduces expenses relatively, augmenting net profits. As long as output and sales remain constant or grow, these wider margins of net profit are welcomed and provide a strong incentive to operate plants at full blast. *Bona fide* investments may form the least part of capital assets, as capitalization is based on an imputed interest rate or a return on outlays rather than on costs incurred in the past. Thus the temptation to keep wages at a low level is always great.

Periods of boom, however, have during the last half century stimulated expansion even more than net profits. Enterprisers have been more eager than ever to reinvest their annual surplus, so that at certain times capital goods increased faster than consumption goods. The marvelous advantages of large-scale production and of the employment of the finest and most elaborate machinery partly suggested this policy, but we must also bear in mind the rapid growth of joint stock companies and corporations. These two types of business organization account to-day for about three fourths of all industrial products. Business begins and ends with the funds secured through issue of stocks and of long-time

bonds. Profits therefore belong legally to shareholders, of whom there may be many thousands, nay hundreds of thousands. But boards of directors have increasingly withheld a portion of the gains. Instead of dividing everything, they have laid aside large sums for immediate developments, improvements, and possible emergencies. Either this has helped to provide the means for rapid growth, or loans have been floated at home and abroad. In both cases the men at the helm of industry or trade have been able to buy raw materials, technical aids, real estate, and labor power in huge amounts. Plants were made to grow quickly during prosperous times.

If this then is the procedure during the upward trend of business and of sales, the eventual result may be over-production. Not that by this term we mean an excess of enjoyable goods which cannot be disposed of at *any* price. Of course not. If entrepreneurs are willing to sell at a small profit they may force demand for a long time, and if they decide to sell with no profit at all, or at a loss, we may expect them to boost consumers' trade very effectively, as the final phases of a business cycle show. Over-production in the sense that people cannot use things, or will not take them at any price, is well nigh impossible. But it may exist in so far as dealers cannot dispose of their wares within a normal period, or in so far as commodities must be sold at a price leaving less than the customary profit for the industry in question. This may be true of consumption goods; and as regards capital goods, we may have too many of them either because we cannot keep them working at full capacity, or because none of the finished articles and services derived from them can be sold at a sufficiently high price.

From one standpoint over-production relates to enjoyable utilities which people refuse to estimate at a fair rate, that is, at a price satisfactory to the producer. From another standpoint it means creating instruments of production at too fast a pace, so that revenue from them is problematical. In the United States internal

improvements have in earlier years of our history proven unprofitable because people did not need them for the time being. Bold investors and speculators were disappointed because traffic did not move in the direction they preferred, or because less up-to-date methods answered apparently just as well. Old investments sufficed. New ones were not actually demanded by the trend of population or the industrial growth of the community. Thus capital goods lay idle, deteriorating without yielding either utilities for consumers or income to creditors. Such a state, of course, is bad, since capital goods in themselves furnish no gratification of any kind. We never want machines or canals or factories except as a means to an end.

A big drop in the sale of consumers' goods therefore may prove fatal to enterprisers because their plants bring in no returns, and yet the cause of it all may be the owner of the plant himself who does not pay wages commensurate with the advance of prices. *If* this is the case (though it need not be), then the declining purchasing power of employees raises net rates of profits only to lower them again afterwards when sales at retail shrink. In recent business cycles this has been a fertile cause of troubles. In their desire to become efficient and to produce at a greater rate corporations or joint stock companies have spent too much on expansion and not enough on wages or salaries. They have set aside colossal funds instead of declaring and distributing dividends which would partly have been spent for consumption goods. They have borrowed funds and built with these. They have added to capital outlays even at the cost of scrapping fairly workable machinery. The ideal of maximum productivity was grasped so firmly and clung to so tenaciously that scales of operation came close to applying laws of proportion and of size perfectly. As has been shown, these two principles must always be observed if costs are to attain their minimum, and modern finance has favored their application remarkably. None the less, business cycles teach us that there is another ratio to keep in sight,

and that is the *ratio of producing power to purchasing power.* It does not avail business men in the long run to devote all their surplus to efficiency methods and vast enlargements, if they do not leave the masses of consumers enough cash to buy willingly and continuously the articles or services turned out by an industrial plant. A relative fall of wages during a rise of prices and a period of boom injures business by and by. Underpay brings losses, even though we consider pay sufficient according to predefined standards of living or from the viewpoint of what workers happen to insist upon. Underpay is a wrong ratio of production to purchasing power; this and nothing more, so far as our problem of cycles is concerned.

To be sure, it seems odd to be talking about insufficient earnings among employees, when depressions commonly tend to lower wages further. We may be puzzled about this fact and wonder how it agrees with the kind of over-production just mentioned. But two facts will enlighten us. In the first place, namely, the reduction after the pinnacle of business has been reached is accompanied by fully as marked a decline of prices, if not by a greater one; and in the second place, consumers after a while have used up their reserves of enjoyable goods so completely, or have gone without enjoyable services—amusements, travel, and so on—so long, that they are inclined to buy some things which earlier they boycotted (so to speak) because too dear. The spirit is willing, but the flesh is weak, as an old adage has it! People hold out a certain length of time, but not forever. They are used to their mode of living and try to maintain it when the first force of resolutions not to buy is spent. This, the greatly reduced prices, the expectation of better times ahead, and for some people the resort to savings in banks, explain the revival of business in the retail trade in so far as we do not trace it to policies of entrepreneurs.

But the possibility of a low purchasing power among consumers at the end of a boom remains just the same. We may well stress this trend toward one-sided develop-

ments by producers, and we may illustrate the effect of excessive prices further by what happens after a poor harvest. If this raises prices unusually, many people have less to spend for nonnecessities and luxuries. Sales in particular lines of goods drop off precisely as they decline in all fields when incomes among the masses suffer from a too rapid advance of prices for industrial goods or consumers' services. The principle is the same, though we mention different causes and find the extent of the damage much more discouraging in one case than in the other.

§ 6. In so far as the rank and file of enterprisers are guilty, then, economic depressions are caused by an unequal development of capital and consumption goods. Though other events may teach business men to reduce output and to dismiss men, thus starting a general decline, their chief difficulty is to find a proper ratio of personal income to capacity of plants. Even when they supposedly know the ratio, they are as individuals tempted to ignore it, since each one works for himself and secretly hopes that he at least will gain by big profits and small expenses. However, there is a *third* possible cause of business cycles, and this refers to one type of enterpriser in particular, namely, to bankers. This too helps us to understand the periodic decline of business, and sometimes it really looks as if everything might become clear, once the functions and powers of our modern financiers are borne in mind and fitted into the productive process.

The importance of credit follows from the use of modern means and methods of production and trade, as has been shown elsewhere. With the advent of the Industrial Revolution the handicraft system disappeared. Machino-facture and artificially generated power took the place of it very largely, though not entirely. Scales of production were gradually enlarged, partly because the technology resulting from modern science and mechanical inventions urged it, and partly because greatly improved facilities of transportation and communication expanded local markets into world

markets. Customers by degrees were sought all over the world. To sell to perfect strangers thousands of miles away seemed no longer extraordinary, inasmuch as commercial law became more definite and was enforced with greater rigor. Thus the elaboration of legal principles and the advantages inherent in our modern industrial system bade business men do magnificent things. Plants grew larger and larger. Commerce covered the whole globe, interlacing the interests and ideals of many nations.

If enterprisers had had enough funds of their own to found a business or to maintain and expand it, credits need of course not have become essential after all. But we know from the distribution of income among people (as shown before [1]) that few of them could have had as much wealth as the conduct of their business required. Indeed, increasingly as scales of operation grew in manufacture, mining, and notably in the public utilities, the resort to loans was a foregone conclusion. To begin with, individual and partnership enterprises became rarer. Business magnates organized companies or corporations, thus financing themselves by issues of stock. Dividends in considerable measure superseded profits pocketed by individual owners of a going concern. But however effective and natural this development of corporate enterprise, it could not supply funds at all times, nor in altogether ample amounts. Hence bonds and credit instruments in general assumed importance. The public was taken into consultation, as it were. Savers were asked to contribute by buying bonds directly or by turning their surplus over to investment houses who then furnished enterprisers with what they needed. In this way the era of credit and bank currency was ushered in.

Banks multiplied rapidly and assumed leadership in several fields of finance. They supplied both producers of concrete commodities, and dealers who marketed simply what they bought. The producers might turn out consumption goods or materials destined for further

[1] See Vol. I, ch. 18, § 14.

improvements, or finished technical aids such as machines and tools. No matter what they put on the market, they learned eventually to borrow at commercial banks as well as at other places. Nowadays commercial banks help out not only merchants who need sums for a short time, offering salable goods as security, or buying them with the proceeds of the loan so that their debt can be easily redeemed when it matures; they also contribute toward material development by a renewal of their loans and by a purchase of notes from commercial paper houses or other investment agencies. But what is equally noteworthy, the producers and merchants buy with their borrowed money consumption goods as well as technical equipment. In the case of the merchant consumption goods absorb most of the proceeds of a bank loan, though not all of them perhaps. In the case of a manufacturer, farmer, mining concern, construction company, or a public-utility firm, the bulk of the loan presumably goes into the purchase of raw materials and paraphernalia for running a productive plant. Yet some of it is spent in wages which buy consumers' goods, or in other finished articles such as are used also in private households.

Banks at the same time have gained as suppliers of capital because they have more and more taught people to accept token money or bare promises to pay values in place of real money, say of precious metals. In the first place we must reiterate that whoever gives or lends us money, provides us with purchasing power which may be used precisely as we please. The immense significance of money lies in the fact that it is a universal medium of exchange, a general title to wealth, that is a claim to anything whatsoever of any value. When we obtain money or its equivalent we do not get specific items of wealth, but an order on society to give us what we want. This point we have brought out before and must now stress again. Money buys anything in the market. Business men prize it highly for this reason. What they need is exactly such a command over all kinds of goods or services, the choice to lie with them.

Now, commercial banks specialize in this sort of business. They hand out universal titles to wealth by way of a loan. They assure the borrower of the ability to acquire what commodities or services he wants. They do not give real money when advancing funds. As we saw before, that is impossible. Only a small portion of loans at banks are paid in cash. But they have during the last century obtained permission from public authorities to issue paper money of their own, or to set into circulation scrip which passes as money for most purposes, though not recognized in payment of taxes, and so forth. In the first case banks give the borrower a universal medium of exchange, bank notes and federal reserve notes being an example in this country, while bank notes sponsored by a central bank of a semi-governmental nature are a common instance among Europeans. This class of paper we call money, and take at par, as if it were gold or silver. But more usually borrowers do not ask for even these notes. They are instead satisfied to draw a check against the lending bank, handing this to others for merchandise bought. Each party takes the check and either cashes it at his own bank, or just as likely has the fact amount put "to his credit," meaning that it builds up a demand deposit and is used in writing checks in favor of others later on. This substitution of bank checks or deposits for real money constitutes one of the outstanding features of our modern economic regime. Banks may expand loans speedily, granting almost any amounts, as long as their promises to pay function virtually as money. Currency is fabricated by this means. It is quickly expanded and can be contracted when demand deposits are on the wane. Banks thus become creditors *par excellence,* seeing that *their* promises alone pass freely among people as money.

But this being the strategic position of commercial banks, we now come to the inevitable conclusion that they may influence profoundly the course of business events either by refusing to help out enterprises, or by assisting them so generously that sooner or later

an injury results. That exactly is the truth about the matter. If we wish to attribute a periodic decline of national prosperity to bankers and their tactics, we must consider both the over-abundance and the dearth of capital (or loan funds) at certain stages of economic development. Viewed from one angle business is impeded because capital becomes too scarce, because bankers withhold the purse. Viewed from another angle difficulties arise because bankers have been too lavish with their advances, because in their eagerness to humor the demands of their clients they have incited them to efforts and errors which eventually spell disaster. Just as we suffer from under- or over-feeding, so entrepreneurs may receive a temporary setback through either a lack or a plethora of funds not actually owned by them, but borrowed. It depends upon our point of view whether we trace the depression to one fact or the other.

A scarcity of credit is noticeable when commercial banks refuse to renew old loans or to grant new ones. They may do this quite unexpectedly. They may suddenly be impressed with the need of curbing the ambitions of business men, expressing inability to extend loans already made, or to advance additional funds. In either case the reaction upon would-be borrowers is bad, especially if loans so far have been easy, bringing with them a rising price level and a long period of developments in all fields of endeavor. The blank astonishment of business men then is natural. It arouses suspicions that things are worse than a disinterested examination would prove

Indeed, incidentally speaking, the psychology of retraints emanating from highly respected experts must not be overlooked. If financiers pause and ponder, others may well take the hint and become even more cautious. It does not take much pressure from the former to set other buiness men to thinking, particularly if they are well organized and have a central clearing house of information which controls rediscounts on bankers' papers or guards the flow of precious metals within the land and in international trade. Under such circum-

stances—and they have prevailed in most civilized countries during the last century—the stoppage of loan funds soon disturbs business relations elsewhere.

Commercial banks however may have excellent reasons for refusing to grant new loans or to renew old ones. In the first place, their demand liabilities must up to a certain amount be covered by real money, so that they cannot be enlarged if no additional cash reserves are in sight. Experience has taught bankers that the people are not satisfied with the issue of bank notes alone, nor much less with the permission alone to write checks on the strength of credit accounts, these checks to be passed from hand to hand in lieu of legal tender.

Of course, for the most part this means of exchange does answer the needs of business. Nine tenths of all transactions in this country are probably settled by way of bank currency, checks serving in most cases. We are so familiar with these orders directed to a bank in favor of a third party, that we can hardly imagine ourselves without them. Still, an elastic paper money has always been found necessary, and in nearly all countries is provided in the shape of notes based on bank loans. These bank notes satisfy a part of the demand for something more universally acceptable than mere checks, and in addition banks keep a minimum percentage of their demand deposits in metallic money, preferably in gold. The reserves, as this item is called, may be within each bank or centralized in a few places. They may constitute a fairly high or a tiny percentage of all the outstanding liabilities, according to the law of the land or the customs at the time. But in any case there is a variation over different times of the year or successive years. Now the ratio of cash to deposits is twice as high as governments require; now it is close to the minimum. Since precious metals are being mined almost continually and move in the trade of nations, since the quantity circulating among the people is now large, now small, since legal requirements themselves are subject to change, the general trend having been

downward in the last hundred years,—since these forces are always at work, the ratio of cash to credit is never fixed. It moves up and down, and is especially influenced by the expansion or contraction of loans. If these grow in large measure, an excess of cash is quickly reduced to something like the legal limit, or to what prudence urges bankers to maintain. If business conditions bring a slackening of credit demand, reserves may rise relatively without much of a change in metallic stocks. Thus the ratio of the two varies continually, and yet must be kept above a minimum if the confidence of the people in banks is to remain unshaken.

For in the last analysis it is not the actual amount of gold in banks or subject to their control which inspires faith, but the belief of people that the precious metals are at their disposal, if they wish it. It is again a question of knowledge or ignorance. If we can get a gold dollar, we probably do not want it; but if we are forbidden to ask for it or are told it is not to be had, our desire to hold one in our hand waxes strong. As was remarked apropos of the financial panic of 1907, somebody asked for a dollar, for real money, and that started the trouble. So commercial banks above all others do well to observe the principle of a minimum cash reserve, loans being unpopular with them if this reserve is as low as custom and law allow. As long as people will not accept paper money or checks on banks for all purposes and under all circumstances, so long coin has its place in national currencies and must set limits to credit. For this evidently is the crux of the whole matter: The size of funds to be loaned out depends to some extent upon metallic stocks, all provisions for an elastic paper currency and of lowered legal reserves in an emergency notwithstanding. Governments may give us an elastic ratio of cash to credit as much as they please. But they cannot prevent people from asking for gold or silver, and since they cannot, cash reserves remain a decisive factor in business.

Still, banks may have other reasons for being wary about loans. They may believe that security should be

higher and better. They may take exception to loans not secured in a particular manner. The whole range of credit principles may be involved in a refusal to accommodate the petitioning business men. It may be suspected that loans are spent for enlargements and improvements rather than for merchandise which brings quick returns and thereby makes bank assets liquid. It may be objected that the applicant is tying up his funds at considerable risk, meanwhile leaving the bank exposed too. Again, in financial centers credit is given habitually to people dealing in securities, and much depends upon the trend of general business as well as upon the known standing of the companies issuing these securities. If banks are opposed to speculative dealings or unfair manipulations they will be prompted to reduce loans regardless of the amount of profit lost by this policy.

Besides, funds so provided in the important financial centers come partly from banks far away, from country banks who have greater cash reserves than they need and find it advantageous to transfer them to big metropolitan banks. So the refusal to lend to brokers may have its origin in a downward trend of reserves already in effect throughout the country. Possibly rates of profit have reached or even passed their high-water mark, as seen by shrewd and ever watchful bankers. Payments of one entrepreneur to another may be lagging, while sales in the immediate future are not to be depended upon. If that is the situation, there are extra risks in expanding loans or discounts. Especially when banks have outstanding debts of their own or have made questionable investments by using their surplus, caution is in order. Thus a few big institutions may start a policy of contraction of credit and currency which quickly spreads to other regions. Central banks with regulatory powers may precipitate events by raising rediscount rates without much warning, or by advising others to be circumspect. In short, a number of reasons may actuate bankers in declining politely but firmly to assist their clients. Some of them lead us back to

entrepreneurial practices, but others point to a status of banking that is not occasioned by any false steps of producers and traders.

§ 7. Furthermore, as intimated a while ago, the source of disturbances need not be at all a shortage of credit accommodations. On the contrary, it may be an overabundance of them in earlier stages of the business cycle. It depends largely upon the point at which we begin our inquiry whether we ascribe evils to an excess or to a scarcity of loan funds. At bottom the trouble is perhaps a too elastic credit system in progressive countries where business cycles have been most frequent and pronounced. If capital were manufactured less copiously and spread more evenly over time, economic development might be less rapid, but also free from nation-wide depressions. It is hard to say what extreme elasticity means in the end, but it does have several peculiar consequences.

To begin with, enterprisers are inclined to spend the proceeds of loans on raw materials and labor energy for the purpose of turning out production goods or services not intended primarily for personal gratification. Since money buys anything in the market, and loans provide money or near money, borrowers are in a position to use the available resources of a nation as they please. They may either produce consumption goods, a farmer growing more wheat or raising more live stock, a manufacturer adding to fabrics, furnishings, and like commodities for the families, or they may hire labor to produce more machinery and tools to build hotels or amusement places, bridges, tunnels, railroad mileage, and so forth. Workers engaged by employers who received credit at banks turn out these things if told to. There is always a certain reserve of labor power that may be added to men already in employment, and it is also possible to take men from one field, say from that of domestic service or farming or public utilities, in order to set them to work elsewhere. In some measure labor is convertible from one kind into another. Thus entrepreneurs have an option of increasing either

production or consumption goods. This we have noted more than once before.

It follows, then, that cheap bank credit, if not controlled by the lenders themselves, may flow into channels where values are unstable. The excess of capital goods mentioned some time ago may be due, not so much to underpay to employees during a period of rising prices, as to a liberal lending policy of banks which business men abuse without being at once conscious of it. They abuse it in developing their plant too much, in making costly improvements, in multiplying expensive machinery and providing utilities which cannot bring adequate returns for some time. Merchants may lay in too large a stock of goods with the hope of forestalling a marked rise of prices, and of course also in the belief that there will be no difficulty in selling everything at a fine profit. Mistakes in sinking too much money in wholesale orders are common, just as producers are prone to reinvest their surplus or funds from banks in forms of wealth that mean nothing to consumers. However efficient the equipment bought, if its products cannot be sold to advantage, it is useless. A loss of returns on such investments soon causes anxiety among business men and initiates a movement of retrenchments that marks the beginning of a decline.

A second result of immoderate commercial credits is a growing interest charge saddled upon enterprisers, and the necessity of receiving payments from customers regularly. That is to say, on the one hand loans constitute a burden because interest must be paid and in itself calls for an increase of prices. (For all expenses must be made good by prices.) But on the other hand people in debt are likely to insist upon immediate payment by those to whom they sell. If a firm is debt-free, it may not care much whether a customer settles accounts on the dot or not; but if it has obligations of its own it cannot afford to be lenient with others. A slight lagging of payments may bother it considerably, thus leading to its downfall in the end.

Third, high wages are frequently a sequel to easy

credits. In their eagerness to succeed and "to make hay while the sun shines" employers bid for labor at rising prices. They take less capable men, take more of them, and treat them better in every respect. But to pay fair wages or more than that does not, of course, guarantee producers a market. Employees may nevertheless fail to buy in proportion to increased income. They may adopt a policy of frugality, as noted before. They may spend their money for things the production of which involves little capital, while items turned out only with the aid of huge investments may go begging, so that producers with such expensive equipment find their aggregate net profits decidedly reduced. Supposing this were the dominant attitude among the masses of wage-earners, trade would droop exactly as if wages were too low. Eventually a depression might set in. High wages as much as a spirit of economy would be responsible. The former would probably result from over-abundant credit which bankers gave largely out of self-interest. The latter would spring from short-sightedness among employees who saw prices advance, but forgot that their earnings had kept pace with them. Often that is the case. We complain of dear living, overlooking our higher income.

Fourth, aside from minor and indirect consequences of cheap credit for entrepreneurs in general, banks themselves may be punished by their reckless practices. They lend to wrong parties and lose their principal, or are unable to regain it for a long time to come. They may drag down sister institutions in a financial plunge that involves millions of dollars and proves supposedly sound investments to be anything but safe. If loans are large and partake of the nature of fixed investments, a very few banks may bring disaster upon a number of leading business houses. Failures of this sort have occasioned depressions in the past, and may do so again. But the fault here lies with the banks, not with producers or dealers, nor with the public at large. It is always a case of bad finance, of dissipating reserves and credits normally based upon them! If the ratio of cash to credit

were not so variable, if the law did not provide so generously for the expansion of credits, if reserve requirements were severer and more rigid, the temptation to lend at low rates to almost anybody would not be so great. Precautions would probably be taken to guard the interests of business by refusing loans when times seem most promising. A comprehensive and scientific statistical service could help bankers even when the ideal of a thoroughly elastic currency and loan fund is adhered to in principle.

§ 8. This however is not to insinuate that reform should come from only one direction, or that this is the place to discuss it. Much less should we infer that irregularities in our economic life can be removed altogether, so that hereafter progress will be unmarred by mishaps. On the contrary, we have already seen that a distinction must be made between business cycles in particular and the rhythm of economic life in general, and that the former is the less fundamental of the two. Booms and depressions, in other words, may possibly be averted. It is not unlikely that in the future we shall do away with the worst features of the cycle as experienced in modern days. Relief measures too may help greatly, once a disaster has befallen us. But as regards the main drift of our economic activities, when judged by generations or hundreds of years, we can hardly question the universality of a rhythm which in its very nature brings friction and exhaustion now and then. Nations like individuals must pay for what they get. There is a price for every glory, and above all, great uncertainty as to the ultimate goal for which mankind is destined.

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CHAPTER 16

CHANGING COSTS OF LIVING

§ 1. The fact that costs of living change for nations as well as for individuals is nowadays well understood and reminds us that here again we are confronted with the rhythm of economic life, with variations in wealth or income which at one time are disappointing and at another encouraging. In so far as progress may be expressed in terms of output or flow of goods and services, it evidently is halted at times or even reversed into steps backward, so that people are no longer sure of the worthwhileness of their endeavor. Like price levels and business cycles, changes in costs of living are accompanying features of a growth of national wealth which on the whole is very gratifying and illustrative of the care man bestows upon externals of appearance or prosperity. It is therefore fitting that we treat them from the long-time standpoint in order to incorporate them in the economic process as a whole. There is no other way of bringing out their ultimate significance.

If the average man were asked what a change in costs of living means, or even what these costs in themselves mean, he would probably point to price levels or to groups of prices familiar to him. He would tell us that prices rise or fall, that lately they have gone up, and consequently that costs of living have done the same thing. Costs from this viewpoint would be intimately connected with levels of prices or with the prices of particular goods and services; indeed, it might be argued that in the absence of such prices no costs of living could exist.

More especially it appears as if costs depend upon the relative change of two items, one of which repre-

sents an income, while the other is an outgo. The man of common sense points to this ratio and to the changes occurring in it. He either grants that his own income is also a price to somebody, hence that it is a question of comparing this one with all others paid by him, or he differentiates between his personal income and prices in general. The former he never calls anything but earnings or receipts for work done, or perhaps for investments and leases of real estate, while the latter he associates with things bought in the market. It is quite customary to think of prices as something relating to items bought with money, while income is identified with what we charge to others for services rendered somehow. But whatever the interpretation of the man of the street, he might stress this ratio of income to outgo, of earnings to the sum total paid out *for a given quantity of goods and services*. If it changes, costs of living would follow suit. If receipts grow more than payments for a constant amount of goods and services, costs fall, while in the opposite case they rise.

In other words, it might be insisted even by the casual observer that costs of living turn on a ratio or a budget. The ratio is the annual income relative to expenditures, provided these cover a *given* volume of goods and services, not one that varies. (That costs will change according to our buying more or less of wealth goes without saying.) It is earnings per year or for a particular kind and volume of work relative to expenses for necessities, comforts, and luxuries. As a rule earnings exceed outlays. There is a surplus known as savings. But whether this is so or not, the ratio always exists, and is the essence of costs of living. We might estimate beforehand these two items, thus getting a real budget in our private household. Or we may use the word "budget" broadly, meaning simply that a ratio of income to outgo or of outgo to income is a budget, since it deals with values flowing toward and away from us. Whatever affects this budget or ratio, then, bears upon costs of living. As the great majority of people see it, costs are this change of a ratio in pecuniary values,

one of which figures as income while the other is the outgo per time unit, the year being chosen ordinarily to measure both.

§ 2. Now, as far as this analysis goes, it is good enough and should not be rejected. But we may well ask ourselves whether it explains everything, whether it meets the criteria of nations as well as those of individuals. That is to say, we may wonder whether costs of living have a further meaning, whether they are inseparably bound up with prices or with the movements of price levels. To be explicit, must we consider changes in costs impossible if price levels remain the same, or should by chance not exist? Is there no possibility of real costs of living when monetary measurements called prices are lacking? And beyond that, what is ultimately at the bottom of costs as society sees them, what are the causes discernible to an economist, and what then is the rôle of such costs in economic life? These questions surely deserve consideration.

In approaching them from this impersonal standpoint we come across four possible definitions of costs of living, any one of which has merits distinct from those so far suggested and may serve to introduce further observations of a useful character.

In the first place, we may think of a ratio of *work done to material wealth received* or resulting from such work. If we work ten hours and get as the fruits of this toil fifteen units of things or of value, the ratio of ten to fifteen may be made the basis of an estimate on costs of living. We may accept this ratio as costs to-day, and find either work reduced or results improved. If the next time we obtain just as large a value or volume of goods by working less than ten units (hours), our costs have gone down. If we work as long, finding our product increased to twenty units, costs once more have fallen. If on the other hand we receive less for an equal amount of labor, or must increase it to secure the same number of units of value (namely fifteen), our costs have risen. No other interpretation is possible, as far as this test is concerned.

In the second place, we may think of costs *exclusively as an outgo of materials, or as a ratio of outgo to income of materials.* Suppose for instance we plant seed of some kind and later on reap a harvest without doing any further work. Granting that we may ignore the effort in planting the seed, the only cost is this seed itself. What has been sown cannot be used otherwise. This loss is a cost in the narrow sense, while the ratio of this seed sown to the harvest constitutes costs in our present sense. If we had to live entirely on this return from nature, we should perhaps define costs of living as the seed gathered in the fall relative to that put into the ground in the spring. Let the same amount of seed bring a bigger harvest, and costs have declined. Let the return be smaller, and costs have been augmented. No doubt of that.

In the third place, we may compare *gratifications received as a result of work or effort* with these latter themselves. We may, for example, run fast in order to reach a trolley car or a train. The effort has physical aspects, in that there is an outgo of energy. So this cost may be compared with the relief or exultation experienced upon attaining our goal The question is whether costs have justified themselves. So, to admit this is to confess that a ratio of effort to return exists. The labor spent upon the task is one magnitude, and the sensation or feeling of satisfaction, the other. Whether we treat such satisfactions as purely physical facts or as psychic ones, they constitute an income for present purposes. We have a right to say that there is a ratio of outgo to income, so that costs change according to what happens to this ratio. Any effort made and treated as a physical fact may figure as an outgo, the size of which determines costs of living if the return of either a physical or psychical sort declines. If we were hermits depending upon our own resourcefulness only, and had to do many things which bring no tangible results, we should certainly weigh prospective gratifications in our mind, comparing efforts with them. At one time we might be pleased, at another chagrined. A

young man, for example, is disposed to count effort lightly, while emphasizing the pleasure derived from the results of it.

Fourth, this suggests naturally that costs of living may refer to *psychic events alone.* Instead of comparing material returns with work done, or a loss of material things with the receipts of them, or work in the physical sense with satisfactions resulting from it, we may confine ourselves to psychic facts known to everybody. We may define costs of living as a *ratio of pain to pleasure.* Whatever work we do may appear to us as a disagreeable experience, as something to be avoided, while things used, services rendered to us, or idleness in itself may become an endless source of gratification, whether we live the life of anchorites or share joys and sorrows with our fellowmen. Indeed, as a rule this ratio receives much attention. In the last analysis costs cannot be anything else than sensations, emotions, or ideas registered by man who is rational, self-conscious, and ever intent upon betterment. This feature has already been admitted in our study of valuations and costs of production.[1] There can be no doubt of the reality of pleasure and pain, of the hedonistic motive actuating most people most of the time.

On the one hand this amounts to saying that pain exists in spite of the overpowering will to live. Nearly everybody feels the urge of life, desires to continue to live, struggles heroically against perils which might bring him to an early grave. We surely are imbued with the will-to-live, with the notion that life in itself has intrinsic merits, is a gift of the gods or of nature, should be courted and appreciated. Few deliberately end it because tired of it. So it seems somewhat inconsistent that we dwell on pains even while we would not be rid of them at the cost of life itself. But whatever our explanation of it, we have on the other hand also the reality of pleasure or pleasantness. To taste sugar is pleasure in a crude sense, while to rejoice in the creation of wealth or in the good fortune befalling a

[1] See Vol. I, ch. 23.

friend or stranger is to have pleasant experiences of a finer sort. Pleasure, we have seen, is either of the sensual or nonsensual variety, so that in the second case we may speak of pleasantness or of happiness, as suits our fancy. At any rate, there is the contrast between pleasure and pain which looms up continually in our thought and endeavor. Generally speaking we seek pleasure or pleasantness, and shun pain, sorrow, irksomeness, and so on.

Since this is so, costs of living may be described as a ratio of pleasure to pain, or vice versa. If the pleasant experiences grow more than the disagreeable ones, costs fall. If pain is intensified without bringing a proportionate enhancement of pleasures, costs have risen. Furthermore, we may trace costs here to either one of two causes. We may argue that they consist in our actually suffering pain as a result of doing work. Most of us dislike following our vocation. There are really few who do what they like, how and when they like it. Usually there is cause for criticism, for complaint or resentment. People deplore that they must work at all, or that they must be doing this particular thing, when their heart and mind is turned toward something else. For this reason costs may be the annoyance, the physical fatigue, the muscular or neural pain, of attending to duties. The question is whether the goods or earnings received represent a sufficient amount of pleasure to justify the painful effort. If we can obtain sufficient fun from leisure bought with money (via means of living), or if the use and possession of purchased wealth requite us for pains undergone, well and good. In that case we are content. But it may be that we think the return too slender, the trials of the daily grind too great, a burden to be borne only with resignation. So we may now and then compare pain of labor with pleasure of consumption made possible by labor. A Robinson Crusoe would be very much impressed with this budget, but even the modern man planted in the midst of a complex and highly artificial civilization knows something of it.

Secondly we may picture all psychic costs as pleasure foregone, and as nothing else. We may not care whether work is painful or not. We may argue simply that life is limited in duration, that there is much to be enjoyed, and that our opportunities should be exploited. In that case we call the inability to enjoy ourselves a cost. Life has costs in proportion to foregone pleasure or forms of happiness. It is the costlier, the greater the sacrifice in opportunities placed before us or imagined to be ours. Many people discuss costs in this spirit. To them everything hinges on what was forfeited as a result of a certain occupation or state of disability. The sick man stresses these costs every day. A business man mentions them when asked why he does not take a vacation or go to a frolic. The cost is not pain in working, but happiness given up because duty calls, because for some reason men are engaged upon definite tasks.

To be sure, we need not exaggerate the significance of this ratio of outgo to income. The four conceptions of cost here cited must not be applied too literally in our analysis of social costs of living. The psychic aspects do not appear on the surface anyway, and as for the relative variations of effort and of products resulting from it, these too are frequently ignored by us. In fact, we should not commit a great error in measuring costs from the national standpoint simply by the total income in goods or gratifications gained during a year. We might not be interested in the number of hours of work done, or in the aversion which people show to labor in any form. Usually it is the physical side which we talk about. As will be emphasized again in a moment, costs of living are understood to refer to goods and services objectively viewed and measured, not to psychic states or units of time and energy devoted to the creation of such wealth. Still, the aforesaid definitions are useful in that they wean us from a narrow monetary view of costs of living. So we may now add the following by way of closing our preliminary examination.

For one thing, *costs* of living clearly are the recipro-

cal of *levels* of living. If the former rise, the latter fall, and conversely. Levels are made up of the aggregate of goods and services received or used up in the course of time, say of a year. Whatever our net receipts in either money or in concrete items and inconcrete services, these we may consume, and our level of living is high or low accordingly. If costs of living go up, there is an increase of outgo over income. There is a smaller net return. Whether we reckon in terms of money or of goods, there is a shrinkage somehow, and this is the proof of rising costs. So this rise accompanies the fall of our level of living; or if we prefer, we can think of the rise as curtailed production, this being an active cause, while the drop in our level of living represents reduced consumption, this being an effect. So we are right in saying that levels move always in opposite direction to costs, and at the same rate.

Furthermore, we should now be willing to grant that *costs of living may exist irrespective of the use of money* or exchange, and hence also of particular rates of exchange and of price levels. It is not necessary that we have a national currency in order to feel fluctutions in real costs of living. In a sense animals have such costs. They have them because their food supply is abundant in one year, and scant the next, or more than sufficient one day, and all too sparse a little later. If they could talk and reason, they would doubtless present this view of the matter. Income and outgo would mean things or enjoyments, and sufferings respectively. Human beings certainly have had costs at all times, from the dawn of civilization up to the present moment. Savages have costs in that hunting and fishing yield a varying return at different times. Now much pain and expenditure of time and effort, now little or none! Possibly wild herbs, roots, fruits, and nuts sustain them in one region, while elsewhere they must search long, roam far, and even then get along on less. Here game abounds and is easily caught, while there it is hard to find and must be stalked with the utmost stealth.

In such comparisons we surely have types of costs of living.

Hence exchange is not logically essential to the existence of costs. We may consume everything we produce, and yet have variable costs. We associate costs with trade only because increasingly we have specialized, buying goods with what we create, or with

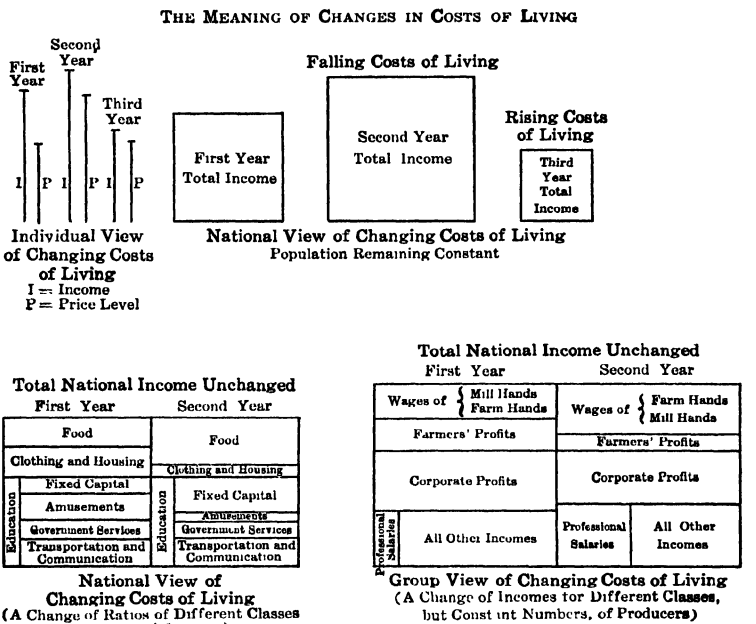


FIG. 4.

money accepted in payment for services rendered. Thus it is natural to link costs of living with money and prices expressed in terms of it. We find it difficult to dissociate the one from the other. Nevertheless, it can be done. It is suggestive to state costs in the absence of counters of currency, to say that they may change even when we do not receive money or pay it out.

Besides, it may occur to us that, so far from costs of living depending upon the existence of prices or price levels, they may move directly counter to them. It is

indeed possible that *the price level of a country rises, while costs as here defined fall.* In the United States, for instance, prices have almost universally risen during the last hundred years. But is that to insinuate that the people are worse off, that costs of living have grown when judged by levels of living? And if we grant that levels have steadily risen, can we defend the thesis that costs have actually gone up? Here is a question that must be looked into a bit more if our analysis is to be thorough.

§ 3. But before we enter upon details of explanation, let us first present the three basic respects in which costs of living may change for any one nation or for the whole of mankind. From what has so far been said we may infer the following, once the monetary side of costs is lost sight of or treated as a minor phase.

To begin with, costs of living change manifestly *when the total income of a constant population rises or falls during a time unit,* a year being the most convenient one for us to use. Whenever the sum total of goods and services produced annually declines, costs increase. We may think of this total as gross or as net, though it is best to choose the latter. If we, for example, turn out a million units of foodstuffs, textiles, motive power, and so forth, and we spend half a million to obtain these items, then half a million is the net receipt. Let this be larger or smaller per capita the next year, and there are changed costs of living for the country as a whole. That is one aspect of the situation.

Costs may however also vary, as shown in Figure 4, *because a recomposition of the national budget takes place,* because a nation produces different *kinds* of goods or services in successive years, as well as *varying ratios* of them. We must not forget that levels of living comprise many classes of things. We have concrete goods and services valued for their own sake like a physician's advice, or desired as means to ends, like those of a fireman who helps propel the ship or generate power at a plant furnishing us with electric light. Again, we have capital goods like machinery, and consumables

like meat or shoes. There are farm products, minerals, and timbers for building. We may classify things in many ways and always be impressed with the endless variety before us. Some of them we consider luxuries, some ordinary comforts, and a few dire necessities in a physical sense. These different types of goods and services too numerous to mention do not appeal to all people in the same manner. Tastes and preferences differ, and the estimate placed upon commodities or services varies correspondingly.

So it is inevitable that a marked change in the classes of goods or services turned out annually, or in the relative amounts of them made available for consumption, signify changing costs of living. When food becomes scarcer, perhaps one group deplores it and another remains fairly indifferent. When luxuries multiply wealthy folk may exult, but poor ones pay no attention. Better educational facilities are welcomer here, and a more liberal allowance of pastimes or viands there. As long as we rate things on more than one scale, we shall disagree as to what is an advance and what a step backward. There will be cries of rising and falling costs of living according to where we stand and to whom we listen. The reason for the clash of opinions is the modification of the ratios of things produced and offered for personal use. Either this, or the introduction of new articles and the disappearance of older types of wealth, figure in our definition of costs of living. Everybody hints at this fact, though we do not usually become definite in our comments.

Third, it is quite possible *to change costs of living in a distributive sense.* That is to say, the distribution of personal incomes may change so much and so quickly that particular classes of money earners are astonished by it, lament it, or are exceedingly pleased. Wages and salaries may be raised more than prices. In that case the masses are glad of the change. When pressed for an answer, they probably admit that they are better off, that costs for them have gone down.

Of course, they may not be honest even then. Lots

of people are so determined to identify costs of living with price levels that they do not care a fig for their income. Whether they receive enough dollars to offset advances in price, or not, they bewail the rising costs. They speak of them even though their income has risen as fast as, or more than, the price charged for what they buy. But if this is not their obsession, if they are candid and willing to respect facts, they consider costs of living reduced, as far as they are concerned.

Meanwhile however a second or third group may have lost relatively. Receipts may have declined when compared with the falling purchasing power of money, that is with rising price levels. And though the pecuniary standard is left out of the reckoning altogether, there may still be a loss of goods and services as compared with preceding years. Income and outgo vary continually for different classes of society, giving some more, and others less. Costs of living consequently may be interpreted in a particularistic spirit. We may refer to ourselves or to our clique, instead of taking the nation as a whole. Perhaps the majority is better off, but since we ourselves are not, we insist that costs have risen. The redistribution of incomes for individuals or social groups is thus a third type of changing costs as here discussed.

All three types go together in the vast majority of cases. For reasons to be given in the next chapter it is safe to say that no exception exists. If costs vary for society we may be certain of changes simultaneously in the three fields mentioned. The total net or gross receipts of goods or services vary for a given population in a given period of time, as compared with an earlier or later one. There is also a qualitative change in that new goods appear or old ones cease to be produced. Besides, there is as a rule a variation of the relative amounts turned out of each kind, and this likewise is sensed as variable costs of living. But in the third place these quantitative and qualitative changes for the nation (or for mankind) as a whole are accompanied by distributive changes affecting people unequally. The

combined effect of these three modes of change presents to us the spectacle of decided instability in costs, of rising or falling levels of living which are the reciprocal of costs.

§ 4. We may next therefore look for specific data to illustrate the principle here brought out. It will be serviceable to give statistics on changes during the last few decades. Any period will do for this purpose, but since data are rather scant for earlier ones, we gain by restricting ourselves to the latest period. Furthermore, there is no harm in pointing to one country rather than to another, for the principles are illuminated equally well by any or all of them. Changes of costs are widespread, and have been especially noticeable during the last century. They have made us pause and ponder. They have been the subject of investigation in many lands, and have led now and then to official measures believed to relieve the situation, to lower costs and to help the rank and file of people. The United States is as good an example as any of this swift change in costs in all three respects indicated, so we may confine ourselves to them. What applies there, has its counterpart in the modern history of most western nations, and in fact also of some Asiatic countries.

As for the price level itself, this fell slowly after 1870 and until about 1895, the resumption of specie payment and the adoption of the gold standard being a special force in this case. But since the end of the last century the level has risen without interruption, excepting only the three years from 1920 to 1923. If we make the year 1914 a base year with an index number of 100, we find wholesale prices for 1890 at 81, and for 1918 at 194. The rise of prices throughout this period, and particularly since the beginning of the war in 1898, was so continuous that people soon commenced noting it. After 1900 rising costs became a popular topic because costs were judged by changes in price level as well as by the general lag of wages behind prices. From year to year the average man felt his purchasing power shrinking even though his pay re-

mained constant. So costs of living went up in direct proportion to price rises.

Nevertheless, if we pass from these externals of monetary measurement to the things which really constitute levels or modes of living, we get a very different impression, and one which is more important as well as more accurate. The aggregate income of the American people, for example, rose even if we allow properly for the rise of prices and of population. According to one estimate [1] the *per capita* income rose between 1850 and 1910 from $95 to $332, while the price level (wholesale) fell from 139.2 to 126.5, if we make the decade of 1890-99 a base of 100. In other words, income measured in purchasing power increased even more than is suggested by the difference between 95 and 332. Again, between 1890 and 1918 income per head of the population rose from $192 to $605, while the wholesale price index rose only from 113.6 to about 270. That is, roughly speaking, income per head was considerably more than doubled even though we make allowance for the remarkable upward trend of prices after 1900 and especially during the first few years of the war. Whatever the indications of price level, actual income in goods and services grew continually, and not least of all in the very years when costs of living were felt to be rising. If then we wish to explain this seeming contradiction of facts before us, we must in part analyze them further, but in part also note the difference between short-time and long-time, individual and national views. As we shall see in the next chapter, both these items play a rôle in our interpretation of costs of living.

But to return to our illustration.

As regards the recomposition of the American income during the last generation, evidence for it is so abundant that one hardly knows how to choose from it. People of middle age or more advanced years have themselves witnessed this transformation which was nothing less than revolutionary. Not only in the United States, but in the rest of the world, great changes occurred;

[1] King, W. I. *Wealth and Income of People of the United States*, p. 129.

indeed, they came so fast that what was new and up to date a generation ago is already antiquated and in large part no longer desired. New goods have continually replaced older ones of an inferior sort. Variety has enormously increased and correspondingly made choice more difficult for consumers. The flow of tangible goods, and particularly of capital used in production, has grown more during the last half century than ever before. But services wanted for their own sake have also become more plentiful, so that we can no longer judge the national income by the output of farm, mine, or factory alone.

Among new classes of goods and services that did not exist fifty years ago one might mention the telephone, phonograph, dictaphone, calculating machine, cash register, electric light and traction, the bicycle, wireless, radio, the automobile, tractor-plow, aeroplane, player-piano, moving pictures, refrigeration in moving vehicles, and an endless array of machines, tools, utensils, and scientific apparatus which mean almost as much to the average consumer as to particular producer classes who are ever on the lookout for technical improvements and lowered costs.

Foods have been bettered by careful selection and propagation of superior varieties. Fruits and vegetables of many kinds may be had the whole year around because of rapid, regular, and cheap transportation which covers every ocean and draws upon every clime for a contribution to our table. Fresh meat has largely displaced salted or smoked meats. Dealers grade their wares more nicely, standardizing by brands and catering to fastidious people to whom the best is just barely good enough. Household duties have been made easier by a number of new contrivances, including the vacuum cleaner and better facilities for cooking, washing, and the repairing of articles of wear.

What may be called the qualitative aspects of the change in our output by *volume* are therefore just as striking as the quantitative ones of which a word presently. The content of our social income and life has

changed because of these introductions of new forms of wealth, or because of improvements in the make-up of old kinds of things such as tools, machinery, scientific apparatus, household utensils, and so on. In every respect the change has meant improvement rather than a loss of workmanship or usefulness. What we buy nowadays is better than what our grandparents bought. They may have had the same kind of article, as for instance, a stove in the kitchen or a knife or wall paper or plumbing or fruit on the table or shoes or linoleum or carpets on the floor. Many of these manufactured goods were already on the market even a half century ago. But they were less convenient to handle, less durable or prepossessing in appearance, heavier or clumsier, not so precise in the work they did, or made perhaps of coarser materials. So the qualitative change counted even when the classes of goods turned out remained the same. Improvements related to details which, taken together, proved most important.

Various kinds of services also improved in proportion, for in the first place it is obvious that workers could not fashion a superior article unless they were trained better or had additional knowledge of a practical sort. The general run of employees in factory or on farms had to be versed more thoroughly in their art than men of an earlier age. But this meant in the second place that the same advance which helped manual workers was reflected also in labors not yielding a tangible product. Transportation, communication, and travel thus registered many changes for the better which all of us appreciate the more the farther we look back comparing them with practices of a hundred years ago. Transportation, we have already seen, became rapid, regular, and cheap. An enormous volume of trade could be moved by the new technical means invented since the Industrial Revolution. Travel became much safer, and of course also more enjoyable and convenient, especially for trips from one country to another. Steamers began to keep their schedules almost as punctually as trains on land. Sightseeing became a common pastime for

men of quite limited means. Marked advances were made in the training of teachers, in the use of apparatus for demonstration and experimental work by the students. Instruction improved noticeably in all countries and brought as much of a qualitative change here as in any other profession. High-school and college curricula show the change of standards, most of them for the better, though not perhaps all of them. Medicine became a new science altogether during the last half century. Epoch-making discoveries have lengthened life, prevented diseases, cured patients who formerly would have died a miserable death, taught people everywhere how to avoid accidents or illness or find relief afterwards. In matters of diet food values were emphasized which formerly were quite unknown or not given serious consideration. In the sphere of sanitation our water supply, the building and care of streets, the disposal of human waste, and quarantine measures have been improved. But not only this. Municipalities have greatly enlarged their range of regulation, and this has brought such new features as public parks, museums, libraries, fire protection, musical entertainments, and so on. Light and cleanliness, safety on the streets, pure water and air, urban beautification and community centers for young and old—these are some of the features neglected in olden days, but now emphasized by public authorities.

Even amusements have felt this trend toward higher standards and greater efficiency. Indoor and outdoor sports are one proof to this effect. But the most marked advance has occurred perhaps in musical and theatrical entertainments which a generation ago played but a minor rôle in the life of the masses, and now are enjoyed in liberal doses. In the "movies" this tendency toward greater variety, more startling scenic effects, extreme lavishness and a gigantic scale of operations is given wide comment. The paraphernalia of only a few decades ago are now utterly inadequate and useless. What is needed is an entirely new equipment and an ever increasing display of things other than the actor's art

itself. An up-to-date concern proudly advises us that it spent hundreds of thousands of dollars upon a single "picture" presented on the screen. We read of thousands of people engaged for a mob scene, of fabulous sums spent for gowns and furnishings, of the reconstruction of whole streets for the sake of "atmosphere" which gives the spectator a vivid impression of life long past. The ingenuity of engineers, electricians, and directors is as vital as the personality of the actor, perhaps more so. Photographers vie with mechanics and advertisers in attracting the public. In short, the demands of leisure and of distraction have become as severe as those of keeping body and soul together. Producers aim ever to please the majority and to improve their technique as well as their products.

§ 5. But if all this is so, if qualitative changes in the shape of new kinds of goods or of superior workmanship have helped materially to change the composition of our national income, we should expect of course also a corresponding change in the ratios of principal classes of goods turned out by people. Not only in the United States, but abroad in all progressive countries, the relative output of farmer, miner, and industrialist has risen or fallen, and besides, an increasing percentage of the population,—or we may say of those gainfully occupied —has found employment in fields which do not create tangible commodities. We need only to look at Tables 4 and 5 in order to see how greatly the production of goods and services in this country has changed since 1890. Finished articles and final services to consumers improved and appeared in new proportions of annual output because the primary industries and the realignment of labor forces in many occupations made this possible.

Between 1889 and 1919, for instance, the output of three principal groups of material wealth was in this country as stated in Table 4. Though some allowance must be made for our having chosen only two *single* years (instead of, say, triennial averages), we may ignore the possible error resulting from it because of the

long time interval between our two dates. Furthermore, we need not take the figures to be accurate within more than ten or fifteen per cent. It is not necessary that we become extravagant in our claims. But the fact remains that in the three chief fields of production of raw materials, *taken as a whole,* output more than kept pace with the growth of population, while for each one the percentage increase was as indicated. The first class represents *primary* crops, that is, produce of the soil used in industry or fed to man and to domesticated animals. *Secondary* materials are (by comparison) meats, hides, dairy products and so on. But these may well be ignored since they make no great net contribution to the total agricultural output. So our figures, covering yields for sugar, cotton and cotton seed, all cereals, tobacco, fruits and vegetables, and forage crops, are fairly indicative of the main trend. We find an increase of about 70% as against one of 60% in population. Agricultural produce therefore more than held its own, gains being especially marked for forage crops, tobacco, and sugar. As for the second group, namely the output of lumber, it grew only about one third as fast as the population, while the third group consisting of soft and hard coal, cement, zinc, lead, copper, stone, petroleum, iron ore, and phosphate rock, increased about four times as fast as the population.

As far as these three basic groups are concerned, then, our national income changed very much because some raw materials became relatively scarcer and others more plentiful. The output of food presumably declined per capita, and certainly formed a decreasing percentage of the total national output, while things usually designated as mineral products became much more abundant, thus providing the wherewithal for buildings, manufactures, and activities of various sorts. But not only this. What is equally significant, the percentages of people in the main occupational classes changed somewhat in proportion to this new ratio of material goods. As is seen from Table 5, people gainfully occupied in agriculture made up a much lower percentage of the aggregate num-

TABLE 4

PRODUCTION OF RAW MATERIALS IN THE UNITED STATES, 1889 AND 1919
(Illustrating Changes in Ratios of Materials and Goods Made from Them)

	1889	1919	Increase
Primary Crops, Pounds....	382,410,720,000	651,988,860,000	70%
Lumber, Board Feet.....	33,000,000,000	40,000,000,000	19%
Mine Products, Long Tons.	211,175,000	739,424,000	250%

Growth of Population = 60%.
Increase of *improved* farmland = 40%.

Note: Primary crops are those of the soil, while secondary crops would comprise meats, dairy products, eggs, hides, etc. The bulk of secondary products results from feeding primary ones to animals, hence is not for the most part a net addition to farm output.—Mining products here include coal, copper, lead, iron ore, stone, zinc, phosphate rock, petroleum, and cement.—The change in the output for these several products suggests also a growing volume and variety of manufactures or of building activities, hence bears directly upon the trend of levels and modes of living of a nation.
Figures compiled from United States census data, etc.

ber of money earners in 1920 than in 1870, and this trend is shown also in a comparison of the years 1890 and 1920. Mining on the contrary took a growing part, while manufactures and the mechanical trades absorbed a distinctly larger portion at the last census (1920) than some decades ago. But even if we add these three groups together, thus taking care of all producers of *tangible* wealth, we still find the percentages decreasing. In 1870 it was 73.2% according to estimates here made, while in 1920 it was only about 60%. In other words, at the same time that the output of material wealth was being increased greatly in excess of population,—mining and manufactures standing out prominently,—a growing amount of labor energy was being set free for pursuits elsewhere. Men and women found positions more and more in fields that did not turn out concrete commodities. The public utilities of light, power, traction, and communication enlisted a rising percentage of these occupational armies. We find the gainfully occupied in transportation and trade to have made up only 13.1% of the grand total in 1870, and 25.1% fifty years later. In public and professional services too the percentages rose noticeably Only domestic servants and others catering to personal wants became less numerous,

a decline however which is offset by the gain of *all* money earners on the total population of the country. Thus, if the gainfully occupied constituted about 35% of the entire population in 1870, and about 41% in 1920, a slight loss for domestic services (as shown in our Table) means really a constant percentage on the whole population.

TABLE 5

THE DISTRIBUTION OF OCCUPATIONAL CLASSES IN THE UNITED STATES, 1870 AND 1920

(Illustrating Changing Costs or Levels of Living)

	1870		1920	
All Gainfully Occupied.....	12,500,000		41,600,000	
Percentages for Classes:				
In Agriculture, Forestry, and Fisheries	47.7%		26.3%	
In Mining	1.4%	73.2%	2.6%	59.7%
In Manufacture and Mechanical Trades	24.1%		30.8%	
In Transportation and Trade, including "Clerical" Help.....	13.1%		25.1%	
In Public Services, including Military	0.7%	26.8%	1.9%	40.3%
In Professional Services.....	2.6%		5.2%	
In Domestic and Personal Services	9.9%		8.2%	
Total	100.0%		100.0%	

Note: Some changes have been made in the classification given by the Census reports, in order to make the data more nearly comparable, and the percentage for Agriculture in 1920 should probably be raised to 28-29% because the Census was taken in January, that is, at a time when employment is usually somewhat below the annual average. Percentages for some of the other classes would in that case have to be lowered correspondingly.

In the main, then, the change of ratios of different producer classes was pronounced during the period under consideration, and this becomes especially evident if we go into details. Between 1870 and 1920, for example, wholesalers and retailers more than kept pace with the population which grew about 175%, teachers tripled in number, while physicians and dentists increased over 700%. Again, for the shorter period of 1890 to 1910 or 1912, we find a 50% increase of population, but *net* increases for certain branches of industry

or occupational classes as follows: For the ton-miles carried by railroads, 231%; for postal receipts, 312%; for the number of employees in steam laundries, 165%; of journalists 124%, of college students 290%, of barbers and hairdressers 124%, of watchmen and policemen 180%, of janitors and housekeepers 155%, of bookkeepers 200%, of commercial travelers 180%, of salesmen and women 230%, of plumbers and fitters 174%, of milliners 117%, of clerks and typewriters or stenographers, 170%; and so on. In all lines of business the increase of people employed productively and earning money, but not turning out concrete goods, was marked. National income came to consist more and more of services of this sort, even though the flow of tangible materials likewise grew steadily. Indeed, it might be said that the recomposition of our national income involved a change of ratios for different classes of services rather than for different classes of raw materials and manufactures. Costs of living changed in this sense mainly, and because of it must be admitted to have fallen, as the quality and variety of non-necessities became more gratifying from year to year.

§ 6. Yet there occurred also a redistribution of personal incomes, as might indeed be expected. This third fundamental source or definition of variable levels of living accentuated the general instability so far pictured. Not only for the nation as a whole, but equally for particular groups a transformation took place, as may easily be proven by a few figures.

§ 7. If we look first at our four "factors of production", the trend between 1870 and 1910 was as follows: In the earlier year 48.6% of the total social dividend went to labor; 12.9% to capitalists; 6.9% to landlords; and 31.6% to enterprisers of every possible kind; while in the later year the shares amounted to respectively 46.9%, 16.8%, 8.8%, and 27.5%.[1] Both laborers and entrepreneurs therefore lost slightly during the period in question. But we know, of course, nothing of the number of people in each group, nor must we forget that

[1] King, W. I. *Wealth & Income of the United States*, p. 158.

one and the same physical person may combine several shares. "Factors" as here cited are abstract terms or broad groups whose membership may vary even while the total going to each remains the same. Besides, we have seen already that one and the same person may draw from several sources, uniting rent and wages, or interest and profits, or all four shares. Consequently factorial distribution does not tell us much for practical purposes.

More serviceable is the comparison of earnings for the *average* member in any one of the four factorial classes or in some other occupational group, and still more so a study of the distribution of the entire national income among various percentages of the whole population. If we find, for instance, that between 1850 and 1910 the annual wages of the average employee rose from $204 to $507, while the average self-employing person increased his profits from $443 to $899,[1] or if we hear from another investigator that between 1890 and 1910 the income of the average worker rose only about 27%, while that of the average enterpriser more than doubled [2] —if we get data like these, we have at once a practical illustration of how incomes may be redistributed among different economic classes giving them divergent views of the trend of costs of living. In this sense, too, interest attaches to the estimate that between 1909 and 1918 the average annual earnings of all employees in industry increased from $626 to $1078, while for farmhands it rose nearly 100%, for miners, railway employees and those engaged in shipping more than 100%, and for employees in other public utilities and government services less than 50%.[3] If these figures are correct—and we have every reason to consider them among the most accurate ever compiled—costs of living changed at different rates for the classes mentioned.

Most useful however is an inquiry into what percentage of the total national dividend is received by what

[1] *Ibidem*, p. 168.
[2] National Bureau of Econ. Research, *Income in the United States*, 1921.
[3] *Ibidem.*

percentage of the population, or of all people gainfully occupied, and how these percentages vary from time to time. Such a distribution of personal income is always instructive because it may be taken as a rough index of the concentration of wealth and income at any one moment. We feel that costs of living have risen for the majority if their share of the grand total decreases. We perhaps believe this even when we are told that the national income itself has grown greatly and has more than kept pace with the increase of population.[1] Between 1890 and 1918, for example, 88% of the total population in this country reduced their portion of the total national income from 65% to 61.6%. Furthermore, 1.6% of the population claimed 10.8% of the whole income in the earlier year, but about 16% at the later date. Now, though these two estimates [2] are not made by the same parties, they are sufficiently reliable to illustrate our point. If we had not learned that the per capita income of the American people increased much more than this inequality in distribution, we might read a rising cost of living out of the comparison for the majority of money earners. At any rate, it is obvious that a redistribution of personal incomes may determine our view of the trend of costs of living regardless of what changes occur in the total national income or in the make-up of it, as judged by its various kinds of goods and services and their ratios to each other.

§ 8. If the United States, then, may serve as an example of general tendencies throughout the western world, we find costs of living to have been quite unstable during recent decades. But perhaps this feature in itself may be taken for granted. So we may restate instead the conclusion that real costs may fall at the very

[1] Strictly speaking we should then be wrong, for if the entire nation is our standard for gauging prosperity, a per capita increase of income can only be desirable. We should accept it as proof of a rising level, and of falling costs, of living. However, it might be that because of a sweeping redistribution and equally pronounced further concentration of wealth this advantage for society as a whole does not appeal to particular groups, or to large masses of people.

[2] Estimates of two authorities mentioned under footnotes [2] and [3] have here been used together.

time that price levels move upward, and that they change usually, if not always, in all three respects discussed above. There is a rapid change in totals or per capita income, in the composition of it, and also in the relative amounts going to different classes of society. Precisely because these three types of change coincide, costs of living seem to vary so quickly, at so many points in the life of business men or consumers. It remains therefore only to ask *why* costs vary continually or periodically, what the final causes back of this variation, and what this means to social economies when viewed from a long-time standpoint.

CHAPTER 17

THE CAUSES OF CHANGING COSTS OF LIVING [1]

§ 1. After what has been said about the nature of costs of living it is not supposed that we can explain changes by a single set of factors. Rather, it is necessary to distinguish three different lines of explanation to correspond with the three principal phases of change mentioned earlier. For the most part the causes are not the same in all three fields. Some factors explain why the total annual income of a nation grows or contracts. Others account for the change of ratios of goods and services—what was presented as the recomposition of the income; and in the third place there are causes peculiar to the redistribution of income among different groups of producers or percentages of the whole population. To show why costs of living are unstable, we must consider all three types of conditions and what is back of them; but of course, the things that explain a change at one time need not always be the same. In details each epoch of human history will have its own variables. It is only with respect to major principles that an explanation once given will hold for all countries and periods.

In the *first* place, a change in the percentage of the productive population may affect income to some extent. As was shown elsewhere,[2] it is possible to increase or decrease the number of producers relative to the whole population. At one time only thirty people out of each hundred may contribute something toward the national income, thus offsetting their consumption by a product of some sort, whether it be tangible or not. At another

[1] Some of the data here mentioned are found also in ch. 10, but they serve a different purpose, as the text shows.

[2] Vol. I, ch. 10.

time perhaps nearly fifty per cent may be productive in some measure. It depends upon social ideals, upon moral norms, upon the distribution of ages in the population, and so on. This latter item, we saw, plays quite a rôle in the destiny of nations. If the young preponderate, a nation is strong, *ceteris paribus*. If a large percentage is above fifty years of age, this is a detriment in some respects, though for the moment one may not be impressed with its significance. The national income therefore may conceivably be increased by a high net birth rate or by a steady influx of youthful immigrants from abroad. If in this way we increase the number of workers of ages between fifteen and fifty, a larger labor power results. Men between these ages are at their best as producers. They need not work longer hours nor be better trained than an earlier generation. By the mere fact that we have substituted low ages for high ones we have gained in productivity, and thus in annual income. That is quite probable.

Again, regardless of a change in age distribution we may prolong hours of work, or reduce periodic idleness such as comes with strikes, lockouts, and so forth. Here too is a chance for our influencing the national output. If we worked ten hours a day instead of eight, this would mean a greater stream of goods and services, supposing nothing else changed. Similarly the reduction of industrial accidents and of strikes help to raise the allowance of wealth for the average person. The more we work, the more we have. We may not be more efficient. Our output per day or month may be the same. Our stock of capital also may be the same. Nevertheless, working a larger number of days per year, we increase our wealth. There is no doubt of the possibility of such improvements which have little or nothing to do with costs of production strictly viewed.

§ 2. But if we overlook these possible minor causes of a change in national income, our next big factor is a change in *rates of output* as ordinarily defined. We must realize that costs of living grow or decline according to a rise or fall of *net* costs of production. The more

proficient a people, the higher its level of living. That is the first law we must understand in studying our problem.

Costs of production vary chiefly with natural resources and human knowledge. If the soil gives out gradually, farmers have less to give. There is no way of compensating mankind for this loss of primary materials in foods and rawstuffs which are the basis of every other industry or art. Either the deficiency must be met by importations from foreign lands, or the nation suffers. If on the other hand new worlds are thrown open to the farmer, he may help appreciably in increasing the grand total of social income. The age of Columbus and Cook was memorable precisely because it revealed new continents and treasures beneath the surface of the earth. Until then costs of living had been fairly stable. Methods had been exceedingly primitive, judged by modern times, and therefore could not easily exhaust the soil. Moreover, there was for a long time, enough spare land in the Old World to offset losses through deterioration, or to meet the slowly rising pressure of population. Of minerals there were practically none. Timber was used sparingly, and industry in the narrower sense was of very modest proportions. Under such circumstances the income of people could well remain stationary, or nearly so. Since resources changed little and science had not yet been born to disclose splendid opportunities for the producer, a change in any field was unlikely. Rates of return were no more uniform than levels or costs of living in general.

But with the discovery of vast virgin tracts agricultural produce could eventually become cheaper. If manufacturers could improve the tools of the farmer, there would be a new epoch in the economic life of nations, and this epoch began with the eighteenth century. The clearing of a vast wilderness and the operation of rich mines gave to the white man fabulous wealth. He could produce more in less time. He could add to the volume per man or per average amount of time spent at work. He could provide for a growing number of people in

all parts of the world, and yet be better off than ever before.

Furthermore, inventions of a mechanical and scientific character reënforced the effect of the territorial expansion inaugurated by voyagers from Columbus to Cook. Natural science achieved wonders because it proceeded experimentally and trusted the senses rather than the memory or the assertions of antiquity. In this way new truths were unearthed and made applicable to the problem of production, communication, transportation, and so on. Whenever research lays bare laws regarding the behavior of matter or of organisms, the entrepreneur is likely to hear of improvements, and these in turn tend to strengthen the flow of goods and services sold in the market. Science here accomplishes even more than sheer mechanical ingenuity can promise, although this too has in the last few generations contributed magnificently to the income of nations. Indeed, every addition to our understanding of physical and human nature, of flora and fauna, of this planet of ours and its place in the universe can have only salutary effects upon the economic life of society; for income is the result, not of ignorance or lazy indifference, but of knowledge and initiative brought to bear upon practical questions.

It must be noted, however, that costs of production for present purposes signify *an outgo of materials and of energy, not one of moneys.* When we say that in principle every scientific discovery or technical improvement helps to reduce costs, just as a depletion of resources or the loss of the industrial arts reacts unfavorably upon the level of living of mankind, we refer to amounts of labor used up directly or indirectly. From the social standpoint cost of production is exactly this outlay of material wealth already on hand, and of human or other energy which must be replaced regularly if the flow of income is to continue. If a farmer, for example, has to use more machinery or seed or workers or accessory supplies in one year than in an earlier one, in order to grow a *fixed* amount of wheat on an acre of soil, he may

rightly speak of diminishing returns. Costs have gone up. But if instead of that he merely spends more money, paying his farmhands higher wages or paying more for his plough or reaper, this added expense need not worry the nation as a whole. Even though expenses in the pecuniary sense have risen, the net output by weight or volume, per acre and per equipment or seed used may be as great as ever. There is no diminution relative to the total time employed, to the volume of materials, or to the quantity of human and artificially generated energy used.

The only difference is the higher rate of pay for labor, or for machines, or for whatever else we suppose to have grown dearer. That is to say, expenses of production here point to a fact in distribution, to a gain by particular groups, to an increase of income in one quarter, when elsewhere it has declined somewhat. Farmhands may benefit by the higher wage. Manufacturers of ploughs or other implements may rejoice in higher prices charged to farmers, and hence perhaps in larger net profits. If these two parties consume none of the crop which is sold for as much more probably as the rise in expenses, they are so much the better off without a doubt. Only those eating the wheat are affected, since they pay more for it without adding anything to receipts in their own occupation. Thus somebody feels the effects of a rising cost as defined in our illustration. But whatever these be, we cannot consider society as a whole to have lost anything by them, for it is interested only in rates of physical output, not in the slight changes of income among special classes or among all members taken in the aggregate. Costs invariably refer to material, time, and energy from a national standpoint, not to monetary standards of measuring values.

Again, in talking about costs of production we do well to distinguish between those applying to the creation of concrete forms of wealth, and those incurred in the course of marketing them. In discussing agricultural costs, for instance, we may find that crops are smaller than formerly, that *on the farm,* rates of return have be-

gun to shrink. But meanwhile we may find improvements in transportation, communication, and banking, and these may point to a marked decline of costs. Hence, if we try to estimate the trend of costs of production we must be careful to state whether the whole process from the cultivation of the soil to the sale of its produce is meant, or whether we are thinking of harvests or of marketing costs alone.

§ 3. If we are clear, then, on the exact meaning of variable rates of return upon costs of living, we may pass over to a few particulars on the trend of costs of production in the United States during the last few decades. We may again confine ourselves to one country for illustrative purposes, as was done in the preceding chapter, for the facts here are typical of what has happened elsewhere or may happen at any time if costs of living rise or fall.

In this country levels of living have risen decidedly during the last century and a half because on the whole costs of production fell. They fell rapidly and steadily for public utilities, manufactures, transportation of every kind, and for the operation of quarries. They declined in most mines turning out minerals, coal, or gas and oil, partly because of new discoveries and partly because of astounding progress in engineering and the manufacture of machinery. On the other hand, in some branches of mining we note a tendency toward rising costs because of thinner veins, less pure ores, deeper beds which could only be reached by dint of harder work and more expensive equipment, and also because of a certain amount of misplaced investment and barren speculation which played less of a part in undertakings of earlier days. Thus costs irrespective of higher wages or price level movements rose, if we may judge by evidence for recent decades.

Timber became much scarcer and had to be supplied at rising costs because stands grew thinner and moved steadily away from saw mills, manufacturing plants, and the markets of the final consumer. If the output in this country increased between 1890 and 1920

only about 20%, while the population increased 60%, we must attribute this difference mainly to rising costs.

Fisheries too lost in this race with population, for hauls became less satisfactory or had to be engineered at a greater outlay in materials, time, and skill. Some species have already become extinct, while others appear in much smaller schools than formerly. Rates of return have dwindled for these reasons. But the main field of production is, of course, agriculture, and so we naturally ask what the trend has here been during late years. Aside from the fact that its yields per acre and unit of cost must affect profoundly the income of nations, what may be said about tendencies among us?

TABLE 6

CHANGING COSTS OF PRODUCTION IN AMERICAN AGRICULTURE FROM 1889 TO 1919

	1889	1919	Approximate Increase
Number of Farmers and Farmhands[1]	8,960,000	11,950,000	33%
Number of Horses and Mules[2]	16,300,000	25,300,000	55%
Acreage of *Improved* Farmland	358,000,000	503,000,000	40%
Commercial Fertilizer[3]	$38,500,000	$326,000,000	675%[5]
Machinery and Implements[4]	$495,000,000	$3,600,000,000	590%[5]
Buildings exclusive of Homes[6]	$950,000,000	$5,750,000,000	355%[5]
Primary Crops (Pounds)[7]	382,400,000,000	652,000,000,000	70%

[1] For 1919 one million farmhands have been added to the number given in the Census report, since this census was taken in January, and the earlier one later in the spring, so that official figures for 1919 are probably below normal.

[2] It is assumed that horses and mules were used almost exclusively for field work.

[3] It is assumed that the percentage of all farmers returning expenses for fertilizer was practically the same in both years. Furthermore, manure from live stock on farms is not here included.

[4] The value of machinery, etc., and of buildings, is given here for the same reason that numbers of draught animals were given. Data on wear and tear which constitute the real cost for any one year are not available, hence must be replaced by data on capital values.

[5] The percentage increases for fertilizer, machinery, and farm buildings have been made comparable by allowing for price rises since 1889, index numbers of the Bureau of Labor Statistics (United States government) having been used for this purpose.

[6] The figures for buildings represent one half of total values given by the Census Bureau, homes being excluded as values not used productively.

[7] For definition of Primary Crops see Table 4 of this volume.

Table 6 is designed to answer this question and to suggest how changing costs of production may bear upon costs of living, whether other fields yield more richly in the meantime or not. If we accept for present purposes our earlier estimate of primary crops for 1889 and 1919,[1] we may compare this with six items indicative of farming costs, namely, labor spent by farm owners and their employees, labor given by draft animals, horses and mules figuring chiefly, the total acreage of improved farmland, commercial fertilizer, buildings devoted to the growth or storage of crops or to the care of animals, housing of machinery, to dairying, and so forth, and finally, machinery of all sorts employed in connection with farming itself.

Of course, these six factors are not the only ones involved in costs. We should wish to include seed, fuel, accessory supplies, and so forth. We might prefer operating costs in the use of horses, buildings, and imple-

TABLE 6 A

ACRE YIELDS OF PRINCIPAL CROPS IN THE UNITED STATES, 1886-1922

(See Yearbook for 1922, published by Department of Agriculture, Washington, D.C.)

Crop	Annual Averages	Yield per Average Acre	Increase(+) or Decrease(—)
Corn	1890-99	24.5 Bushels	
	1920-22	29.6 Bushels	About 12% +
Wheat	1886-95	12.7 Bushels	
	1920-22	13.4 Bushels	About 6% +
Oats	1890-99	26.1 Bushels	
	1920-22	29.3 Bushels	About 12% +
Barley	1890-99	23.4 Bushels	
	1920-22	24.0 Bushels	About 3% +
Rye	1890-99	13.9 Bushels	
	1920-22	14.1 Bushels	About 1% +
Potatoes (Irish)...	1900-09	91.4 Bushels	
	1920-22	101.0 Bushels	About 9% +
Hay	1886-95	1.18 Tons	
	1920-22	1.5 Tons	About 12.5% +
Tobacco	1899-1901	770 Pounds	
	1920-22	777 Pounds	About 1% +
Cotton	1886-95	177 Pounds	
	1920-22	147 Pounds	About 17% —

[1] See Table 4.

ments to figures on capital, and we might think the amount of work done or the number of hours spent at work by farmers and their help a more accurate measure of cost than the change in the number of farmers themselves. Even more to the point, perhaps, we must allow for error in the official reports here used, and we must also remember that the individual years of 1889 and 1919 may not have been representative of each end of the entire period. Comparing these dates, for example, we find the improved acreage to have grown 40%, and the output of primary crops 70%, leaving a net increase per average acre of 30%, but when we use averages for successive years such as appear in Table 6A, we find the yield per average acre much less pronounced. For all the crops there listed it amounts to probably less than 15%, so that the net gain over costs measured physically or in terms of money is not as great as one infers from Table 6.

Nevertheless, taking our data with a grain of salt, we may still claim that rates of return rose slightly during the period in question. If we judge by costs relative to output, there was a net increase which helped to lower costs of living, or at any rate did not interfere with a steady rise of the general level of living. What would have happened if American farmers had tried to increase the *gross* yield per average acre considerably, is a separate question. We cannot be so optimistic in facing it. But since net rates of return for present purposes may be calculated by deducting costs from any acre yield whatsoever, we find the general trend as stated. Agriculture benefited greatly by the introduction of superior means and methods. These latter were industrialized, so to speak. The use of artificial motive power and of superbly efficient implements economized human energy, costs falling in proportion. This in itself was decisive. But it need hardly be added that harvesting methods also improved wonderfully. Indeed, if the gain in this branch of farming is added to that in tillage itself, rates of return on American farms rose perceptibly. Hence it is correct to maintain that so far

returns in food or raw products increased sufficiently to stimulate enterprise or to raise standards of living among the people.

§ 4. This direct relation between rates of return and the aggregate output of goods or services by a given number of people should teach us also to connect them with the qualitative aspect of changes in national costs of living, that is, with the recomposition of the total income. If new goods appear and old ones lose importance, if relative amounts of particular classes of wealth and services change, the reason again lies partly in varying rates of return.

For one thing, the supply of different classes of *raw materials* reflects the trend of rates of return. If a certain mineral must be produced at a rising cost, it is likely to become scarcer. Though theoretically we might employ more capital and labor to offset the loss in rate of net yield, in the long run this does not avail or is not attempted. Relative to another mineral turned out at a falling cost the first one figures less prominently in the national budget. Only if importations can easily make good the loss at home is there no change in ratio; but this principle cannot be applied to all items at all times. So in general the result is as stated. On the other hand, if rates of return rise rapidly and for quite a while, the item in question probably becomes more plentiful. Farmers, for instance, take up new land as fast as they can. Virgin forests are stripped of their timber. Mining concerns invest money in research, geographical explorations, and land, in order to bring riches immediately to the light of day. In this way rising returns determine relative amounts of things entering into income or costs of living.

Frequently investors and financiers are responsible for this derangement of ratios because they associate rising physical returns with rising rates of profit. During the last half century, for example, agriculture was neglected in the United States, while almost every type of industry or commerce received a generous support. Europeans were more willing to buy our industrial stocks and

bonds than mortgages on farms. Even if farmers had tried to finance themselves by corporate organization or by an issue of long-time bonds, they would have had difficulties apart from those inherent in the nature of their business. American bankers themselves accommodated the grower of produce less liberally than they did merchants and industrialists. They charged him higher rates and were fairly indifferent to his pleas. In general this followed from the circumstance that values are less stable and negotiable, and also from the relatively low profits of agriculture. Rates of return judged by yields per unit of labor and equipment did not increase, or if so, did not keep pace with improvements elsewhere, and as for pecuniary returns, these were always small compared with those of manufacturers, lumber and mining concerns, and so forth. So the *comparatively* high costs of production on farms militated against a development of agriculture proportionate to that of other primary industries. As the American consumer saw it, there was relative stagnation. Food supplies formed a shrinking part of the total national income, and for some years also of the per capita income. The change in ratios of raw materials, including foods of certain kinds, was brought about by this neglect of a field lagging in the rate of progress, or suffering from the overshadowing advance of other arts.

But even more noticeable is of course the effect of changing costs of production upon *secondary industries*, upon ratios of goods and services turned out with the aid of these primary materials or sources of power. Invention here has its greatest victories. In its wake come new tools and machines, scientific apparatus, instruments of measurement, engines generating power, and accessories too numerous to mention. During the last half century these appliances have made their appearance everywhere, in offices and banks, in the laboratory of the scientist or physician, in stores selling groceries or meats, in theatres and other places of amusement, in the shop of the cobbler, tailor, or baker, in gigantic mills, on the farm where the harvest depends as much upon imple-

ments as upon soil fertility, and in short in every nook and corner of the world of business.

One result of this remarkable and unprecedented spread of enlightenment in modern times has been the prominence of *capital goods* in the annual flow of goods. While among primitive people consumables constitute nearly the whole income, higher stages of civilization show a growing percentage of equipment which serve as means, but not as ends in themselves. As was noted on an earlier occasion, a large part of the annual output of nations to-day consists of buildings, engineering projects, transportation facilities, machinery and tools which do not enter into the budget of private persons. They are essentials, but not from the standpoint of consumers. They may be called a burden therefore, or a disadvantage incidental to the increase of consumption goods as such. These latter are being supplied more liberally per capita of the population, but meanwhile technical aids form an ever growing portion of the total social wealth or income.

A second consequence of this triumphant march of science and mechanical invention is the very variety of enjoyable goods and services of which evidence was furnished some time ago, and this rests not merely on the introduction of new, tangible forms of wealth, but also on the liberation of human energy. Technical progress has brought labor saving devices, and these have reduced the number of workers in one field, so that elsewhere they might resume activities. If it takes fewer farmhands or miners to turn out a given quantity of materials, more men are available for the rendering of services not giving us concrete wealth. The percentage of people employed in the public utilities, in government services, education, research, amusements, and in domestic services could increase for this reason during the last hundred years. These occupational classes gained on almost all others. They provided gratifying forms of income not formerly of any moment. In this sense too a marked change in rates of return affects costs of living.

Not all of its features however may be due to this

factor. There must be noted also the effect of unstable valuations among consumers. Even if costs did not fluctuate, ratios of goods and services would.

Looked at from one standpoint this instability is due to our economic environment. Indeed, it has been said that religious and moral ideals, systems of philosophy, and legal norms depend largely upon the means or methods of production and exchange. So it would seem as if we must trace variable demands back to what entrepreneurs offer or are able to produce. Viewed from another standpoint, however, the change of our non-economic ideals is itself a cause of new demands upon the market where goods and services are sold for money. Certainly, tastes do fluctuate from one period to the next, so that producers must adapt themselves or suffer. At one time science seems nonessential; at another we act as if our very life depended upon it. Some generations ago a high school or college education was a privilege claimed by only a few select folk. Nowadays it is sought by one third or fourth of the population, and one out of every ten in this country succeeds in his quest. Not to be educated is now a stigma, while formerly it meant nothing in particular. Ideals of equal opportunity, of improving potential faculties in men, of developing a social sense or the Self of each person, these ideals have driven nations to allow much for education, far more than a growth of population or even of total national income would lead one to expect. Similarly government functions may vary from time to time, taxes taking a large or a small portion of people's income and supporting public employees accordingly. In many European countries public ownership has retarded the development of services which under private ownership have entered much more prominently into the life of Americans.

Indeed, whenever non-economic ideals change, ratios of goods and services are sure to reflect it. Our homes to-day offer more comforts than ever, partly because costs of production have fallen, but partly also because of a new conception of family relations. Or take the

astonishing amount of attention paid to sports and recreation. Here again the effect of science and norms of living is shown. We are more determined to guard health, to develop the physique of our children, to enjoy outdoor life and to go sight-seeing. What the artificialities of occupation and urban congestion take from us in the way of wholesomeness and leisurely living, as known to older generations, we apparently resolve to counterbalance by spending more for certain pastimes and forms of hygiene. In this manner some occupations gain while others come to mean less, and with this change the general tone of our mode of living is altered too.

From this then it is easy to see that governments may do a great deal to influence ratios of goods and services for a whole nation. Indeed, a third principal cause *is* public policy along various lines, including free trade or protection, provisions for army and navy, the extension or rejection of public ownership or control over industry, taxes calculated to curb and encourage the use of particular commodities, and still other activities. Sometimes we believe that everything hinges on proper tariffs or the absence of them. We decry or praise bounties, subsidies for shipping or manufactures, the regulation of banking, transportation, and so on. We favor taxes that tend to equalize wealth, or on the other hand, we show why they are wrong in an economic sense, if for no other reason. In short, there is no agreement possible on the proper scope of government interference, but for all that we admit its bearing upon production and consumption. Again and again we have voiced such opinions, taking a definite stand one way or another.

§ 5. The *third* or distributive side of our subject therefore must likewise be related to policies of government. We might descant upon the popular notion that tariffs are class legislation, making some rich and others poor. We might point out the purpose of inheritance taxes or of excises which are ruinous to some industries, and perhaps are meant to be so. We might illustrate from government contracts and sales of land or of mineral riches and water rights, all of which influence the

earning power of particular groups in different degrees at different times. Manifestly these public policies are quite variable, and decisive in some cases. A war is an especially opportune moment for studying their effects. It has long been agreed among competent observers that wars bring a redistribution of income for large numbers of people who lose or gain according to the nature of their business or to their influence with legislators. But instead of dwelling long on these matters let us instead consider a few other items of equal import, including some already connected with changes in the total national income or of its composition.

Thus, since we are speaking of public policy, we may note first the effect of changing price levels which often result from an issue of fiat paper money by governments, but more frequently from issues of bank credit and currency.

As appeared incidentally in our study of business cycles, all incomes except profits lag behind movements of prices. They are based upon written contracts or tacit agreements or established customs, hence cannot be revised at a moment's notice.

Of course, prices are contractual too. When we buy things with money we express a willingness to accept one item for another. Every exchange rests on an understanding between two or more than two parties. Without it trade is impossible. But these sales are made daily or rest on orders of delivery which can be easily rescinded. Every day, or hour of the day, goods are newly offered and taken, so that prices are naturally short-lived.

Contractual incomes are by comparison relatively fixed and in proportion uncertain, once prices change. Since only sums of money or rates of pay in terms of money are given, but not guarantees that the purchasing power of money will remain the same for the entire period in question, a virtual change of income is unavoidable. If we have a thousand dollar bond bearing 5% interest, this sum of fifty dollars per annum means more or less to us, dependent upon how prices move. If they rise,

we are worse off, while in the opposite case we may rejoice. If such payments therefore constitute our exclusive or principal source of earnings, our idea of the trend of costs of living is shaped according to the extent and degree of price changes. Similarly rents and wages or salaries have their purchasing power modified by price fluctuations. Rents, like loans and interest rates, may be made out for many years. The contract may run for five or fifty years, according to the nature of the property leased. To secure a definite sum of money thus is to incur the risks attendant upon the instability of price levels. If these latter fall, the income of the landlord in effect increases, while a rise reduces it.

Even wage earners may be affected appreciably by this circumstance. As a rule they do not adapt themselves quickly, or rather, their employers do not balance every change in prices by an equal one in rates of pay. When the trend of prices is downward, wages may for quite a while remain at the old rate and buy more goods and services. When on the contrary the drift is upward, most employees suffer. Their wages do not rise at once, nor do they rise perhaps in proportion to the advance. So they see their purchasing power shrink. They get the impression of a rising cost of living and do not hesitate to vent their feelings. Finally, if price movements describe a wide swing up and down, extending over many years and varying greatly within that period, the bulk of working men alternately gain and lose, though in the end they may hold their original position in the distribution of the national income.

Entrepreneurs, on the other hand, need not mind the upward trend of prices. They raise profits with prices, or do even better, so that a rise of prices all along the line is welcomed as a blessing in disguise. If a large sum of money borrowed many years ago is due at this time—or may be paid off according to a proviso in the bond—this return of the principal may be considered an advantage, since the purchasing power of the money at that time is lower than at the earlier date of the loan.

If prices rise very rapidly, goods may be bought in large blocks so as to promise a fine margin of profit by sales at the higher price a little later on. But most of all does the business man count the difference between prices he charges and wages he pays to his employees. Since these latter do not as a rule demand an increase as soon as they are entitled to it by virtue of advanced prices, but rather cling to old figures and habits of calculation, their employers are the gainers. Net profits soar and bring falling costs of living at this point. If entrepreneurs are honest and logical in their reasoning, they admit the reality of betterment for themselves. As far as they are concerned, the redistribution of incomes has turned out well. There is ground for jubilation, especially if prices do not return suddenly to their original level.

But even if we disregard the discrepancy between prices and profits on the one side, and contractual incomes on the other, we find the instability of prices an influential factor in changing costs of living since *prices do not change equally* for all goods and services. A sort of dispersion of prices takes place usually which may be contrasted with the variation of the margin between profits and the other sources of factorial income; consequently different classes of people are affected differently by the change going on. Suppose the price of foods rises quickly, while that of highgrade clothing, house furnishings, automobiles, railroad mileage, and jewelry remains practically the same. If this should occur, the poorer classes would be harder hit than the well-to-do. They would virtually lose more because they spend so large a fraction of their annual earnings on food. Perhaps it makes up one third of their entire income. Hence they have lost. But meanwhile the people having more than, say, three thousand dollars a year, gain. They spend only about one sixth or one tenth of their income on foodstuffs; possibly much less. So they care more for cheap rent, traveling, furnishings, articles of wear, and so forth, than for quotations on meat or bread or vegetables. As they see it, costs of living have

changed little, if at all, and they can prove it by their family budgets.

Nevertheless, it must not be supposed that a redistribution of income among social groups is brought about solely by price movements. That is not so. Our allusion to government policies should in itself have forestalled such an impression, and we may further be warned by considering briefly three additional factors.

Inventions, for instance, act here as in the two respects already mentioned because they afford extraordinary opportunities to alert business men. They have the same effect as new natural resources discovered and owned or controlled by a few producers, for they bring differential powers and privileges. To find new stocks of raw materials is in most cases to lower costs, and that is exactly what inventions also mean. They help to reduce expenses and hence to raise net profits for the time being. Until others have made similar improvements, or until patents lapse, the owners of such superior methods in production hold a commanding position. They do not have to sell for much less than the price charged by the least efficient rival. The principles of pricing make this unnecessary, though we must state the rule with some allowances for exceptions. So an era of inventiveness is logically also one of rising net profits. The last century and a half has acquainted us with this phenomenon on a large scale. Off and on, particular concerns—corporations or individuals—have the better of a situation. They grow rich and mighty. Their fortunes rise while somebody else loses at the same time, or at least cannot match the winnings of his competitors. Profits therefore are being redistributed almost continually. As long as socio-economic conditions are unstable, entrepreneurs have their ups and downs. We must expect it, and can hardly hope to prevent it by paternal policies of legislation.

Still, profits for particular firms or fields of production may vary also because of measures of private control. The last thirty or forty years in this country and in Europe have shown how much may be done by in-

genuity that aims at organization rather than at labor-saving tools. If certain competitors combine, if they manage to secure the ownership or control of relatively rare natural resources, if they proceed to fund their assets and liabilities, parcelling out markets at the same time—in fine, if they resort to what we call restraint of trade, they may enrich themselves at the expense of both rivals and consumers. While men differ naturally and are surrounded by unequal physical and economic environments, such developments must be expected. Profits vary for different groups, since they turn so much on exceptional personal traits or opportunites, and so little on long-time contracts or virtues of character.

Again, and lastly, costs of living will always be changeable in the distributive sense because our valuation of goods and services is anything but constant. The whimsical and fickle nature of our preferences for economic things is just as sure to affect incomes directly as it helps to determine ratios of things produced or consumed. Every ideal of life reacts upon some one's earning power. All changes of standards of living mean changing costs for this or that party. The very phrase "standard of living" suggests a minimum of income which must be granted irrespective of personal merits or capacity to acquire, and this minimum is something new among nations. It has been formulated quite recently. It has affected the wages of millions of people in late years, though it never played a part before. Similarly our notions of what should be paid to public employees may be revised now and then. In the United States to-day a teacher is allowed more for his services than for many preceding years. There need not have been an increase of proficiency or training. The attitude of leading classes by itself brought a turn of events for something like three quarter million people. And so one might go on indefinitely illustrating the force of abstract ideas, of standards which somehow react upon incomes. What men are worth is to some extent a question of the spirit of the times in which they live. We

cannot reduce all values to physical facts or to efficiency as usually understood!

§ 6. To conclude then. If costs of living change, we must seek the causes in facts of production, valuation, and public policy. These are most decisive. But as long as society is on the lookout for betterments, and as long as natural resources represent a variable quantity, so long we must expect production and valuation to be themselves variable. Hence our aggregate national income or its make-up, and what it means to particular classes or persons, will always be unstable, however definite it is for any one year or month. Costs of living are bound to vary more or less at different periods of history. If they remain absolutely or nearly the same for long years, it is a sign of a low type of civilization or of a stagnation of man's mind amidst vanishing natural resources.

COLLATERAL READING

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CHAPTER 18

POPULATION AND PROSPERITY: THE PROBLEM

§ 1. Our study of economic principles or of the economic aspects of life is not complete unless we consider now also certain facts of population and prosperity. In the very long run this relation must assume a deep significance for us for the one simple reason that natural resources are not unlimited. If they were, we might go ahead unconcernedly in all our economic aims and actions. We may console ourselves with the thought that continued prosperity and progress depend purely upon the innate qualities of man. As long as the whole of mankind or its largest part are able to think cogently, to fathom the secrets of nature, to organize for the purpose of applying the laws of productivity effectively, so long no serious obstacle to an ever rising plane of economic living can arise. Though he continued to multiply his species, it would not matter, for the wealth provided by nature herself would ultimately meet all his needs. Mental and moral qualities alone would color his prospects.

But as a matter of fact, the outlook is not as roseate as all that. The possibility of increasing numbers forever and of providing for them on any scale desired, however lavish, is not ours. We are face to face with a fundamental question because natural resources are limited and give rise to a group of relations and difficulties which we may conveniently discuss under the heading of population and prosperity. We must bear in mind, taking a long-time view of the economic process, that three facts are closely interrelated, to wit the population of any one country or of the world, the sum total of resources at its disposal, and the level of economic

living attainable by any one nation or by the whole of mankind amidst any given density of population, and particularly when this density threatens to exceed a certain point. Our last subject thus turns on *relative changes* for these three factors. The problem is: What is the effect of a steady increase of numbers in the long run? What follows when population outstrips the additions made to known natural resources, or when it grows while resources remain constant? What is the natural law of population, and what ways and means are available for maintaining a high level of living in the distant future? This is the topic before us when stated in its most general terms.

§ 2. If we grant that natural resources are not limitless, but rather represent a finite quantity—albeit one subject to variations according to the progress of human knowledge—if we start with this assumption which indeed is easily verifiable and tacitly accepted by most competent persons, we have before us several alternatives. We may first suppose that the population of the world will increase as long as further treasures can be found in and on the earth, that meanwhile our per capita allowance of goods and services may also increase, but that finally we shall come to a stop. How far this date of a stationary condition is away, may then be a subordinate question. Secondly, if we have already measured the extent of our resources and are much impressed with their limits, we may multiply our species further, but expect to do this by gradually lowering our level of living. A larger number may be taken care of by a reduced ration for the average individual. Either some one nation, or mankind acting concertedly, may look forward to this curtailment of income, accepting it with composure, if not with enthusiasm. This certainly is one alternative. But in the third place we may insist upon a continuance of a prevailing rate of per capita consumption, providing even for an increase, but making this possible by a shrinkage of numbers or at any rate by its restriction when the proper time arrives. We may anticipate this event because of natural laws of popula-

tion, or we may take steps to reduce birth rates so that the population remains constant or falls again to that point where our ideal of a high economic level of living is feasible. This is a second option theoretically before us, once we have admitted the limitation of those primary materials which determine our productive powers, all other things being equal. It may be for man to decide what should be done. That is, we must count on this possibility, unless our studies have convinced us that the real or probable course of events will be another one of the three here mentioned.

Now, if we look first at the question of natural resources, remembering their absolute limits, we may nevertheless wonder how much of a development is still in store for us. As the economist sees it, the exhaustion may be a long way off. There may be excellent chances of discovering new stocks in the interior of the earth, of utilizing land hitherto neglected, of making the most of potential wealth so far wasted or ignored. One phase of our subject of population and prosperity deals consequently with the force of research as well as with the magnitude of untouched resources. What ways and means may be employed to unlock these new riches? What can man do, or what is he likely to do in order to augment his output in proportion (or more than proportionately) to a growth of numbers within some one country or for the entire world? In how far do racial qualities enter into the situation? Is the present productivity of the white race, for example, unattainable by others of the human species, or may all members of it be educated to a stage where efficiency can rise to even higher levels than those now boasted by a few nations.

Furthermore, since we are bound to admit the absolute limits of natural resources, as will be shown in the next chapter in an indirect way, we can hardly afford to omit asking what kinds of materials are most plentiful or least scarce. What indeed is likely to give out first, or to cause us anxiety earliest? This is a perfectly natural question for us to formulate.

§ 3. When we broach it, we shall remember that

natural resources are of two kinds for present purposes, viz. reproducible and irreproducible. We may agree at once that coal, iron, petroleum, diamonds, building rock, precious metals, and natural gas are things man cannot reproduce at will. They are either inorganic, or if organic, have undergone such slow processes of metamorphosis in order to become useful to us, that there is no chance of our replenishing the supply at will. We cannot hope to add to coal stocks even though we know that they originated in plant life. It takes too long a time for humus to turn into coal. Man must obviously be satisfied with what he finds, go without, or devise substitutes. But as regards the majority of organic products, we associate them with life now on earth. We think of fish from the ocean, of timber stands on the mountain side, of grain, grass, and fruits or vegetables growing in the soil as yearly returns. These appear to be reproducible at will, and in a sense they undoubtedly are. Though we are governed by seasons, we can restock our granaries or freight our table from the annual harvest of the soil. Hence these items of wealth may seem reproducible without end.

We must however revert at this point to one of the three basic laws of productivity discussed earlier in our analysis of the productive process, namely the law of proportions.[1] At that time we saw that the output of every kind of wealth is subject to limits imposed by nature and not to be flouted by man. We saw that there is such a thing as an ideal proportion of men and materials used in production, as an ideal ratio of costs to gross returns determined by us beforehand. One aspect of this principle received recognition as the law of diminishing returns, and to this we may now add that of absolutely limited returns.

To restate the fundamental idea: Producers in every field may increase net output only up to a certain point. When that has been reached, they face a relative loss, that is, a net return smaller than the one realized just before. Farmers especially have experienced the force

[1] See Vol. I, ch. 8.

of this principle long ago. They learned centuries ago that it was folly to employ too much labor and capital on a given piece of land, to increase the amounts endlessly with a view to obtaining greater returns. To be sure, they were able to add to the *gross* product for a long time. They might have obtained, first, twenty bushels of corn from an acre, then twenty-five, then thirty, and finally forty. Thus the gross yield was at last doubled. But very likely the costs in terms of labor, seed, implements, and so on, went up also. As yields rose from twenty to twenty-five bushels, costs might have increased ten per cent. Hence, if gross returns rose according to our supposition twenty-five per cent, net yields became larger. Again, upon growing thirty bushels, costs might have risen only thirty per cent, so that the net yield once more was satisfactory compared with the earlier experiment. But let us imagine that in order to produce forty bushels rather than twenty, costs increased from ten units of labor and capital to twenty-five. In that case they went up more than gross returns which only doubled. *Net* yields declined in spite of the fine showing made by our acre of land. Hence circumstances in the very last case are not as favorable as in the second or third. Although the farmer may charge higher prices, thus maintaining his old income or even adding to it, the consumers of wheat are worse off because expenses have risen disproportionately. Either they pay much more for a bushel of wheat, or they curtail consumption so as to make an output of forty bushels per acre unnecessary and foolish from the farmer's standpoint. Or to give the same principle a different aspect: *Under diminishing returns labor and capital are heaped up in the production of one article or service, while a corresponding amount is withdrawn from elsewhere.* Instead of having plenty of manufactures, transportation facilities, medical help, amusements, or whatever we might choose, we devote less time and wealth to these, and more to the growing of things at a falling net yield. That is the meaning of our law.

As stated, its operation is universal and unpreventable. Man cannot annul it. He can only adapt himself to it in the manner just suggested, or else take the full consequences. Furthermore, not merely is there a point beyond which net returns decline, and do so steadily and perhaps at an accelerating pace, but what is equally noteworthy, we shall find an absolute limit for *gross* returns in agriculture. We may not expect a thousand bushels of wheat or tons of cotton from a single acre, however rich the soil. Although it is true that astonishing results have been obtained from some fields, provided that exceptional climatic conditions were combined with much scientific knowledge and extreme application on the part of farmers, gross returns have always stopped increasing at a certain stage of cultivation. In this sense we are invariably subject to a law of absolute limits. No matter how we try, we at last realize that nature gives so much upon proper coaxing, and no more.

This then deserves the more emphasis in the discussion of our main problem since the raw materials taken from the surface or from the interior of the earth represent primary products relative to which all others are secondary or contingent. The fruits of the soil, fish from the water, timber, minerals, coal and gas and waterfalls, and whatever else we may find given by nature, are primary not only because manufactures are impossible without them, but also because they provide the foundation for all human endeavors that do not cater directly to our bodily needs. When we have food and a sufficiency of clothing and shelter, we may proceed to turn our thoughts to better things. We may produce luxuries of weight and volume that please our finer sensibilities, or we may use the leisure which a store of plenty permits us, to develop our inner life, to nurse ideals and pursue lines of reasoning which further enrich us spiritually as well as materially. To-day we boast of science, art, literature, philosophy, and religious or moral doctrines because we have ensured ourselves thousands of years ago a minimum of subsistence. We have added to our style of living innumerable services

which lead to no tangible wealth. We have bankers, physicians, teachers, jurists, railroad directors, artists and novelists who widen our horizon mentally and physically. We are proud of them and should not like to forego their ministrations. But let us bear in mind that all of them exist only as long as the more elemental things come forth in abundance. There must be a certain quantity of the crude essentials per capita of the population. Unless this is forthcoming, the rest of things are out of reach, for the superstructure of civilization rests on a foundation of animalistic wants and gratifications, however sordid such a view may seem. So everything depends upon the bulk of natural resources here styled primary forms of wealth. If these begin to shrink, there is need of very careful budgeting among producers and rulers of nations. We are then really in a deplorable situation, in a plight not easily ended. Of course, we may take solace in rising rates of return or rising efficiency in other fields. We may continue inventing better methods for application in factories, in the moving of merchandise, and so forth. We may make further progress in the technique of converting primary materials into finished goods, or in the rendering of services not taking tangible form. That is true. Yet all this is in the end of no avail if the supply of those elementary things is dwindling. Betterments in secondary industries are fruitful only if the output from farms, forests, fishing grounds, and mines is adequate. That is the chief reason for our concern about the possibility of a depletion in natural resources.

§ 4. In view of these facts on the side of supply, then, our next question logically relates to demand, or to changes in population. If nature's stores may give out, what is the trend of numbers to be fed and clothed in the very long run? Looking far ahead we may wonder whether numbers *must* grow indefinitely, whether any laws of increase or decrease exist, and what may be done by man to regulate future developments along this line. Offhand we may believe numbers to be illimit-

able. It may seem to us that biological data substantiate this view, whatever the force of temporary setbacks. Or on the other hand we may, after due investigation, stumble upon facts which point to limits in population as well as in natural resources. Like certain other scientists, economists are qualified to study this problem and to venture a forecast, though not perhaps to lend practical counsel. What indeed is the law of population, if one exists? What checks exist that have been or will be active? What does the record of the last few centuries tell us definitely, and what measures may in the future govern the trend of population in general? This too is a riddle to be solved, or at any rate to be included in a comprehensive survey of economic processes.

In so far as we decide or try to prove that the growth of population is subject to checks voluntarily adopted by man, we may be interested in knowing what the effects will be apart from those upon our stock of natural riches. As any one nation understands it, the deliberate reduction of births may be a risky experiment, while in the absence of nationalistic aims and needs it may be as welcome as anything can well be. Besides, a control of numbers may have consequences for the character of succeeding generations. It may be that the physical and mental qualities in man are affected by it, so that here again an economic factor becomes discernible. The interrelation between population and prosperity does indeed involve much more than is evident at first thought!

Now, in the following pages not all of these phases of the subject can be given consideration. For our purposes the economic ones alone assume significance, and these do not constitute more than a part of the entire problem. But it is necessary for us none the less to pay attention to several topics. We shall first present salient facts regarding natural resources and the possible effect of scientific progress, so as to get a rough idea of what may be expected from nature herself. We shall then turn to the problem of population which centers in rates of birth, gross and net.

What inferences may be drawn from the past, and what the prospects of a continued growth of prosperity are, this will be stated next, and with it our survey of economic principles comes to a close.

CHAPTER 19

POPULATION AND PROSPERITY: RESOURCES AND RESEARCH

§ 1. Aside from the important distinction between, first, reproducible and nonreproducible resources, and secondly, rising and falling rates of net return,[1] there are several other points that must be stated before we are ready to proceed to particulars regarding natural resources and the possibility of adjusting facts of population to them. In talking of the existing stock of resources, for instance, we must remember that our knowledge of them may not be complete. What we understand them to be at any one time—to-day or to-morrow—and what they will turn out to be eventually, may be two different things. When we attempt to take inventory of what we have, we naturally think of known facts, of what is visibly before us or has been shown to be a probable supply. Yet it may very well be that much more can be utilized; in other words, that discoveries will augment our raw materials so greatly that later generations will have less ground for anxiety than we ourselves. Especially with regard to minerals hidden in the bowels of the earth is this true. Again, and equally to the point, we may effect changes in our mode of using raw materials after they have been brought to the light of day. Instead of being wasteful, we may learn to economize. Thus a little attention must also be paid to the possibilities of greater thrift as an offset to shrinking resources in the midst of a growing population.

Finally, it is impossible to venture an opinion as to the probable course of resources or as to limits for

[1] See preceding chapter.

population in days to come, unless we have decided first what the prevailing rate of consumption will be or ought to be. We can have no idea about the probable duration of resources unless we know definitely how fast they are being used up, or else assume a certain rate of consumption. From this standpoint, therefore, it is important that we think of the entire world rather than of any one country, for rates of consumption evidently vary a great deal. Asia and Africa are to-day, and have been probably in all ages, modest consumers not only of minerals, but also of foods or rather of particular kinds of foods, such as meat. Europeans had a low level of living up to recent days, but for the last century or so have raised it greatly, so that they now rank among the biggest consumers on earth. The Americans, too, use up natural resources at an alarming rate; indeed they have always been big consumers and lead in this respect to-day. *Their* standard of living would affect our estimate of future trends very differently from that of either Germany or Brazil.

§ 2. To make the significance of this thought clearer with the aid of a few figures.

In 1913—a normal pre-war year—the United States produced 38% of the world's aluminum; 32% of its silver; 40% of its coal, pig iron, and sulphur; 55% of its copper; 47% of its gypsum; 35% of its lead; 30% of its zinc; 42% of its phosphate; and two thirds of its petroleum;[1] and barring copper and lead, virtually the whole of this output remained in the country, that is, was consumed by it in one way or another. To-day (in 1924) the percentages are substantially the same, except that the production of petroleum, gasoline, aluminum, and zinc has further grown without causing a proportionate increase in exports. Americans thus prove themselves to be rich people, or consumers on an unprecedented scale. While for the entire world foods constitute nowadays about two fifths of its total production of concrete forms of wealth, for Americans they make up scarcely

[1] Huntington & Williams, *Business Geography*, p. 448-49.

one fifth, the other fifth of income consisting of a number of comforts and luxuries which nobody else can afford, to judge from statistical evidence. Yet we are far from stinting ourselves in matters of food and drink. On the contrary, here too we take a prominent place, although not more clearly so than Australians, South Americans, or Canadians. We are among the chief producers of meats, dairy products, and grains, and consume the largest part of them at home. In recent years we have consumed about 90% of our total output of meats; about 95% of our dairy products; over 95% of our corn; and approximately two thirds of our wheat.[1] Our principal fibre product, too, is being grown mainly for home consumption, only about one fifth of our enormous crops of cotton reaching foreign lands.[2]

The United States, then, cannot be a standard for calculations of future needs, since it is far from typical at the present time, and represents rates of consumption perhaps never equalled before in history. We may, to be sure, use these data to show what a high standard involves, and how much may be lacking even when it is in force. Even in this country—we may add—there is still poverty and distress caused by undernourishment. We too have with us the poor and the begging paupers. There are millions who have no more than a frugal living, and other millions who do not boast a bit more than large numbers of Europeans. Thus it is possible to have problems in the distribution of wealth in spite of an incredibly large consumption for the people as a whole. Furthermore, we might be tempted to accept this standard of the American nation as at least a desirable one for the whole of mankind. We might say: "So much at least should all of us have. These allowances represent a decent or gratifying minimum, but no more. It would be admirable if in all times to come the world had as much to draw from as is now offered to a most favored nation. When less is in sight, the trend of population either will take a downward course spon-

[1] *Year Book*, U. S. Department of Agriculture, for 1921 to 1922.
[2] *Ibidem*, p. 465.

taneously, or should be changed in that direction, if possible."

Nevertheless, though we might naturally come to this conclusion after reviewing facts of consumption for the United States, we must not offer it for present purposes. Since our problem in population relates to mankind, not to some one country, our rate of consumption should also apply to the whole world. With this in mind, then, we do well to pay some attention to five leading topics, namely: first, the extent of resources known to-day; secondly, the possibility of new discoveries and technical improvements; third, the trend of productivity or of *net* rates of return for work and time spent; fourth, the possibility of putting land to better uses, especially with a view to increasing the food supply; and fifth, the possibility of economies in the use of goods already taken from the soil or from the interior of the earth. However sketchy our review, if we consider the salient facts from these angles, we gain materially. It will then be easier to correlate with it the question of population in the next chapter.

§ 3. As regards the extent of mineral resources now known, we have no reason for misgiving at the present rate of consumption.[1] There is enough to last for thousands of years, of iron, potash, phosphate bearing rock, and a number of elements used in relatively small amounts, such as tungsten, molybdenum, manganese, iridium, vanadium, platinum, and so forth. Copper, silver, gold, sulphur, and nickel too exist in gratifying quantities, although we measure their stocks by generations rather than by centuries.

When we pass over to those mineral products which serve chiefly as a source of motive power, heat, and light, we shall find the supply large or small according to which kind we are thinking of. Anthracite is scarce and may not last more than two centuries. Soft coal and peat exist in almost limitless supplies, so that for

[1] *Political and Commercial Geology and the World's Mineral Resources* (Spurr, J. E., editor) is a convenient secondary source of data on this subject.

many generations to come there need be no fear of a serious depletion. (Seven trillions of tons is a widely accepted estimate of visible stocks of bituminous coal.) Petroleum may not last more than a half a century at the rate of increase of use noticeable during the last few decades, and this is probably true also of natural gas; but oil bearing shales occur in such huge quantities that we may feel reassured even though no substitutes of an equally inexpensive sort can be manufactured. Water power, too, has been used only here and there. Less than ten per cent of what is now commercially available does work for man, and this not always where it is most productive. In short, sources of motive power and heat are far from being exhausted. In spite of tremendous developments in recent decades much remains in various parts of the world.

Timber, of course, is likewise a valuable combustible, but in mentioning it we pass from inorganic and non-reproducible products to organic and reproducible ones. About three fifths of the world's wood is used for fuel and the heating of homes, the rest going into mine construction, buildings, engineering works, pulp, furniture, and so on. The world's forest area is to-day estimated as being equal to about four acres per head of its total population, and this is certainly enough for several generations to come. But whether we shall be content with such a supply is certainly another question.

Similarly land, which is the basis of all our reproducible raw materials, is scarcer than one might suppose, though on the other hand perhaps more plentiful than is suggested by some writers who take habitually a pessimistic attitude. The largest portion of high-grade soil is already in use and made to yield big returns by intensive cultivation. Much of what is unused is not fit for the plough. And yet there remain reserves which seem gigantic when one thinks in acres rather than in percentages of the earth's superficies.

During the years just preceding the latest war most countries were already making productive use of the bulk of their holdings as follows: Sweden used 69%;

Rumania and the Argentine each about 75%; India, Japan, and Bulgaria each about 80%; Great Britain over 85%; and the rest of Europe fully 90%. To be sure, in certain other cases the percentages were astonishingly low; thus 52% for Serbia; from 50% to 55% for European Russia and the United States respectively; about 40% for Algeria; only 7% for Australia, and hardly 2% for Egypt.[1] Such figures lead one to believe that chances for expansion are excellent, and indeed this must be admitted. But we must also remember that considerable fractions of the entire area of the globe are not suitable for cultivation under present conditions. Unless revolutionary inventions for irrigation come to our rescue, much will be permanent waste. In Australia, for example, hardly forty million acres out of almost two billions are fit for the plough; in Canada only a quarter billion acres within an area covering three million square miles; in India and the Argentine each only about three hundred million acres out of a grand total several times as large.[2] Thus the visible supply of suitable land is limited, after all.

§ 4. One naturally asks therefore, in the next place, whether new accessions of all kinds of resources are not possible or probable, and here again we can afford to give ourselves the benefit of the doubt. We have a right to hope for the best, even though we should not expect everything.

As regards the total and area, it is of course pretty well known by this time. We do not anticipate discoveries such as marked the period from 1450 to 1650. But geology may help us in no small measure, and besides, what it does not do, may be done accidentally, as has happened so often before. Even the most competent student of economic ecology cannot be absolutely sure of having found all the data bearing upon the location of riches, nor may he have read correctly what he did find. Errors here as elsewhere are common, and may disappoint us pleasantly. Then, too, we have so

[1] Huntington & Williams, *Business Geography*, p. 431.
[2] *Ibidem*, p. 155.

far made a survey of only a comparatively small part of the earth. We have much to do before completing our task in this field. If one may judge by recent experiences, additional resources await us in more than one region, and in amounts far from negligible. We may unearth new deposits of minerals and coal. We may open up new gushers of oil or gas. We may strike lodes and veins of a high degree of purity. We may stumble upon them accidentally, if not because of organized research and expeditions carefully planned. Possibly, too, we may devise ways and means for creating some raw materials synthetically. We have already manufactured precious stones and gold in tiny particles. It is not inconceivable—albeit hard to believe—that in the dim future we shall wrest secrets from nature deeper and more productive than any so far known, so that costs of artificial output will be lower than those of our present extractive industries. One may take this roseate view of affairs, whether it seems justifiable for the nonce or not.

As regards the soil itself, additional amounts for the farmer may be gained by drainage and irrigation or by other treatments which will make arable certain tracts which now are utterly unfit for that purpose. Europeans long ago began to increase their holdings in that way. Moors and fens were drained, fertile stretches reclaimed from the sea—as in Holland—and arid regions watered by irrigation systems built at great expense, though justifiable in the light of subsequent results. In the United States an area of nearly twenty million acres has been made productive by artificial methods. Four-fifths of it is irrigated by stream water properly controlled, the rest by lakes, wells, city supplies, springs, and so on. Again, some fifty-three million acres had by 1919 been provided with drainage of some sort, so that the total arable land was increased materially by it.[1] Considering that to-day two-thirds of all land not in farms in this country is rated as arid, and that millions of acres may yet be freed of swamps, the prospects

[1] Census Report for 1920, V. 7.

of adding to our farms is far from depressing. The world as a whole may benefit by these engineering projects for drainage or irrigation. Possibly as much as 10% may be added to existing acreage by this method. It is hard to say, although it would be foolish to expect relief chiefly from these net additions.

A more promising field is the clearing of the untrodden wilderness in Africa and the American hemisphere. What we know of the interior of these continents encourages us to believe that very large tracts may yet be improved by the arts of the white man. There are dense virgin forests to be cut down, vast regions waiting to be cleared of brush and grasses which now make cultivation impossible. Even in the tropical zone our food supply may be greatly augmented, provided the white man can adapt himself to the climate. But that of course is a moot point. Some students doubt his ability to resist the extreme heat and moisture, to say nothing of insect life, while others hold out hopes or else believe that the colored race will learn to take care of itself, thus furnishing the rest of mankind eventually with foods indigenous or adaptable to the equatorial belt. Whatever history may really hold in store for us, we should not doubt at once the possibility of new gains in quarters which now yield next to nothing. Climatic hardships may be mitigated by a scientific diet and proper means of sanitation. Insect pests can be exterminated or made bearable by the use of methods greatly superior to the clumsy ones of an untutored native. Disease may be either prevented, or checked through personal hygiene, immunization, and so on. Bacterial infection need not be a scourge in the future as it has been in the past. Hence we cannot pretend to have proven that the tropics are altogether unfit for habitation by the white man, much less that they do not permit the development of an economic organization which will yield as good a return, or nearly as good a one, as is now registered in our temperate zones.

§ 5. None the less, when we consider the probable

future trend of net rather than of gross returns, we shall have to curb our enthusiasm somewhat. In spite of all hopeful signs so far acknowledged willingly, we must be prepared for a gradual decline of net rates within a very few generations, if not earlier.

The cheering side of the question here consists probably of the natural resistance of the soil, and of what we can accomplish with the help of fertilizers and further technical improvements. The soil itself deteriorates less quickly than has sometimes been supposed. Physical and chemical properties are not taken away by use without being restored partly, nor is the soil purely inanimate matter. As we are now told,[1] it is a maze of living tissues rather than so much silt, loam, or clay. Myriads of miscroscopic organisms in it do what the weather alone cannot do. They remove toxic conditions at the same time that cropping introduces them. They are forever altering the chemical constitution of the subsoil, displaying a dynamic force which builds up as well as tears down. In short, according to most recent investigations, there is a natural balance of income and outgo of productive qualities. If the principle of rotation and occasional fallowness is applied with discretion, fertility may be preserved for long, long ages.

Fertilizers meanwhile can raise it appreciably, as has always been known, and in this respect the outlook is now better than ever. Whatever the dissensions among chemists and farmers on the kind and amount of fertilizer to be used for particular soils or crops, we may go ahead using it because supplies are ample. Of phosphate bearing rocks, potash, and Chile nitrates there exist still huge deposits. Coal distillation yields among other things sulphate of ammonia. Nitrogen fixing plants such as clover have done their share toward regenerating soils, and may be dug under as liberally as before. But in addition we have learned how to manufacture nitrogen synthetically, so that there is appar-

[1] For a concise statement from an economic standpoint see *Quarterly Journal of Economics*, May, 1923, article by A. P. Usher.

ently no limit to output hereafter. If we ignore costs of production we may obtain as much as we like of all sorts of commercial fertilizer.

Yields (gross) will correspondingly rise in many countries, and this will be true doubtless even where the maximum is already imagined to have been attained. The United Kingdom, for example, raised its food output during the recent war from 34% of the domestic consumption to about 42%,[1] most of the gain being due to intensified methods and more scientific methods. In China the average yield of rice per acre is about forty bushels, which corresponds closely to an equal amount of wheat. In France the average acre under wheat produced during the years 1911-13 thirty bushels, in England thirty-two, and in Germany still more. We have an excellent chance of duplicating or bettering these records in the New World as well as in Africa. Instead of forty bushels, fifty or sixty may become feasible. We have no proofs to the contrary yet.

But to return to the question of *net* yields. It is not difficult to see that eventually they will decline, and this the more surely so, the more food we force from the soil. It is held by some agriculturists that the general run of land will not give more than thirty or twenty-five bushels of grain without necessitating a disproportionate expenditure in labor and materials, that is, without leading to a downward trend of *net* yields by weight or volume. In Asia and western Europe the law of falling returns has been in force for some time, although with interruptions. In the rest of the world net yields have so far been either constant or on the incline, but we must not infer too much from the last few decades alone. The American farmer, for example, has lowered costs slightly between 1890 and 1920. This has been admitted more than once before.[2] We have reason to be glad and proud of this record. Yet we must give due weight to two factors which may easily be overlooked. We should distinguish between different ways

[1] Middleton, T. H., *Food Production in War*, 1923, p. 373.
[2] See ch. 17, § 3.

of measuring costs of production, and we should also remember the marvelous technical progress of the last two generations.

Costs may be reckoned either for the tillage of the soil only, or for the process of harvesting as well. In the first case they may be constant or rise, while in the second case there may be a slight decline because of exceptional savings effected during the harvesting. In this country particularly net yields gained somewhat because our reported costs of production include those incurred in taking crops from the field, where great economies were introduced.

On the other hand, we should not expect the next centuries to improve our means and methods of cultivation as much as has been done during the last. Though conceivable, it is quite improbable, for we have now perfected implements to a degree which leaves little to be desired. If mankind is to benefit further along this line, it will be doubtless by a more general use of scientific knowledge, of machinery and artificial power, and also by the construction of superior engines, which will burn fuel at a much higher efficiency. Here indeed are needs and possibilities that cannot easily be exaggerated.

This suggests, then, in the next place that agricultural net yields will have their trend determined in part by the supply of fuels and by rates of return in timbering and mining.

Our stocks of wood certainly are not so large nowadays but that we must reckon with a declining net yield. Though we still have huge stands in some parts of the world, consumption far exceeds natural regrowth. The world as a whole uses up wood twice as fast as it is replaced, while the American nation (which consumes two fifths of the grand total) does not replace even one third of what it mines.[1] Plainly, such exploitation points to dwindling net returns. There will be timber belts of lower density, of less desirable stock, in regions

[1] See Zon, R. and Sparhawk, W. N., *Forest Resources of the World*, Vol. I.

farther removed from centers of industry, and located in land less accessible because of contour and climate. Hence we shall unquestionably be compelled to cultivate wood as we now grow grain or fruit. Costs will rise and offer new practical problems. Total yields will be maintained or even increase, but relative to expenses they will be less satisfactory. There is no hope of our being able to stave off this moment forever.

As to other sources of power, we may feel sanguine according to what we expect from science. If we should manage to harness tides and air currents to our machinery, that will be an unparalleled gain. If solar energy should become available for practical purposes, that would be even more momentous in its consequences. There is no telling what may be done nor how it will save mankind in later ages. In view of prevailing methods, however, we may expect a decline of net returns at most points. Coal is already being mined at a growing disadvantage, especially in Europe. Since oil and natural gas exist in quite limited amounts in spite of magnificent yields just now, we must class these too as fields for diminishing returns, or else count them out altogether. New inventions will aid us doubtless as they have heretofore; at any rate, we need not deny this offhand, in view of the fact that so much progress is being made these very days. But meanwhile shafts will be deepened; engineering problems will multiply, even though being solved at perhaps smaller expense per unit of work done; veins must become thinner, ores less pure, and transportation needs greater as remote regions of the earth, and especially tropical zones, are being laid under tribute. Precisely because these contingencies are real, we should not be over confident in our estimate of future trends. All items considered, net rates of return will probably fall off by degrees, according to pressure of population and its preferences in certain directions.

§ 6. A fourth general topic to be considered, therefore, is the substitution of one crop for another which is either more necessary, or can be grown at a relatively

smaller cost. If we distinguish between primary products like fibres, fruits, and grain on the one side, and meats and dairy products on the other side, we shall be reminded that the first are much more economical in their demands upon land. The same acre that can support only one ox, which gives us but a few hundred pounds of meat, may yield corn or wheat of decidedly greater nutritive value. Animal products represent an indirect method of food production, grains and fruits a direct method. If food should ever become scarce, or if for some reason we should decide to proceed as economically as possible, we should have excellent opportunities for savings along this line.

A few years before the war the number of cattle and swine per hundred of the human population was in the United States 132; in Canada 137; in Australia 60, to which should be added 2,400 sheep; in the Argentine 397, plus 1,100 sheep; in Germany 67; in the United Kingdom 35; in France 53; in European Russia 38; in India 55 (most of which were oxen used for transportation); and in Japan only 3. The higher the density of population per average square mile, the greater as a rule the per capita number of animals bred for food. Thus the number of inhabitants per square mile of *improved* farmland was in this country in 1910 only 130; in Canada, 125; in the Argentine, 84; in Australia about 200; in Germany, 637; in France, over 400; in European Russia, about 300; in British India, 744; and in Japan, nearly 2,600.[1] As long as such differences in density prevail, the distribution of live stock will also be very uneven, illustrating at the same time the general principle that an abundance of secondary products depends upon an abundance of land, or—what comes to the same thing—upon a rather small population. Because this is true, the United States can to-day afford to devote 20% of its total improved lands to the growing of forage crops, so that about 40% of the aggregate of its food calories consists of meats and dairy products. Yet it has been calculated that if the average acre

[1] Huntington and Williams, *Business Geography*, Appendix of Tables.

yields one hundred units of energizing in the shape of corn (maize), it yields in the shape of milk only twenty-three units, of pork twenty-two, of poultry five, and of beef only four.

Actual conditions nowadays prove therefore that substitution may help us materially. Much land may be gained in a displacement of secondary by primary products, or through a readjustment of ratios which shall tend to make us more appreciative of grains and vegetables. The Japanese have in recent years consumed only one seventh as much meat per capita as Americans, and the French only about one third. Yet their efficiency cannot be said to have suffered from this emphasis upon cereals or vegetables; neither can we be sure that absolute vegetarianism militates in any way against the progress of mankind, however defined.

Of course, it is not to be supposed that calories are the only test of what is high-grade food. We must remember that the human body needs more than heat and energy. We do keep in mind nowadays especially the value of certain fruit salts, of minerals, of vitamines, of body building properties, and so forth. Flavor too may have indirectly a dietary function. Besides, there remain still other data to be consulted. Labor costs are greater for the cultivation of crops giving the largest number of calories per acre than in other cases. A soil yielding few calories for human consumption may be rich in by-products which, though not usable by man himself, constitute fodder for animals to be slaughtered. Questions of climate and rates of exhausting soils or of relative needs of rest must also be weighed carefully before a final decision is made.

But all this does not prevent us from agreeing to the general proposition as here stated. Indeed, new uses of land offer much greater opportunities than can be inferred even from what has so far been emphasized. Instead of animal fats, for example, we may cultivate plants and trees which yield oils of equal value and chemical qualities. Peanuts, cotton-seed, sunflower seeds, coconuts, and soy beans have been mentioned as

fair substitutes. Acorns, walnuts, and chestnuts grow in a wild state and may be gathered with much profit, if we so feel inclined. For cold latitudes hardy varieties may be bred so as to help us extend the area of productive land. Where corn cannot ripen, we may nevertheless plant it in order to secure fodder which fattens our meat animals. Silos have here proven a most useful adjunct.

Again, aside from substitutions in foods, we may economize by using cement in place of lumber, synthetic dyes in lieu of those derived from plants, and so on. Undoubtedly there are good chances of our increasing raw materials even after all land has been put under the plough, although some of these gains testify to human ingenuity rather than to the probability of an adequate output of the essentials of life. We must not make the grievous mistake of judging the practical import of substitutions by the variety here cited or by the mere fact that some sort of economy is effected. In the end we must still ask: How great is the saving, in how far will people in all parts of the world be trained to do what is best, and what ensures them an adequate flow of produce from year to year. When we consider this matter, we shall perhaps be less optimistic than at the start!

§ 7. So we may pass finally to a brief note regarding economies in the use of what is already produced.

Here too something worth while may no doubt be accomplished. If a world-wide shortage of primary goods compels us, we may reorganize our productive forces and in addition become more frugal in our consumption of what has been bought. In the marketing of wares, for instance, we may gain by reducing the number of middlemen and setting them to work as farmers, manufacturers, or miners. Duplications caused by competition need not be as common as to-day, nor do we generally approve of them. Instead of transporting produce in its natural state, we may take the water out of it (dehydration), shipping it thereafter at much lower cost. The war proved an eloquent experiment in

this respect as in others. If to-day about 40% of all timber hauled from the forest is lost in the stages preparing it for its final uses, this percentage is too high, and will be reduced in due time. If metals corrode less quickly after having received a coat of paint, this is a means of saving material and energy. If too much coal is left in the mines to provide supporting pillars, this error is bound to be remedied as stocks grow low. In short, any number of opportunities for more scientific use are open to us and doubtless will be capitalized once our natural stores begin to dwindle perceptibly. There is no doubt that much may be saved, and that correspondingly the slogan of national conservation will gain currency, however indifferent most of us are to it to-day. All countries will profit by wise husbandry in these various spheres of consumption, although most may be gained where extravagance is now at its peak.

Lastly, we must not blame merely the producer in the basic industries and arts. We must also have an eye to possible economies among consumers in their own homes, among individuals who spend rather than earn money, or at any rate, who are more thoughtless in spending than in plying a trade. Even after goods have arrived at their true destination, losses still occur and might be considered appalling, were it not for the ease with which they can be repaired. Europeans have already learned their lesson of thrift. Asiatics have practiced it for untold centuries. Poverty there left no choice. But economy may doubtless be driven further in most countries. Both in the preparation of foods for the table and in the use of manufactured commodities the need of greater care is before us. Wear and tear nowadays is excessive, or else goods are discarded long before there is actual need of it. The race for appearance has become more attractive than the policy of using things to greatest advantage. Replacement is usually easy, or is forced by a system of production and merchandising which is more intent upon profits for the time being than upon national economy measured by centuries. Whether this is right or wrong under

prevailing conditions may not be easy to show, but we can hardly question the chance for greater frugality if we feel so inclined. The garbage pail is overly large notably in this country. Waste throughout the western world has reached phenomenal proportions. If resources should dwindle, consumers will doubtless make shift by using more carefully what they can buy, looking more to actual utilities than to proud display.

As far, then, as the future can be interpreted in the light of existing natural resources and the probable advance of research, the prospect for a continued high level of living among all nations is fairly bright, but only on conditions. We find some facts very promising. There are opportunities for increased wealth and superior use that no one can deny. Nevertheless, when one considers all sides of the question, one is not forgetful of some very real limitations. It can scarcely be argued that men may multiply endlessly without having to fear a curtailment of income. On the supply side (if we may treat resources and research under that heading) the outlook for permanent prosperity is but tolerable. While we have no particular reason for dreading an early decline of standards of life, neither should we be oversanguine, expecting everything from our productive powers, as if these could cope with any demands made by rising numbers of people.

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CHAPTER 20

POPULATION AND PROSPERITY: BIRTH RATES

§ 1. If we ignore the possibility of changes in human nature and in our knowledge and use of natural resources, the only decisive factor determining the future prosperity of nations is the trend of population. The question then arises at what rate and in what direction it changes, and how this compares with the efficiency of society developed by it in the meantime. We may wonder whether there exists a natural law for an increase and what are its manifestations in the very long run. On the one hand we have births per thousand or million, and on the other hand a mortality which varies with times as well as with different nations or races; and if we have in mind a particular country, then of course migrations too exert an influence. Thus there appears a problem of numbers which is sure to be considered important by economists.

Beginning with the sixteenth century it assumed great significance because of the perceptible increase of population in Europe, if not elsewhere. The new economic conditions arising out of the fall of the feudal system gave people much to think about, for they showed both the evil and the good effects of capitalism in its new form. Among others Malthus (1766-1834) was deeply impressed with the spectacle of widespread poverty in the midst of amazing affluence for a small group. He saw that machinery and steam could turn out vast quantities of goods with wonderful speed, in a steady stream, and of a much improved quality compared with hand fashioned things. This side of the Industrial Revolution was certainly inspiring. But it seemed also as if mills and mines worked faster than

farms, as if the supply of foods and of organic raw materials might lag behind the demands of the entrepreneur. As Malthus and those of his age saw it, there was a grave question of the ability of farmers to produce all the food needed by the multiplying numbers which manufacture and urban life in general promised to keep busy. Could nature be coaxed to yield foodstuffs as generously as a rapidy growing population in the industrial countries called for?

§ 2. The view first presented, and which may aptly be named the Malthusian doctrine,[1] read approximately as follows: It was pointed out that in general the population increased, and more so than food supplies. Not only was it evident enough that men were under the sway of the sex instinct and could multiply rapidly if sustenance held out, but in addition it seemed as if birth rates always exceeded death rates by a great deal, so that every once in a while misery resulted. Men would marry in years of plenty—that is, of an abundance of foods supplied either by the chase, or by the more advanced pursuits of agriculture and animal husbandry—and suffer for it later on. Babies would survive in prosperous days and grow to maturity, but eventually the new generation and in fact the whole population would be hard pressed for foods, since nature did not give with equal prodigality, nor gave at all in some years. Most societies, therefore, evolved customs or modes of living which held down the gross birth rate, and for the rest they fell a victim to the cruel whims of nature. The number of living was reduced even more than the birth rate. A process of elimination as well as of forestalling or birth prevention took place. By these negative and positive checks the population of any one region and of the earth as a whole was kept within the limits set by the food supply.

If we adopt roughly the classification of "positive" and "negative" checks listed by Malthus in his epoch-making work of 1798 and its subsequent revisions, we find among the forces making for elimination or death:

[1] Malthus, T. R., *An Essay on Population*, 1798 and subsequent editions.

Infanticide, cataclysms of nature, diseases of all sorts, wars, and famine; while among the preventives figure vice, celibacy, and a voluntarily reduced birth rate. Most of these items (though not all of them) were kept in mind by earlier investigators and served to explain the trend of population when viewed from a long-time standpoint.

Infanticide was resorted to by savages either as an attempt at propitiating gods or because it seemed better to save the lives of adults in case of a food shortage than to preserve infants. Cannibalism accounted for a part of this practice. The desire to spare children the pangs of hunger was a second factor; and the inability of mothers to nurse their babies was a third. Thus we have records enough of infanticide even in comparatively recent times, to say nothing of earlier days when it may have been much more common.

Cataclysms of nature have always killed people and brought economic ruin to the survivors because they occur so unexpectedly and with an irresistible force. Earthquakes, floods, and conflagrations have periodically devastated large tracts and shortened the lives of millions of people. Especially among those poorly equipped with scientific knowledge and mechanical aids the toll has been heavy, and always will be so. Nature in her most froward moods therefore has often been looked upon as an inevitable remedy for over-population or as a sort of punishment for vices wantonly cultivated by man in flourishing times.

Diseases too have been a powerful influence throughout historical ages. Even if we ignore their part in the death of people long past the prime of life, it remains one of the greatest checks for the growth of population. Disease accounts for a large percentage of deaths among babies and children up to the period of puberty. It strikes at adults apparently in the best of health and consigns them to a premature grave. It often supervenes as a result of accidents befalling people when at work or, for that matter, during hours of rest and play. It is especially virulent in the form of epidemics

which have swept over races in all climes, taking at times most of them, or such large numbers that the population remained stationary for decades. Pests and plagues likewise have been the curse of mankind, so that they deserve more consideration than any factors save the following two.

In the fourth place, namely, wars have kept down numbers marvelously, and in the fifth place famine has worked to the same effect.

Wars we may for the moment treat as an integral part of human history, as an element which has existed from the very beginning and so far has not been eliminated in spite of efforts here and there. Among barbarians it takes the form of feuds which lead to homicide in the absence of a law or of a well developed government prescribing conduct in days of peace. Though to-day we distinguish between murder and such slaughter as ensues upon a declaration of war, originally the two meant pretty much the same thing. Murder was always a possibility because each man had to defend himself and on the other hand was disposed to attack others. Sex rivalry, tribal antipathies, race prejudice, religious beliefs, disputes over rights of property—these were the first causes of enmity and of struggle among men. The contending parties fought as individuals or small groups, and thus came to grief. With the advance of civilization, however, hostilities took on a more serious and formal aspect. Large numbers banded together and acted as a unit for many (if not for all) purposes. Communities and kingdoms arose. Hundreds of thousands and finally many millions agreed upon certain rules for conduct and for the maintenance of a social order. Nations thus were born, and established central agencies or governments for the regulation of public affairs. Feuds too became a matter of public concern. Homicide now was murder without sanction of the law, while war justified slaughter, indeed, urged and glorified it as a means of preserving the state, of guarding sacred rights, of fostering ideals and providing means for future development. In this

way killings during a war came to be contrasted sharply with assault and murder in times of peace among members of the same community or state. Nevertheless, the effect upon population was as marked as ever, indeed far more so; for modern wars have proven much more sanguine than the frays of savages armed with club or spear. What the population of the world would be to-day if peace had been uninterrupted, it is impossible to estimate. It would be foolish to start musing over this question. But we may be sure that the slaughter has been great throughout history and that it has been one of the most obvious checks to a growth of numbers. Wars have again and again undone the work of peace, exterminated tribes, destroyed wealth, and transformed order into chaos. Not only during the hostilities themselves, but also as a result of the upheaval and despair following in their wake, the growth of population has been retarded.

Finally, famine remains the arch enemy of men everywhere. As Malthus and others of his day understood it, this more than anything else served to decimate the population at certain times, and thus to adjust numbers to food supplies. There can at any rate be no doubt of the gruesome rôle played by famine in bygone days. Myriads must have died from it in the thousands of years back of us. Even during historical times the toll has been heavy and practically unavoidable. If we find it difficult to-day to avert a famine and to help those who are threatened by it, how much more thorough must have been its work in earlier days, before means of transportation and communication were well developed and carefully guarded! Beyond doubt, a drought or excessively cold and rainy season spelled disaster, for help from distant lands was neither offered nor possible. Famine stalked triumphant and reaped grimly as the exigencies of the moment urged.

Preventive forces—that is, those tending to keep the birth rate down or to prevent births altogether—were not nearly so important until recent days. From the standpoint of Malthus and his contemporaries they

needed to be mentioned only to complete the list of theoretically possible checks. But it was granted that vice, celibacy, late marriages, and contraceptive measures had been of some effect at least.

As to vice, it signified dissolute living or simply a high standard of life which tended to devitalize people, to weaken resistance and to lull the passions to the point of impotence. It was held that civilization might go too far, that it might effeminate the man and make him indifferent to success or virile pursuits calculated to develop his stamina and physical strength. In such cases the sexual instinct might wane or lead to malpractices militating against a normal increase of the species. Sexual excesses, intemperance in drink and eating, supine ease and luxury encouraged on the one hand by wealth, and on the other by climatic conditions—these might lower the birth rate visibly. The fecundity of the race would suffer in the end. There would be fewer women capable of bearing children, and fewer births per thousand of the population.

Celibacy was of importance formerly because religious beliefs preached it and made it a sacred institution for large numbers of people. The great religions of the world have without exception taken note of it as a source of faith and piety, sanctioning it in one form or another. Monasteries and convents, hermitages and pilgrims dedicating their lives wholly to God have thus helped to lower the marriage and birth rates. Until recent times their effect was not negligible.

But this of course still left the question of the age at which marriage takes place, and also of special preventives such as abortion or contraception. While these features were not stressed, we may infer from occasional allusions that Malthus kept them in mind. Manifestly, if any of these measures could be approved of, or were actually adopted by large classes of people, the effect upon the birth rate would be instant and far-reaching. As we see it to-day, the preventive forces should or will outweigh the positive or eliminating ones. Instead of depending upon nature or man's

foibles for a proper adjustment of numbers to economic income, it is hoped we shall apply reason and method, averting misery rather than seeking to relieve it in some degree after it has fallen upon us.

§ 3. Now, if for the time being we disregard the force of checks historically known or pending, and concern ourselves merely with the rates of change in population, we have to admit that they have often been marked and in modern times have meant a steady growth of numbers. Not only may we consider the Malthusian theorem as substantially correct, but what is equally to the point, developments since his day have demonstrated the great multiplying powers of the human species. The white race especially has increased more during the last century and a half than ever before. If we were to judge from records since the dawn of the Industrial Revolution we should be optimistic or pessimistic in the extreme, according to whether we approved of large numbers, or feared an over-population relative to standards of living previously fixed and clung to as an indispensable prerequisite. In general we must accept the thesis that men do multiply quickly or are able to do so under favorable circumstances. The abundance of seed and the inborn and mutual attraction between the sexes cannot be denied. It is apparent everywhere, and it may be illustrated particularly from the trend of population in Europe and in the United States during recent decades, wars and diseases of various sorts notwithstanding.

To cite a few facts from modern history.

During the seventeenth century the population of Europe is estimated [1] to have increased about 35%; in the next, 50%; and since then over 125%. From 1815 to 1915 the grand total increased from less than 200,000,000 to over 450,000,000, and this in spite of an emigration of about 35,000,000 to foreign shores—mostly to the United States.[2] To-day the white race is said

[1] Rossiter, W. S. in *Journal of American Statistical Association*, March, 1923.

[2] For this and other data on same subject see East, E. N. *Mankind at the Crossroads*, 1923.

to increase annually by about nine millions, and the rest of mankind by three millions or less. In the United States there were ten million inhabitants a hundred years ago, and more than a hundred and ten millions in 1920. In short, whatever data we consult, we find a rate of growth which, with the amount of unimproved farmlands now known in the world, would claim every acre of arable soil within a half dozen generations.

Of course, the last few decades were unusually favorable to a rapid rise of density in population. The figures just given must be studied from this viewpoint. There existed conditions never seen before, and perhaps never to recur for any portion of the globe. Both Europe and North America gained by unexpected developments to which none of antiquity or the Middle Ages can be compared.

To begin with, a new world of natural resources was opened up and exploited with amazing vigor, nay, even ruthlessly from the standpoint of the needs of future generations. Australia, North and South America, and large portions of Asia and Africa furnished an endless stream of foodstuffs and raw materials taken from the soil or from the depth of the earth. Land at first could be had almost for the asking. To prepare it for the plough cost little either to the individual farmer or to society. The soil yielded richly and sometimes more than once a year. The average farmer could produce not only for his own family, but likewise for three or four others. There was no danger of dearth or of periodic famines in these regions newly explored and subjugated by the white man. Raw materials became plentiful and cheap when compared with old time labor costs or the sporadic supplies offered by producers and traders. Virgin forests furnished hard and soft woods for fuel or various industrial uses. Fibers, rubber, and dyes came from farms, plantations and the recesses of the primeval forest where supplies seemed inexhaustible for the time being. Even in the Old World new resources were tapped and made to serve the needs of western nations. Asia, for example, furnishes nowa-

days about one half of all the antimony consumed annually, about one third of the manganese, and large portions of the world's output of phosphate, tungsten, tin, and graphite. Thus it was comparatively easy for the white race to multiply rapidly and to better its mode of living at the same time.

As far as Europe is concerned, she supplied backward people everywhere with what they could not possibly produce themselves, but welcomed either as a means of developing the extractive industries or as a feature in their list of consumables. Even the United States was for a long while supported by foreigners. In effect Europe said to these younger and less advanced countries: "You go ahead tilling the soil and operating forests and mines as fast as you can. You should produce these primary materials at low cost because of the abundance of land and the largesses heaped upon you by nature. We cannot compete with you in these fields, nor do we intend to do so, though we shall make the best of our slender resources. But you will need machinery and much stationary equipment for mines and mills. You will want to develop water ways, transportation systems on land, public utilities, and urban improvements. You will have to build up systems of communication and intelligence, construct ships and terminal facilities. There will be scant supplies of capital for these purposes. So we shall attend to the things you cannot do right away. We shall help with funds and scientific knowledge, with technical skill and leadership in organization or finance. Whatever you may want, whether it is art products or machines or scientific apparatus or banking service, we shall come to the rescue, if you desire. We know how to cater to you along these lines. We have the means and the methods which you lack and must depend upon for further progress. We shall therefore work at rising returns in manufacture and industry in general, selling their products to you in exchange for the raw materials or foods which you possess in such over-abundance."

As long as Europe could make good this promise of

a fair exchange, she could increase her population greatly and at the same time also raise her level of living. The cause of her growing numbers might, from the economic standpoint, be stated as follows: There was first a remarkable advance of science and technical knowledge. Inventions and discoveries in rapid succession opened up new avenues of approach to the problem of production and trade. New technical means and methods were tried out and proven successful. Manufacture, mining, and diverse industries of a mechanical nature therefore developed rapidly. The advantages of the roundabout capitalistic method called for an increasing scale of operations, and this favored a concentration of people as well as of materials. The ascendancy of the metropolis, of the city with hundreds of thousands of inhabitants, was thus a by-product of the Industrial Revolution in the widest sense. But urbanism and a high density of population point also to a close and mutual relation between industry and agriculture. The former may be said to have gained by the wonderful yield of farms and mines in the so-called "new" countries. There the primary materials essential to manufacture, public utilities, and business of every kind were turned out at a small expense, in huge amounts, and in such excellent quality that the severest demands of Europeans could be met. Foods from North and South America, Russia, and Australia made possible the rapid increase of numbers in Europe, while the rest of supplies provided the basis for highly finished products which could be easily sold at a considerable rate of profit. The New World thus appears to have exchanged its necessities of life for the comforts and luxuries offered by the Old World. That is one aspect of the situation. However, agriculture itself gained by the exchange and thus may be said to have been the *result* of industrialism. The Europeans were for a long time pioneers in science and its applications. They supplied knowledge and practical advice. They improved breeds of plants and animals. They turned out farm implements and engines. They were leaders in the organization of systems of transportation,

communication, and banking which gave to the output of agricultural countries its real market value. Without these devices the food supply of the world could not have reached its present volume. It could not have grown as rapidly during the last century and a half as it actually did.

Furthermore, in western Europe and the United States the growth of numbers was partly due to a reduction of mortalities. Even when the gross birth rate began to decline—as it did about fifty years ago—the net rate continued to rise because of the saving of lives threatened with disease and a premature death. A larger percentage of infants survived in spite of hardships and sickness formerly fatal to them. Scientific advance in many branches, the control of bacterial infections, attention to personal hygiene, new aids for analyzing organic disturbances and for checking their progress—these and many precautionary measures helped to raise the normal expectation of life at birth and even at a later age. The poor no less than the well-to-do benefited by conquests in the field of medicine and of household sanitation. Between 1901 and 1910 the European death rate was only twenty per thousand as compared with over thirty a century earlier. England and New Zealand boasted in 1923 a rate of less than twelve per thousand, while in this country it has been for years less than twenty. So it would seem that we may ere long reach the minimum compatible with a normal distribution of ages, raising our average longevity to perhaps seventy years.

§ 4. In view of all these facts, then, the unprecedented growth of population among the whites may be readily understood. Exceptional circumstances favored it, and what happened during the last few generations may never occur again. Giving our problem a wider meaning, however, we should now ask ourselves what the probabilities of change are for the distant future. It is necessary to consider this trend for mankind at large and for long periods ahead.

For this purpose, instead of distinguishing between positive and negative checks, as Malthus did, we may

just as conveniently divide all checks into the unwilled and the willed. The former lie beyond human control entirely or to so large an extent that we cannot hope ever to eliminate them; the latter consist of steps which man may take or not according to his desire. Thus we have on the one side cataclysms of nature, disease, famine, and congenital sterility, while on the other may be listed wars between tribes or nations, a postponement of marriage among people who practice monogamy under legal or ecclesiastical sanction, and contraceptive measures which, *in contradistinction* to abortion, we shall hereafter call birth control.

Wars, to be sure, are not declared for the avowed purpose of slaughter. Nations and governments have never in modern times, and rarely before that, made such an admission. As will appear a little later in this chapter, a number of other motives have served to explain or to justify an offensive. The loss of lives is apparently only an unfortunate by-product of tactics aiming at ends often of a high moral order. Still, we cannot deny that war does kill vast armies of people, and that they are begun deliberately by at least one of the two parties in question. They may or may not occur, dependent upon ideals among nations to-day and in the future. Hence it seems admissible to class wars among the willed checks.

§ 5. As regards the *unwilled* ones, we may expect most of them to operate less ruthlessly hereafter, though that is not to imply that they will ever cease to be formidable. Some will remain about the same; some will lose force; and one may possibly gain in significance.

Destruction by nature for instance may continue as in the past. Earthquakes, floods, sinkings of land, devastation by windstorms, and so forth, are uncertain factors; but they have never retarded the growth of populations materially as far as records show, hence we need not linger over them here.

Disease is likely to diminish because of better means for both prevention and cure. A larger number of people are being made acquainted with the rule of hygiene, of sane living. We learn more of requisites in food and

housing. We shall doubtless do more for the care of our body, even though progress will be slow and unequal for different parts of the earth. After illness has set in, too, our chance for recovery will be better as time goes by. Natural science, the various branches of medicine, our invention of apparatus for diagnosing a case, for rectifying organic defects of certain kinds, and the increased resort to public sanitation—these betterments will no doubt decrease the mortality from diseases now particularly destructive, or of greatest force in the past. To be sure, wealth and ordinary enlightenment do not make men always prudent. Dissipation will not be checked by it directly. Strenuosity and "high living" will flourish in the future as they do to-day. There is no panacea for weaknesses of this type; neither must we overlook the price paid for efficiency in production. Occupational ailments may gain rather than lose. Accidents have been on the increase during recent decades, and these result from the pursuit of pastimes (automobiling, for instance) as well as from our attendance to duties while earning a livelihood. Thus we may find forces counteracting those which make for a lowered mortality. Nevertheless, in the main the outlook is encouraging. There is much ground for believing that the ravages of sickness in many forms will be abated. A higher percentage of people will enjoy health, since their environmental conditions will improve by degrees.

Famine too will be less of a bugaboo because of superior means of communication and transportation, because of a wider coöperation among producers or merchants, because of a growing mastery over nature and a steadier supply of necessities for the majority of people. Though we cannot control the weather, though carelessness among farmers cannot be prevented wholly, though isolated regions will for long times suffer severely when nature frowns upon them, in the main the fear of starvation will tend to disappear. Market intelligence, rapid travel and transport, a growing humanitarian spirit among public officials and leaders in private life, these factors vouchsafe us a diminution of

mortality so far as it rests on insufficiency of food stocks. Untold millions need not die, as they have even of late. Increasingly the surplus of one quarter of the earth will be put at the disposal of another in dire need.

When we pass, however, to the fourth unwilled check upon population, namely sterility inborn or acquired by people without their knowledge, against their wishes, we must state our optimistic views with some reservation, launching immediately upon a distinction which is by no means negligible. We must make clear whether we mean barrenness caused by vice or by modes of living which are perfectly defensible on conventional moral grounds; and we must also differentiate between a mere decline of the sex passion itself and physiological facts which make sterilization or child bearing, or both, impossible. We may stress one point to the exclusion of another, or we may expect the same trend from all three.

The effect of vice, whether legally punishable or not, has long ago been noted and connected with the course of population in this or that country. According to earlier students it is one important source of a permanently declining *gross* birth rate. It was natural to point out the havoc wrought by dissipation, alcoholism, gluttony, sexual excesses, and so forth. Sins of this sort are known to lead to debility, if not to a premature death. They frequently engender sterility, or else impair the health of offspring, so that the birth rate for large groups gradually falls off. We may assume that this type of check will continue to figure in vital statistics, economic progress notwithstanding. But here again we are dealing with something of much smaller import than ordinarily supposed. Vice has probably never been ruinous in itself. Though we are told of the downfall of whole empires because of dissolute living and gross immortality, we have no absolute proof of their bearing upon numbers as distinct from political units.

Relative sterility, however, is another matter. We may feel that civilization is a burden in a sense, that it imposes duties in thought and action which run counter to the ideal of a continued growth of numbers. It has

often been believed that a high economic level of living is in itself detrimental in this respect. Opulence and a leisurely life, it has been said, tend to enervate the race, to stifle its normal ambitions for success in business, for political grandeur, for strength of character and virility of body or mind. Sometimes we seem to find confirmations of this view. There certainly are people who do not unite wealth with large families, who are suspected of being unable to reproduce themselves. Women or men are sterile apparently because of habits of living which, while not really immoral, sap vitality or choke off passions.

Yet we may look at the eventual effects of a further advancing civilization from a third angle. We may not be able to make up our minds whether the mere use of wealth, the eating of rich foods, the enjoyment of creature comforts, and an ample allowance of everything imaginable—whether these in themselves undermine health. But we may argue that in the future our creeds and social conditions will weaken the sexual instinct appreciably. Instead of fearing a lack of ambition and initiative we may fear an over-abundance of them. Material progress is impossible without a discipline of the mind, without an ever deepening insight into laws of nature and the principles of social order. Only in training our mind can we surround ourselves with wealth. We must sharpen our wits and get rid of illusions in order to make the most of our natural resources. Yet by this very process of banning superstitions, of subordinating emotions to reason, of seeing clearly with the mind what is invisible to the eye, we may also arrive at a philosophy which is essentially indifferent to the procreation of self. Thus in recent decades irreligion has made much headway. We hear of people who find no purposes in life, who live from habit rather than from enthusiasm or a faith in a moral goal. The dissemination of scientific knowledge has been said to be a mixed blessing for many people, since it rends them from familiar moorings of religious belief, causes inner conflicts and emotional decline, and possibly tends to foster

an attitude which cares about nothing in particular. If we could accept this interpretation, if we could show a definite relation between the spread of knowledge or the strenuosity of our life on the one side, and the cynicism of intelligent people on the other, we might have cause for alarm; for in that case the primal passions would undoubtedly be toned down. They might die in us prematurely or never come to fruition. The ultimate problem under those circumstances would be perhaps what somebody, with a different set of facts in mind, has called "the cause and cure" of civilization.

As remarked before, it is not easy to take a clear-cut position on this subject. In so far as we have data to consult, they may be construed to favor a belief either in a continued fertility of the race or in a slow but steady decline. One thing however must be noted in this connection, and that is the important fact that marriages normally occur at an age when life has not yet been given serious thought, when abstract problems of right and wrong, of purpose and chance, of providential behests or human inanities have little meaning, supposing they are envisaged at all. It seems therefore logical to suppose that the gross birth rate need not suffer materially from either the consequences of prosperity itself, or from whatever states of mind and ways of living our modern civilization may engender. It is improbable that the sex instinct will be weakened by cold-blooded reasoning, or that the species taken in its entirety will forfeit in natural fecundity what it gains in its mastery of nature. As far as the unwilled checks in general are concerned, they may be said to favor a further increase of numbers for a long time to come.

§ 6. So we may next inquire how much depends upon the *willed* checks, of which war, a postponement of marriage, and birth control are the only ones worth mentioning. Shall we expect these checks to offset the tendency toward a growing population which we may read out of the probable future of the unwilled checks? May we assume wars to give way to perpetual peace so that life runs its normal course instead of being cut off at an

unexpected moment, as a result of public policies and military conscription? And does it seem likely, furthermore, that men and women will mate at a much later age, or that people the world over will deliberately limit the size of their families by contraceptive measures? Will the increase of numbers be prevented in this way in spite of our triumphs over disease and famine?

§ 7. In attempting to answer the first of these two questions we do well to subdivide it into two parts, putting on one side the case for and against the future of nationalism or of the continued existence of distinct and sovereign countries, and on the other the prospects for or against the abolition of war. The two are closely connected, of course, but we may deal with them in succession.

As regards either the near or the remote future of nationalism, it seems exceedingly probable that nations will continue to be the largest political and social units. Cosmopolitanism does not appear to have much of a chance just now. It is talked of a great deal and looms before us as an ideal. A good many people admit there is no valid moral argument against uniting all races under one government. They acknowledge this in the abstract. So far as real promises go, however, they are neither definite nor encouraging. In spite of magnificent systems of transportation, communication, and education we regard nationality as a dominant fact. It is the vessel, so to speak, into which we pour a host of heterogeneous elements for the sake of welding them into one piece. Divergent traits and interests are reconciled by this device. Those swearing allegiance to one flag are brethren for offence or defence. They admit sharing certain beliefs and aims in common. They insist that whatever their disagreements, they will forget them and stand together to ward off a foe, if not to challenge others without provocation.

States are formed in such a spirit, and endure for centuries. Topography has not usually had much to do with the size or shape of them. To be sure, it has often been regretted that regions with like economic interests

belonged to different sovereignties, while others with no such common bonds were united under one government. Perhaps that is a subject worth studying. But whatever our opinion, we are sure of the relative unimportance of such facts in the past. While rivers, mountain ranges, and the contour of shorelines have profoundly influenced the migration of people, as well as their language, literature, and religion, they have not served as bounds to political units.

What has brought people together for military purposes has been first of all leadership by one man or by a few, and secondly a set of institutions developed after political unification had been accomplished. Great warriors have gathered followers about them and spread their dominion over others. Far-distant lands have been visited in these campaigns and compelled to acknowledge the sovereignty of a superior personality. Dynasties often arose on such foundations and managed to hold themselves for many years, or even centuries. With the help of exceptional organizers the conquering group succeeded in imposing ideals of right and wrong, of religion, law, and art upon those beneath them. In this way large numbers of people separated by many miles could be welded into a single monarchy or republic. Administrative subdivisions allowed enough elasticity for divergences of interests and provided to make a permanent union possible even though political consciousness was rather weak. Human history is full of such concessions granted by the central authority which made conquered provinces virtually autonomous. In part the establishment of modern colonial empires rested on this principle.

Still, until the end of the eighteenth century huge empires were out of the question. Lack of transportation and communication proved fatal to the ambitions of military genius. Once settled in a particular district, people were almost certain to stay there, henceforth to be influenced by their surroundings no less than by a sporadic intercourse with outsiders. Thus principalities remained small compared to those of the present, while

local characteristics gained steadily in momentum. If to-day, then, we profess nationalism wherever we are born, it is partly because of an attachment to the traditions to which we fall heir, and partly because of limits imposed upon the territorial expansion of states by the difficulties of transportation and travel.

On the one hand we find barriers in language, literature, political annals, ideals of government, and so on. Britishers, Russians, Brazilians, and Americans boast of so long a record of sovereignty or distinctive customs and viewpoints that not one of them would care to lose his nationality, to be mistaken for the other. Educators eulogize patriotic motives and policies. Military exploits of ancestors are magnified and commemorated on anniversaries. Patriotism and progress become synonyms to the majority of the people. Rulers and ruled seem one and the same thing in days of challenge by foreigners. Soil and soul, too, blend in the individual. Thus the nationalistic spirit waxes strong, overbearing all other sentiments in a political crisis. Even when at first uncertain of their status, nations become self-conscious in the heat of battle, in the course of a war which draws upon them the attention of the rest of the world.

On the other hand, the prospect of a union among all nations is greatly dimmed by the fact that human beings cannot after all move about freely, however eager they may be to do so and to clasp hands everywhere in token of lasting friendship. The necessity of securing a livelihood is paramount and prevents movements on a large scale for more than a few days or weeks during the year. Travel takes time and is costly. The inclination to stay "put", to remain where we have been born or where we have first sought success and found it, is deep seated and not to be uprooted by an appeal to cosmopolitan tastes. Nationality therefore promises to play an enduring rôle in the history of mankind. People will not mix and blend as quickly as some of us might wish. Political and ethical creeds vary in different parts of the earth and mould the character or outlook of each group coming under their sway. As far as we can tell

from present indications, provincialism is bound to be an attribute of most men. They are provincial in that their criteria and aims fit into a particular physical or socio-economic environment, and this weakness will at the same time prevent the spread of a truly cosmopolitan outlook.

When we consider next, then, the possibility of averting wars in the future, we do well to differentiate between the occasions for them in the remote past, and in more recent historical times.

Originally tribal jealousies, religious fanaticism, and lack of food were undoubtedly fertile sources of trouble between either individuals or social groups. Before man had attained a relatively high stage of economic development, these factors must have been constantly at work. The spectre of famine especially goaded men into frenzy and relentless onslaughts upon their fellow creatures. The pain of hunger is one of the most terrible known. When food or drink grew scant, a struggle was bound to ensue and to solve the problem. The frail or unlucky succumbed, while the stalwart and favored ones claimed the spoils. Again and again wars must have turned on questions of food supply, on the fear that there was not enough in sight for all. Somebody had to do without or die in the attempt to hold his own. Primitive life, as Dr. Patten has said, presented the picture of a pain economy in which risks and sufferings predominated.

We must now add, however, that scarcity of food has long ceased to be the main reason for enmity among human beings. Wealthy and powerful nations have taken the aggressive no less than others whose very existence was at stake, nay, rather more often. What has driven men to fight so far has been an inborn spirit of pugnacity, natural greed, and an appeal to pride which ranks second only to our sense of self-preservation and perpetuation. At all times men have been ready to take up arms when their physical courage seemed in doubt. The desire to prove one's daring is deeply ingrained. Approval by others fortifies the disposition to enter a

fray. For the masses everything turns on proofs of prowess and strength, while for a small minority the goal of life has usually been preëminence and power. Men of brain therefore have been no less inclined to war than the unsophisticated millions. Indeed, pride and prejudice, greed and self-assertion at any cost are more common among men of exceptional energy and insight than among the rank and file. Precisely because these characteristics are part and parcel of human nature, wars have been frequent and protracted. Most of them originated in the rivalries of dominant groups. Dynastic vanities, the arrogance of genius, conflicting interests as seen by magnates in this field or that, these have been starting points for bloodshed on a large scale.

One phase of this subject is presented to us occasionally in the dictum that wars make men, that is, make them manly. In every country and age leaders have been found who extol the virtues of war as a cure or a prophylactic for effeminacy. To fight is to toughen the moral fibre, to resist hardships and inure the body. Furthermore, there can be no doubt that under the stress and strain of a moral conflict inventiveness is stimulated and a deeper sense of responsibility for others awakened. During the late struggle between Allies and Central Powers it seemed to many as if the finer qualities in us were revealed more magnificently than ever before. Self-sacrifice and loyalty, tenacity and fortitude, subordination and self-discipline—these were mentioned as traits cultivated "at the front." Combat has ever thus been glorified and welcomed in spite of all its gruesome experiences.

Now, whether we subscribe to any of these doctrines or not makes little difference as long as we realize the obstacles in the way to an absolute elimination of bloodshed through group feuds. It is evident that a variety of conditions combine to make wars popular even in these days, and may do so in the distant future. Racial differences will play a sinister rôle for a long time to come. Nationalism is a necessity in view of the difficulties of migrations and of such a frequent intercourse

of individuals from all parts of the world that regional peculiarities must disappear. Innate traits of conceit and vanity, of greed and pugnacity, of a love of adventure and lust of power—these factors can hardly be rooted out of human nature; nor can we be sure that in certain forms they are not beneficial even though repugnant to a prevailing code of ethics. Thus, all things considered, the probability of our getting rid of one powerful check upon population is not as great as some of us might wish. It remains to be seen what can be accomplished in this direction. For the time being we can only say that wars are as old as life, that most people are easily stirred up to hatred and aggression, and that we shall have to develop an exceedingly fine mechanism for adjusting disputes among nations and their ruling classes before harmony throughout the world can become spontaneous and enduring. Unless this miracle is performed eventually, the prospect for perpetual peace is not a very bright one.

§ 8. By comparison the outlook for birth control or contraceptive practices is much better, although here too there exist reasons for a mental reservation.

If we have in mind first of all the classes rather than the masses, we are dealing with an already established fact. Quite a variety of motives for this minor group conspire to bring about restrictions. For one thing, the love of creature comforts often outweighs the desire for a large family. Economic standards are understood to embrace not only an adequate food allowance, but also pleasant home surroundings, amusements, leisure, education, and so forth. Many people demand these things. If they can get enough of them, they are contented, but otherwise they fret and grumble. Nothing can compensate them for sacrifices in this direction, for opportunities missed or hardships endured.

In the second place, wealth is by many desired not so much for what it can buy as for the prestige and power springing from its possession. Since the downfall of the feudal system and social stratification in gen-

eral, money has become the sole or principal index of personal worth. There are no hereditary rights, no landed estates handed down automatically from father to son, no special privileges enjoyed by one class only and designed to awe the less favored and capable proletariate. If a man nowadays wishes to prove his abilities, he must seek to earn on a large scale. Besides, the development of specialization and national currencies has tended to make cash and credit omnipotent. It seems as if money can buy anything, as if nothing can escape a plain rating in terms of it. Goods and services are continually produced with a view to exchange in an open market. The battle of life and the reward of unusual merits therefore assume a pecuniary aspect. The more we have, the greater our worth probably, and the surer our success in trying to gain public recognition. A great deal of the popular demand for riches rests on these facts. People wish to be able to spend much or to own much because it adds to their social position, enhances their local reputation, or indicates roughly the intellectuality of the owner. With income goes influence and political opportunity, admiration and envy, homage and praise in many guises. To be conscious of such measures of well-being is to favor a high level of economic living at almost any cost. If a reduction of numbers in the family can help bring it about we may be persuaded to adopt it as a principle even though we care little about creature comforts. A not inconsiderable percentage of those counseling small families or late marriage are thinking of the psychic satisfaction rather—if we may apply this phrase to prestige or power—than of sensual pleasures.

But again. The age of political and social democracy has fostered also the ideal of self-realization for the utmost development of inborn capacities. As theorists or champions of moral progress see it, our aim must be to produce quality rather than quantity. The slogan of equality has achieved miracles even though we do not realize it in full, nor deny its serious shortcomings. Whether we believe or deny that men are born substan-

tially equal, we have for over a century preached equal rights before the law and equal opportunities as far as our legal background of economics permits it. The drive for betterment has been universal among western nations. It has urged men to claim whatever their powers of body and mind can give them. Ambition, once a vice or offence, has long ago been welcomed as a sign of initiative and good citizenship. The masses too have been told to help themselves within the law, to regard all things as possible. Mobility has taken the place of immobility or status by birth. Zeal and enthusiasm have been fired in men's breasts. As a result of this change the trend of population may be slackened, if one may judge by recent expressions.

For the average individual this motto of self-realization may mean a greater regard for achievements than for unpretentious ease. Among intelligent people in many walks of life the value of education has been increasingly admitted. More time and money has been spent upon the training of the mind, and this has frequently necessitated a postponement of marriages or a check of birth rates. Among women too the effect has become noticeable in recent decades. Everywhere they have benefited by the broader application of the principle of freedom and equality of economic rights. They have learned to appraise their aptitudes for many kinds of work. They have been made familiar with the idea of earning their own livelihood, of being independent financially, of pursuing a definite aim in science, art, or business. In proportion as this emancipation continued, the lure of matrimony lost its power. For normal women spinsterhood need have no terror, so far as law or public opinion is concerned.

Yet all this is not, of course, to imply that the majority of people the world over, or even among the whites, will look with approval upon birth control. Granted that a certain percentage has already been converted to this creed, or will speedily embrace it in the near future, we may still question the attitude of the untutored masses. Will these too practice restraint for the sake

of improving their economic, social, and intellectual status?

In general—and arguing chiefly from current facts—we must moderate our expectations. The largest part of mankind seems less disposed to exercise prudence than to accept conditions as they naturally present themselves. We cannot assert on the strength of past experience that it will defer marriage or restrict the size of the family. If it is natural for people to fall in love upon reaching adolescence, it is equally natural for them to get married about that time. There are no statistics proving beyond a doubt that marriages per thousand of the adult population are becoming fewer. Celibacy is on the wane, and has been so for generations. Among men of the middle classes the age for marriage seems to have advanced slightly, but not enough to affect the birth rate in the end. Elsewhere it still hovers between twenty and twenty-five years, while among orientals the range is lower yet. Men, in other words, are governed less by notions of cultured living and a commensurate income than by variations in employment and wages on a modest scale. In a year of business booms they marry more readily than during a national depression; that is shown unmistakably by data at our command. But aside from this principle restraint is not widespread. Poverty does not seem to deter most men from falling in love or from entering the state of matrimony. Not high standards of living, as understood by the select few, but a fair prospect of enough things to keep body and soul together and to support offspring, that is the chief consideration guiding the average person.

Besides, when talking of birth control we should not lose sight of two complicating factors, namely, of the attitude taken toward it by governments, and also of the possibility of deleterious effects in the end.

From the standpoint of any one nation the voluntary reduction of numbers can be advisable only on certain assumptions. We must believe that wars will be virtually eliminated in the future. We must cling to this hope or hold either one of two other positions, one being

the possibility of converting all nations to a policy of birth control, and the second the chance that the numerical superiority of one nation will be offset for the other by a higher economic organization and equipment, so that both represent substantially the same fighting power. If we do not agree to these propositions, we may look askance at birth control, as long as nationalistic ideals prevail. Public authorities may dread a decline of population beyond a certain point. The deliberate restraint of one group and the continued growth of another may prove to be undesirable on the one hand because a lower civilization gains on a higher, and secondly, because a dwindling race may fall prey to a more prolific one. Governments can hardly afford to ignore this problem, whatever the sentiments of a reformer who narrows his sphere of interests and reckons only with the immediate future.

Hence too, judging by long periods, the effect of wilfully lowered births upon the physical and mental constitution of human beings may be an item worth considering. The movement for control is as yet so young, and has been sponsored by so small a portion of the population, that we cannot be quite certain of final results. Though we have so far no reason for considering contraceptive measures injurious, this may be because we judge by our own generation. After a century or two definite changes in vitality, mentality, physical strength, and so on, may become noticeable. It is not inconceivable that our productive powers may suffer in the very long run. Limits might be set to our personal efficiency by the very measure which was designed to ensure us an endless supply of comforts and necessities. Such thoughts may cross our mind and may some day be taken up seriously, though for the present we can well afford to dismiss them as phantastic and out of place.

§ 9. In conclusion, then, we may sum up our principal views on the subject of population and prosperity as follows.

In the first place the past growth of numbers as well as the improbability of a marked increase of natural

resources point clearly to a stationary or falling economic level of living unless counterforces can be enlisted. In the second place, invention and research may stave off the advent of world-wide diminishing returns for a long time, if not permanently. The chance of our unearthing new riches and effecting further economies must not be belittled. Third, checks reducing the number of those born may be expected to become less active, excepting perhaps wars of human making. Fourth, birth control seems to be the most important and by all means logical step for preventing an undue multiplication of numbers, that is, of numbers incompatible with a further increase of goods and services per capita. On economic grounds this measure recommends itself, and what is here more to the point, may be regarded perhaps as indigenous to a certain stage of civilization which esteems quality more highly than quantity. Fifth, so far we have no reason for anticipating evil results from any moderate use of contraceptive measures. Our faculties for mental and economic development do not appear to be injured by such a policy just now, and probably never will be. Sixth, such a deliberate and permanent method for retarding the multiplication of the species can, however, only be considered indispensable to economic progress if hereafter wars are abolished. If we continue to look upon them as ineradicable evils, or as an act of Providence which has an evolutionary mission in spite of its horrors, we shall neither need birth control in the long run, nor deem it reconcilable with nationalistic interests. In that case the future of prosperity for mankind as a whole rests in a periodic over-population rather than in an abundance of natural resources.

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APPENDIX

THE SCOPE AND METHODS OF ECONOMICS

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Preliminary

In discussing the scope and method of any science whatsoever we must not forget that we are inevitably influenced by the knowledge of our day. Just what science is, what bounds should be set for it, and how it proceeds to accomplish its task is a question we are sure to answer partly in the light of current data and criteria. Even if we assume that no science in the true sense existed before the sixteenth century, we must grant that changes of a notable sort have already occurred in many fields. What physics was for Galileo or Newton it is no longer. In part the subject matter has become different. In part methods have been varied, though induction and deduction remain ever the same. In part the ultimate hypotheses and aims of the science are relatively new. Hence a treatise on the scope and working methods of physics of earlier times no longer satisfies us. Similarly other natural sciences have lost a portion of their content and purpose, while gaining in certain directions formerly ignored. All inquiries indeed are subject to this gradual revision. Whether we act as researchers or take a philosophical view of scientific problems, we are impressed with the transiency of thought and the need of acknowledging the force of contemporary information.

It should not be inferred, then, that the next few statements represent the conclusion of all times or find favor even to-day in every quarter. As a matter of fact, there are among students of economic methodology (or of scope and methods) marked differences regarding centers of emphasis, modes of approach to the topic, or answers on certain moot questions. Every scientist, however, shares with professional philosophers the right to ask about the ultimate meaning of his work, to delimit his field and to show what principles underlie the treatment of particulars. The economist need be no exception to this rule. Though so far we have surveyed the economic process itself, analyzing relations and stating laws or generalizations, we may

now examine methodological matters, showing how scope and method become definite in spite of limitations in results. It is natural for us to wonder what precisely is the subject-matter of economics, how it is related—if at all—to other disciplines, and what methods go with it. To treat of these things is the object of the following pages. We shall consider, first, the nature of the data embraced in economics, secondly, its relation to a few other sciences to which it is actually allied or is considered to be allied, and third, the methods by which it attains its results.

PART I.

THE SUBJECT-MATTER OF ECONOMICS

§ 1. Superficially viewed, sciences differ in that they have to do with different objects or classes of things which occupy space. We think of astronomy, for instance, as the science of planetary motions or stellar systems; of geology as that which studies the history and composition of the earth, of its superficies and the changes occurring on it; of metallurgy as one treating of the composition of metallic substances or of the properties of such elements; of biology as the realm of plants and animals, their life forms and principles; of psychology as the inquiry into human nature; of social science as a survey of relations among humans; and so on. At first sight it seems as if in each case we can point to definite objects or to locations in space which have been selected as the proper subject matter. To a degree indeed such distinctions are useful. Upon further investigation however we shall find that the data of sciences are not so much particular tangible things or parts of the earth and of events upon it, as particular types of relations and of *concepts* regarding them. Sciences deal with typical and more or less permanent relations, not with individual facts. Man for this reason may be the topic of discussion for a number of sciences. He figures in psychology, in all social inquiries, in biology, bio-chemistry, and in special studies like genetics or bacteriology,—to say nothing of physics which may illustrate some of its principles from the anatomy or physiology of human beings. Several sciences thus may use the same concrete object for their studies, but point at different facts. Physics treats mainly of force, of the properties of substances as such, and of changes in their state regardless of composition. For chem-

istry the composition and molecular structure of substances must mean most. In biology vital processes during metabolism, growth, decay, reproduction, and so on, loom up as central topics. Psychologists seek to understand human behavior or consciousness. And so we might go on tracing lines of interest which show that relations and typical concepts are more characteristic of a science than certain objects or territories perceivable by our senses.

§ 2. Economics, as one of many sciences, discusses want and wealth as shown in the interrelations among human beings who either unite in a single political group called a nation, or consider themselves for some purposes brethren throughout the world, thus representing mankind rather than any particular community or nation. The *social* basis of wealth must not be overlooked. What some one person or family does in order to earn a livelihood is not the primary subject of economists, though they pay attention to it now and then in order to illustrate a larger principle or to interconnect details. Since man wants many things, and has to cope with natural difficulties in satisfying himself, there emerges a problem as well as a set of relations which may be described and reduced partly to definite principles. Whatever is wealth; whatever data connect with it or its changes in society—that is "economic" in its nature. The chief object of the science is the analysis and understanding of such events and of permanent dependencies between them.

In accepting the social viewpoint, however, we must not forget that the individual is, after all, the unit of every society. There is no social will, public opinion, social standard or movement, except individuals are involved and measure the extent of activities. It is therefore advisable, if not absolutely necessary at times, to emphasize a particularistic outlook or standard. Economics in modern times naturally takes the standpoint of the entrepreneur who is at the center of economic life, while laborers and consumers in general are nearer the periphery. Our treatment of want and wealth, for example, leads to a distinction between capital and capital goods, between earnings and creativeness, between capitalization and investment, between net profits and gross output by volume, between savings in dollars and an accumulation of concrete forms of wealth, between bank credit and assets possibly back of it, between ownership and operative organization which deals with production, but not with the distribution of earnings; and so on at great length. A bond is capital for the owner, but the issue of bonds does not in itself make a nation richer. One may

have a big income, yet contribute little to tangible wealth, rendering services which society as a whole can well afford to dispense with, supposing it approves of them morally. A corporation capitalizes its net profits, past, present, or prospective; but this does not prove the existence of values springing from past expenses, nor the reality of values when the wish for a sale arises. Net profits may increase while output by weight or volume falls. To speak of money accumulated in a bank is not to explain the growth of wealth among nations, though there is a definite connection between thrift and the economic progress of society. Banks may fabricate capital in one sense, yet add nothing immediately to the assets of either borrower or nation. And finally a joint stock company may exaggerate the importance of financial relations without making them bear in any way upon the efficiency of the plant or the income accruing to either employees or shareholders.

Thus a difference evidently exists between the individualistic and collectivistic method of gauging events, of measuring values. Economics must do justice to the facts as they pertain to large groups or to all mankind, but it must also realize that society is made up of individuals, and that under present circumstances the individual producer or consumer rates many things as a disinterested spectator would not. On the one hand certain facts and laws obtain irrespective of our mode of approach; on the other hand personal motives and ways of rating values may affect our argument powerfully.

In studying business cycles, for instance, we may have occasion to consider seriously such objective facts as harvests, weather conditions, general traits of human nature, public policies, and amounts of currency in circulation. But as against these we may also stress the insistence of entrepreneurs upon large margins of profit, banking practices governed exclusively by business motives, methods of capitalization explicable only by entrepreneurial standards, and perhaps peculiar weaknesses of this or that captain of industry who fills a strategic position in the economic organization of some one country. The pecuniary and particularistic view helps us therefore to portray processes engaging many millions of people. In going back of money we find the real meaning of thrift, efficiency, standards of living, prices, and government regulation; but in applying the monetary or individualistic standard we shall discover *why* the real things happen in the first place, and to what extent they represent permanent features in social life. That is approximately the relation between social and entrepreneurial concepts.

Both must play a rôle in our definition of economics, in our actual work while we are investigating facts and principles.

§ 3. Furthermore, we must not assume that economics has to do with psychic data only, or that on the other hand every phenomenon is reducible to essentially physical forces. Instead it is concerned with each of these two facts, and in addition with the interactions between them. When we analyze transportation systems or practices, we are confronted with truly physical data. There are ways and means, topographical conditions, rules for efficiency, and effects upon production or modes of living that may be treated as if life turned entirely on laws of physics, chemistry, or biology. The concrete basis of relations is clearly before us. We may ignore man's own valuations altogether. With this set of circumstances however may be contrasted laws of learning in man, the gradual modification of his innate predispositions—for example, of his egoistic leanings—a scheme of industrial management, or a code of ethics which influences economic activities at more than one point. Such traits or policies appear to be solely psychic and may easily be treated by themselves, since we cannot trace them back as a rule to concrete physical facts.

But in the third place we may also find an interdependence between many psychic and physical data. We may attribute human wants and preferences to climate or topographical features. We may prove harvest to depend as much upon ideas of management or scientific knowledge as upon the weather prevailing from day to day. We may explain modes of living, public policies, or the fluctuations of prices in the light of circumstances which partly are physical, pointing to measurable external quantities, while for the rest they spring from considerations and motives which rise superior to objective conditions about us. Most economic processes and principles, we shall decide in the end, connect mind with matter, *i.e.* reflect a relation between what is predominantly psychic here and physical there. Thus our subject matter is very far from simple in its make-up. It represents a composite, a fusion of factors the disentanglement of which is one of our main tasks.

Put differently, every social economy and every economic process embraces three kinds of interactions. There is the relation of physical to human nature, the relation of each individual to his or her fellow creatures with all their thoughts, wishes, motives, and plans; and there is, not least of all, the reaction of each one of us to the *concrete* facts of the *social* environment. This latter comprises things fashioned by man,

objects like technical equipment, engineering works, buildings, products consumed internally or externally, and in fine, the sum total of human achievements in so far as they become tangible, assuming forms which our senses can behold and our whole being responds to when necessary. These three types of interrelations give rise to economic activities of an astonishing variety.

§ 4. Because this is so, economic data and conclusions or laws regarding them are, in part of world-wide significance, and in part of a rather local and temporary character. When physical interactions or traits of human nature alone enter into our economic inquiry, we may be able to prove facilly that our statements about them are valid everywhere and at all times. Some laws of physical production, of valuation or of motivation back of enterprise are demonstrable at any time, may be found in the records of every nation. We agree perhaps from the start that fundamentals of human nature and of the production, transportation, or consumption of wealth are the same for everybody irrespective of race or social surroundings. On the other hand, the majority of processes and principles cannot be so universalized. There is unmistakable evidence that local and transient factors predominate, that our inferences are not valid without definite orientation in time or place.

Economics consequently has become largely political or national economy. We feel vaguely, and become convinced upon careful thought, that what we say is not applicable in every quarter of the globe. We confine our analysis perhaps to one domain. Each economist unwittingly or intentionally dwells most on the conditions peculiar to his land. The nation he belongs to is a sort of unit for purposes of diligent inquiry. It is bound to be so, as the nation is the largest known social unit for defence and offence. As long as people the world over do not forswear fighting, but continue to distrust each other, harboring hostile thoughts or planning aggrandizement to the detriment of some other people, so long there will be fighting units. Nations are military camps in this sense. They are composed of inhabitants living under one flag, giving allegiance to one central authority, seeking protection under its leadership from foes within or without. The law of central authorities covers all citizens, takes measures to regulate relations of a certain sort between them, directs their economic efforts in a degree, whether the ruling slogan is democracy or a benevolent despotism. Thus legal and other non-economic

factors color economic judgments, guide enterprise at many points, economic principles becoming thereby of local or of temporary validity.

§ 5. The various *divisions* within the science of economics are likewise influenced by these non-economic facts, as may be suggested by our imagining a *régime* different from the one now before us. If communism or socialism were the order of the day, many facts assuredly would change. Institutions now existing would give way to new ones. Subject-matter now of cardinal importance to economists would disappear from the horizon. There might be no market prices as now understood. Profits and interest might cease to be sources of income. Taxation would possibly be unnecessary, or in any case play less of a rôle, instead of encroaching upon our private social economy as it does now. Under such circumstances our arrangement of economic materials would not be anything like the one now in vogue. We should be made aware keenly of the weight of governments, of a legal background, or of ideals and norms which in themselves are not economic, but by their implications and applications are transformed into genuine economic data.

If we speak, then, of a structual analysis or of the principal parts of a science of economics, we must not be blind to their historical character; but having granted this, we may nevertheless state the facts as they confront us, as they have ruled in modern times. Speaking for the last few centuries, we may recognize four leading divisions in economics, namely, Production and Exchange, Price, Distribution, and the Growth of Wealth. Each one of these attends to particular facts, while together they furnish the gist of the entire science.

Production deals with the creation of values, that is, of utilities gratifying a human want, but not furnished by nature in sufficient quantities, if at all. Thus production need not signify the making of tangible goods. It involves *values* of all sorts, services included. Exchange for this reason is not a distinct division of economics, though often treated as such. Since it necessitates many technical steps in transportation, storage, and commerce bringing up problems peculiar to itself and engaging the attention of a large group of specialists, we are inclined to set it on one side. We think of the moving of goods or of the transfer of property rights which constitute trade or exchange; hence we may find it convenient to draw a line between exchange and the work of farmer, miner, or manufacturer. Logically however the two kinds of effort do

not differ, for in both cases values are created. If production is defined as at the head of this paragraph, then exchange with all its phases in finance, insurance, marketing, and traffic is an integral part of it.

Price treats of rates of exchange or of the amount of one good or of money paid for another. Whatever factors help to determine these rates, enter into our division of Price. We may study them as if operative for a brief moment, or we may ask about reasons for a change in any one rate. Whether we find the whole explanation in market phenomena, or partly somewhere else, remains to be seen in our investigation. Beforehand we should not restrict ourselves to bids and offers by merchants or consumers alone.

Distribution has to do with the apportionment of wealth among members of society. What is produced in a year or a week is, under modern conditions, divided among many people. Most of them are producers, while others do nothing but consume. Whatever the annual output of a nation, we naturally wish to know what becomes of it; in other words, who gets it, and on what grounds. If there are principles governing this allotment of shares we want to know them. We may in the end decide that scientific methods cannot account for the income of all individuals, families, or social groups. Certain circumstances may compel us to narrow down our investigation to the variables back of the income of a few classes only. The history of economics has made this clear. But offhand our task, when studying Distribution, is to consult all facts found to bear upon the subject, and to explain by them whatever types of income we recognize.

Finally, the *growth of wealth* is a part of our science because the wealth of mankind or of some one nation changes in the course of years, decades, or generations. We shall discover, in taking such a long-time view, that national prosperity is subject to vicissitudes, that there is now a rise, now a fall of annual income or of total assets. Furthermore, these fluctuations in wealth are attended by irregularities in business activity, in modes of living, in the trend of price levels or of population. Why these occur, what principles obtain in the increase or decrease of wealth, and to what extent they may be incorporated in a broader body of economic generalizations—that is the problem before us in the fourth division of economics as a science.

§ 6. The topics here called Production, Price, Distribution, and the Growth of Wealth do enter into our science of economics

in modern times because of the following facts which deserve special mention.

Production is a necessary division because nature does not provide us with everything we want and consume, indeed, gives us but a tiny fraction of it. On the one hand our bodily needs compel us to consume food, drink, clothing, and so forth. Our mental and temperamental traits too urge us to want many things, and to devise ways and means for gratifying them. Thus we enter upon the business of producing. On the other hand the things at our command are not *naturally* in such shape that we can use them. We must transform them, either directly, or indirectly by resorting to a long chain of efforts whose last link is something fitting our personal needs. Thus productive endeavor justifies itself, giving rise to a distinct and basic set of relations known as Production. Scarcity is the ultimate reason for it.

Exchange, though not really different from productive effort, may be mentioned separately because it is conceivable that society reaches a fairly high level of civilization without trading on a large scale. If each of us would produce what he consumes, and consume only what his own hand or mind has brought into existence, there would be no exchange. This latter results entirely from a division of labor, from the fact that society did not historically progress far without assigning to different members different functions. This certainly is one way of explaining it. Specialization leads logically to exchange since it enables people to produce more than they need, but makes them dependent upon others for that which they want, but cannot or will not produce themselves. But we must also note that exchange presupposes free will and powers of agreement. It points to the existence of individuals with admitted rights and duties. It proves that people have made pacts which guarantee them liberties, among which the right to property, contract, and vocation figure prominently nowadays. Thus exchange is really an outgrowth of two sets of facts, one of which is technical, while the second is legal or ethical according to viewpoint.

Price results from exchange, just as this springs from a few facts in production and government. As soon as persons have something to sell they want to fix rates or relative values. The question arises what each thing is worth as compared to something else. Pricing consequently represents a corollary to commerce and specialization, provided we assume the legal background of modern social economics. Whether it is con-

ducted competitively or through monopolies is a secondary matter which does not bear upon the methodology of our science.

Distribution too becomes a necessary part of economics since, and as long as, specialization is a ruling principle. If people must sell all or a part of their product, or if they render one service for the sake of getting another or of being paid in money, their income is not entirely self-determined. A farmer consuming only what he produces may use as much as he likes. His income is his total output or all he can spare. But in virtually all cases to-day we sell services for money; hence we are bound to ask what fixes our income. How is the output of a particular period of time divided among all members of society or among its producers? That is the question, and it rests on the data of production, exchange, and price already cited. If other facts not connected with exchange help to determine distribution, so much more is there for us to investigate. We may find non-economic as well as purely economic forces in operation. Yet Distribution as an integral part of our science has its roots in the above mentioned circumstances.

The *Growth of National or International Wealth* forms the theme of a separate division in economics because (as already intimated) change is the rule everywhere. Nothing is stable, and human events or achievements especially show a steady flux, a curve of rising and falling intensities or scopes of prevalence which weave the fabric of history. There is change in the physical environment of some one region. There are stages in the development of our knowledge of potential wealth, or of how we must manipulate natural forces. Our learning is not always the same. Technical knowledge and invention vary with times, the trend being on the whole upward. Furthermore, thrift or extravagance vary with people and with periods, and these too bear upon the course of social prosperity. Sociologists may provide us with information anent the methods of social control, the influence of social heredity, the periodic maladjustment between human beliefs and their practices, or between either one and the concrete physical and cultural environment in which men live. These factors are coupled with economic processes. They have a reflex in the fluctuations of wealth. Because of them the fourth division of economics gains much significance, though it is easy to overlook it in our anxiety to understand things as they are at the moment.

The changes observable in the long run indeed suggest that

they are in reality going on all the time, that relations of magnitude like prices, rates of output, frequencies of births or accidents, national or personal wealth, and so on,—that these ratios are never constant, even though the connection between *classes* of events or things like weather and crops, efficiency and wage, demand and supply, or either one and price fluctuations, may be absolutely permanent, or at any rate, last for long periods. To take a static view of economic life is consequently somewhat risky for scientists. It means assuming a balance between forces so that conditions for a while remain at a standstill. It implies a physical interpretation of psychic data. It simplifies problems by rounding numbers, averaging conveniently, so to speak, that is, by doing in their deduction approximately what statisticians do in their own field with propriety; but logical neatness of presentation is gained only at the sacrifice of accuracy and completeness.

Neither must we forget that two kinds of relations, or rather of broad groups of relations, combine in every social process, namely, those revealed at a given date or within a brief time, and those discernible only over long periods, say, years or decades. It is not a question of correcting a few exaggerations or distortions in a static view of conditions by a dynamic view, but rather of picturing everything as a dynamic process, of adding a long-time analysis to a short-time one, so that in the union of the two all economic laws may be properly formulated and verified in so far as any social science permits verification. Each way of looking at things yields its own truths. Each points to interdependencies that are as universal or national as they are enduring in time, but when compared they show their complementary nature, and so give us a rounded view of all processes at work. To insist, therefore, upon the exclusive use of a dynamic concept, and to adopt two different units of time—one short, one long—is more profitable than to show that things may be imagined constant even though they are not. In the end we must admit the need of contrasting, not social order with progress, but economic processes and principles manifested during long stretches of time with such as pertain to very much shorter ones, say to a single year.

§ 7. But this, to be sure, leaves us still a moot point regarding the place of consumption and of government control in economic theory. We may wonder whether these two phases of social life should not also form separate portions of our science, and so it is not amiss to say a few words about them at this point.

As for *consumption,* we are at the outset confronted with doubts since it has been in the past, and may be to-day, defined in various ways. We may mean by it either the destruction of wealth through use, or its use irrespective of wear and tear, or a shrinkage of values as such, or physical deterioration regardless of a decline of values, or lastly a use for personal satisfaction rather than for productive ends. The history of our science gives us examples of all of these interpretations. In fact, there is no reason why we should not welcome one as much as a second or third. It depends upon our argument or the nature of our subject which definition we prefer. In general, however, it seems best to associate consumption with use for its own sake or for the sake of further production or sale. Ordinarily this is the idea entertained by both theorists and practical-minded men when talking of consumption.

If, then, we ask whether this topic admits of being treated seriously, we must answer in the affirmative. There are surely a number of points in consumption which merit the closest attention of economists, and not rarely have received it. One obstacle to a unified treatment of the matter, however, is this very variety of effects to be held in mind. If we use things for the pleasure they give us, either internally like food, or externally like clothes, automobiles, and books, either regularly and with conscious enjoyment of it like tobacco, or indifferently as a millionaire might spend a week in one of his country homes—in short, if consumption is an end in itself, the economist must connect it with facts of valuation, efficiency, waste, the formation of capital, or problems in public finance. It may be shown that continued use reduces gratifications, that an increase of goods affects our estimate of the worth of an *average* unit of them, that valuations of this sort are reflected in our bidding for goods on the market. Both physical and psychic consequences of consumption may react upon personal efficiency, as tests of work among employees have often shown. Hygiene here becomes economic because of its relation to productivity. Again, there may be wasteful use and ill effects which under circumstances endanger the prosperity of a whole nation. Or it may be proven that capital is scarce because people are extravagant, spending their entire money income on consumables. Or public authorities may have a practical problem in trying to adjust modes of living to needs of revenue, this phase of the situation concerning also the student of economic processes. All these are topics allied to consumption in so far as it means use for pleasure.

On the other hand, we may likewise stress the productive employment of materials. It will appear that it bears upon rates of return, upon the future of natural resources in a country, or again upon the supply of equipment relative to consumers' goods. We may find out that cost in production is a matter of ratios in which different kinds of things are employed, this leaving the impression of waste in one case, and of extreme economy in another. Or we may take a long-time view, comparing the ultimate results of exploiting our resources with the immediate abundance of things which seem so desirable to the average individual. Or, once more, it may be argued that productive uses help to determine the flow of consumables at any given time or in the long run, the proportion of these two uses affecting economic life at a number of points. Thus the data of consumption are sure to have a deep significance, being withal genuinely economic in nature.

Still, this does not prevent us from having doubts as to their place in the science as a whole. On the contrary, we may feel less certain than we did before reflecting upon the problem. Some of the facts clearly must be considered under Production, some under Price, while others again fit nicely into a study of changes in the wealth of nations. The history of economics has suggested this strongly. Still other phases however may be put where we like, and all of them may be made the subject of a special inquiry, provided we treat some of them twice, first in an analysis of Production, Price, and the Growth of Wealth, and then again under one single heading of Consumption. On the whole that seems the best way to answer the question what is to be done with data of consumption. In the present state of our science we must refuse to grant them a special niche, but for some purposes we may allot them a great deal of space, especially if in the future we should shift our centers of stress, discovering laws or tendencies which so far have been overlooked.

§ 8. *Government economics* too may be considered as an integral part of economics, but here again we must proceed cautiously. In part, the economic activities of public authorities duplicate merely those of private persons. They are akin to them, presenting similar facts, relations, and principles especially as regards production in its physical aspects. In part, the data are additional to those provided by a private social economy, so that new problems arise. Governments represent the affairs of an entire nation. They have coercive powers. They speak and act on behalf of majorities or of

special groups, employing meanwhile unique means or methods. This being so, we must grant that many facts springing from governmental functions are unlike those due to individual initiative and private control, though equally economic and important. Here then is one reason for adding phases of government economy to the main body of our subject, if we so desire. We may either detach them or we may incorporate them in our general survey.

Aside from this option regarding many data, however, we are bound to differentiate in this connection between two viewpoints which may be called the pragmatic and the scientific. Governments may be pictured as experts who apply economic laws consciously, who aim at advantages through this application, who justify means and cherish ideals utterly impracticable in the entrepreneur regime. In a serious sense they practice an art, while private business and the social economy in its entirety give us material for a science. Human nature admits a certain physical and cultural environment, gives rise to certain processes, ways and means and quantitative expressions which we study in production, exchange, price, distribution, or population. Such data are the basis for a science called economics. Public control, on the other hand, represents the purposive aspects of life and of human knowledge. We may contend that it signifies an attempt at profiting by the experiences reflected in our private social economy. Something of the sort has often been claimed, and appeals to every one who has turned to the problem. Thus, while applications do determine here and there in new conditions and habits or modes of thought and work within the realm of private business, it is well to draw a line of demarcation between government economics and private enterprise. The former is political economy in a restricted sense; the latter is economics, or the ground upon which an art of public economy can be erected. Largely because this is true, many investigators exclude public policies from their treatment of the main body of facts.

§ 9. By way of conclusion, therefore, we may here stress also the difference between business research or special economic topics, and the science of economics *per se*. What this latter is we have in part seen already, and shall understand more fully as we go on with our methodological discussion. As regards the former, we are confronted with facts which lend themselves to two kinds of treatment, namely, to a purely practical one and to a strictly theoretical or scientific treatment. Transportation, insurance, foreign exchange, market-

ing, corporation finance, business administration and still other topics are familiarly found in a college curriculum of commerce and finance and the higher branches of business technique. There is no doubt that such matters may be studied systematically without our going further into economics itself. We may and do treat them as vocational subjects. We take courses in institutions of learning in order to prepare ourselves for a career, and this money earning viewpoint helps us distinctly in going over much of the ground.

But on the other hand, this is not the only possible mode of approach. Instead of treating these data as parts of a profession or of an active routine which centers in individual interests, in the valuations of some one entrepreneur or class of business men, we may also give them a broader significance. What so far has appeared to be merely a series of economic topics, may be converted into a science of economics, or rather into a certain portion of it. We may and should incorporate many of these relations into the main body of our economic analysis in order to bring out principles whenever they exist. Some of them are necessary to an understanding of the productive process as such; others aid us in a study of prices or of distribution. But whatever their exact place, it is clear that a disinterested scientific treatment of them emphasizes facts and present problems of a theoretical nature different in essence from those of a utilitarian standpoint. The former constitute a part of economics as a science, while the latter conform to rules of an art, that is, the art of earning a livelihood and of increasing efficiency or simply net profits and wages.

PART II.

THE RELATION OF ECONOMICS TO OTHER SCIENCES

§ 1. To some extent the subject matter of economics can be made clear if we compare it with other subjects which either are related to it in actual fact, or might be supposed to connect with it intimately at one point or another. Several sciences certainly are allied with economics. They bear upon it or profit by it in turn. Thus it is worth while to give attention to a few of them, selecting as of special interest in this connection biology, psychology, sociology, politics, history, and ethics.

§ 2. Before we do this, however, we may first introduce the

idea of relations between sciences in general, as is attempted in Chart 3. While there is room for doubt as to the precise nature of interdependence, or as to the exact value of such a principle of classification, it is nevertheless serviceable for present purposes. In this case we notice the dependence to

RELATION OF ECONOMICS TO OTHER SCIENCES

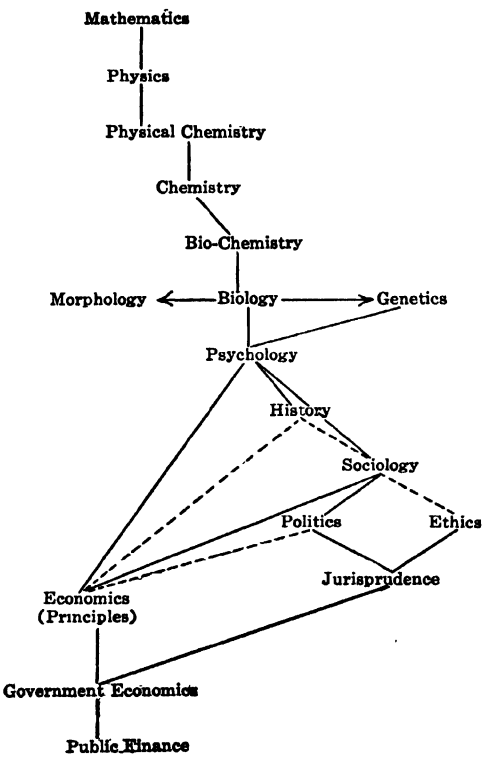


CHART III.

increase as we go from top to bottom. The first discipline mentioned is mathematics, and this is absolutely fundamental to everything else. Whether we consider it to be a discipline of a formal sort like logic or a genuine science like physics or crystallography, we must grant its paramount importance. It depends upon no other work. It deals with numbers, order, and spatial relations. It is first and foremost in a serious sense. From there on we meet with studies which depend

progressively upon what precedes. Physics for instance needs mathematics, and so do the rest of subjects, as just remarked. But physics in part supplies data for chemistry, and this is helpful for biologists. These again provide material for psychologists, and lastly we find the social inquiries, beginning with sociology, look to psychologists for guidance or raw materials. Let us note especially that the line of logical dependence runs in only one direction. To be good biologists we should know something of chemistry, but this latter may pass over biological data. Psychologists learn more from biologists than the latter learn from a study of psychology; and social scientists rely far more upon both biology and psychology than either one of the latter rely upon any social science whatsoever. All this is easy enough to understand once we bear in mind the progressive complexity of data and the evolution of animate out of inanimate things, or of the human species out of plant and animal life. As we move from the top of our chart to the bottom, we find the subject matter to grow more complex, its relations less stable, and the basic concepts more numerous. Mathematics is best off in that it treats of facts not to be tested by our senses or by any known empirical methods. Physics studies certain properties of matter, but ignores its molecular structure and its transformations which concern mainly chemists. Biologists must consider vital relations and variables involved in the matter, while beginning with psychology we study man as an individual or as a member of a larger group, psychic events intertwining with the physical and giving rise to problems in qualitative or quantitative analysis of which the rest of sciences know nothing. Thus it need not surprise us if several lines of dependence radiate out from psychology, some social inquiries connecting with it directly, while others benefit in a roundabout way, as shown in our chart.

True however that this general view of the interrelation between a number of sciences does not tell us a great deal about the immediate grounds of economics. So we shall now turn to a brief consideration of six fields mentioned a while ago, namely, biology and psychology, sociology and politics (or political science), and history and ethics. The question is, what do these fields mean to economics? Have they anything in common? How much can they give to economics either by way of facts or of viewpoint? And aside from that, what distinguishes each, so that we may at the same time find the means for delimiting the scope of economics?

To take them up in the order stated. Biology cannot be considered as of great significance for economists, as it deals with flora and fauna exclusively or nearly so. However, there are none the less the following facts to be remembered. In the first place, we learn through it of the principle of struggle and sex whose bearing upon population and hence upon wealth economists cannot ignore. Secondly, facts of heredity and variation must be kept in view for some purposes, so that genetics proves very much worth while. Third, the instincts themselves may be viewed from the standpoint of biologists, although we probably associate them more with psychological data. Fourth, the effect of certain forms of consumption and of work must sometimes be studied biologically. We have physiological facts in both production and consumption, and these connect with other circumstances which play a notable rôle in economic analysis. And finally, we may wish to correlate the physical environment with the physical side of human nature, in which case again biology proves instructive. Thus we cannot deny the reality of a tie between these two sciences, in spite of the fact that biology has nothing to do with groups of individuals forming a human society.

§ 4. When we turn to psychology next, we see at once that it *differs* from economics by studying each individual as *a representative of the entire species.* To be sure, during the last few decades social psychology has made much headway. There are now specialists who might be classed either as psychologists or sociologists, if we judge by the contents of their works published since 1900. Perhaps it is true that a large portion of sociology is psychology, or that this latter cannot be exhausted as a science until the social grounds and aspects of mental phenomena have been duly explored. That is a question not now to be settled. It does not bear upon our orientation in economics. But broadly speaking we may define psychology as the study of psychic data, of facts of consciousness or of human behavior in so far as it rests on a physiological basis. It does accept the individual as the proper medium for results.

Economics then can easily be distinguished from psychology, but it benefits by it none the less; indeed, far more than by biology or any other science.

For one thing, psychologists tell us of the neural basis of learning and of a gradual modification of our instinctive responses. Instead of accepting the well-known facts of man's intellectual powers, we may have them explained to us at

length, using them thereafter more carefully, if not to greater effectiveness. We find out why man is able to react in several ways to some one situation, how nerves are related to memory, association, and habits, how restraints are built up and what they mean, what imagination does in a practical way, how reasoning develops and why inventiveness becomes deliberate rather than accidental. In following the analysis of the psychologist, the economist therefore learns also to relate acquired traits to those given at birth and known mainly as instincts or emotions. This in itself is a gain for his purposes.

In the second place he may study productive effort in the light of these fundamentals, finding a key to the advantages of specialization, to facts of fatigue incurred during mental effort, or to the slow but steady development of wealth which consists of things *not* furnished by nature, nor catering directly to the needs of the inner man. Many facts of the productive process and of organization for the creation of utilities become intelligible only by reference to the mental phenomena above mentioned. In so far as the technique of production is to be traced to its ultimate sources, psychology has much to offer us.

Third, whether we are interested in the cognitive aspects of economic life or not, we dare not forget the deep significance of affection and conation. Psychologists even more than biologists can enlighten us on the variety of human motives, on the paradoxes they give rise to, on the reasons for the endless multiplication of wants, and on the facts offsetting selfish and hedonistic leanings. The "economic man" who seeks much pleasure at small cost, who thinks of himself more than of anybody else, can be explained psychologically no less than through economic data, and what is more, fares better for it, since his irrational side perhaps receives consideration also. Habit is one force proven by psychologists to counteract some of our egoistic leanings. Altruism is a second element which triumphs over them at times, and this has its foundations in congenital traits no less than in acquired ones. On the one side we find parental love, spontaneous coöperation among blood relatives, a natural sympathy for those who suffer, whether they are strangers or not, and a herd feeling which prompts people to gather in groups, to keep together regardless of a need of protection. These innate traits of man tend to socialize him, to ensure peace and order when tangential forces like self-assertion and love of pleasure threaten to divide people into hostile camps. On the other side is an abundance of

motives built up during life, a tangle of cold-blooded schemes and of warm sentiments which grow to strength after birth. Psychology can explain to us in large part why human beings regularly develop pro-social tendencies, why they like to give and to defy the selfish voice within. Though we are informed of the grounds of the hedonistic calculus which seeks pleasantness and shuns disagreeableness in any form, we note also that intellectual capacities give rise to a superstructure of habits, ideals, and readjustments which aim at group welfare rather than at self-realization. In this sense the hedonistic calculus is tempered by a moral code not to be located among animals. Because of these facts at the disposal of psychologists they can help economists balance their use of the conflicting motives in man. In short, norms of conduct, valuations, or the rating of relative worth in thought and deed, in things and rights, and motivation as a force directing human effort—these factors become intelligible in the proportion that we listen to the counsel of psychologists.

§ 5. Of course, that is not exhausting the subject of human nature. In one respect at least psychologists prove unsatisfactory, as their data pertain invariably to the individual, not to relations among them. Thus sociology is more helpful precisely because it is a *social* science. It does one thing which economists must also do continually, it *treats psychic facts as quantities or as expressions of numbers of people.* It quantifies them, so to speak, and that in itself is of vast moment in an analysis of economic life.

If we pass over the question broached a while ago as to what precisely is the relation between social psychology and either sociology or psychology—a matter that can be handled in several ways—we may first of all point out a few general aims of sociology which distinguish it clearly from psychology. To begin with, it deals with groups rather than with individuals, except of course in so far as outstanding personalities influence their time, socializing their ego or their personal achievements. The relations studied pertain always to large numbers. The processes are pictured as binding people at a given time or as tending toward changes from period to period which make up the history of the race. These principles underlying social order and growth interest sociologists very much.

Secondly, they concern themselves deliberately with differences among human beings or classes of society, thus emphasizing a phase of human nature which psychologists have neglected until quite recent times. It is realized that men are unequal,

not equal; that differences may be accentuated or toned down by differences in physical or social environment—as the individual defines his environment. These facts receive due attention and in turn can be utilized by other investigators. The economist, for instance, naturally goes to either psychology or sociology, for information on this point, according to his needs. What he himself knows of it is either taken at its face value without being sufficiently analyzed, or is far from meeting his needs.

Third, like economics the field of sociology treats of many events and relations which can be stated quantitatively and are subject to changes likewise measurable to a certain extent. Hence both these sciences agree on one important matter. Both quantify psychics, just as natural scientists quantify physics.

To explain this a little.

The raw material for both sciences consists of the physical environment, of human nature, and of the concrete objects to which the union of these two gives rise, of what we shall here call the wealth of nations. Not denying that civilization is more than wealth, that a part of the social environment as the *individual* sees it is not tangible at all, and that this social wealth undergoes changes much more rapidly than our natural surroundings, we may none the less distinguish between wealth as the product of human endeavor, and either human nature or the physical environment itself. These three factors exist everywhere and form the basis of all events or relations known to social scientists. Furthermore, wealth and physical surroundings are obviously magnitudes of a very definite sort. We speak of resources, of weather or climate, of topographical features or the size of an area. These are quantitative facts interrelated somehow and providing a foundation for human life. The durable items of wealth fashioned by man also represent quantities. Whether we think of volume or weights or value, we have figures that can be handled as if no physical elements were involved. Even mere numbers of people constituting a population can be treated in this fashion. Thus some of our economic or sociological data gain significance largely as quantities.

Human nature, to be sure, is not a quantity in this sense. Indeed, it should be admitted that psychologists find it extremely difficult to undertake quantitative analysis, to think of psychic states or of motor reactions of any sort as sizable things. For them qualitative analysis must suffice, barring a few special procedures not yet developed fully. But sociology

as well as economics may quantify human nature. They do this unavoidably by treating, not some one individual, but many of them gathered temporarily or permanently within a certain place. In this way the psychic data become magnitudes. Public opinion can be expressed by a vote. Knowledge appears as school attendance, grades in class, or as the circulation of newspaper copies. Feelings and motives are reflected in crimes, in strikes, or in casualty lists brought from the battlefield. Ideals find expression in church or in philanthropic enterprises, and these can be treated quantitatively, as everybody knows. In fine, the intercourse among individuals which provides the subject matter of sociology even more than of economics also urges measurements of relative size, weight, worth, and so on, as well as a partly quantitative analysis of changes in these relations. Since sociology deals with inter-individual and inter-group phenomena, it uses psychic facts differently from a psychologist. It repeats here what economists do, though these latter do not cover quite the same ground.

Sociology namely takes particular note of the following features aside from what a while ago has been stated to be its general task. It studies organization or structure, and the principles ruling them at all times. It shows how vast numbers of people may agree upon certain common measures without being alike in temperament, capacities, or interests. It treats of social control and of forces making for conflict, stressing now standardization and coöperation, now class struggle and radicalism as a counterpart to conservatism. It describes the functions of learning and of social heredity which transmits ideas and practices from generation to generation. It correlates cultural environment or the achievements of religion, art, science, and industrial craft with physical environs as well as with the inward nature of man. It analyzes population from many angles, finding facts of greatest import to both itself and to economists. It seeks to explain *mores* or ethical norms as existing forces regardless of whether they meet with the approval of practical reformers or not. For some sociologists the basis of morals in human nature, in social intercourse, and in the reactions of man to his physical environment or wealth forms a starting point for discussion, for others a final conclusion after prolonged research. What psychologists discover about the variability and intricacy of human nature is therefore doubly clear to sociologists who consider the incessant exchange of ideas, feelings, and tangible products

among millions of individuals. And finally, sociology seeks frequently to understand the rhythm of social life, the ups and downs of beliefs and policies, the periodic discrepancy between creed and conduct, or between either and the tangible facts of the physical and economic environment. What this round of maladjustments and reconstruction means, they wish to find out. Along these lines they move and labor. Because of these problems they have a field largely distinct from that of economists. Though with respect to recent tendencies it may probably be said that sociologists encroach too much upon economics, while economists have not profited sufficiently by the wealth of data and the acuteness of reasoning shown by their colleagues, in the main these two classes of specialists pursue different lines of study.

§ 6. *Politics* or political science, as contrasted with sociology, has a much narrower field and correspondingly is of less service to economists. It specializes in public agencies of control such as central or local governments and more or less transient institutions which owe their powers to legislative enactments or executive orders. In part it is history, in part a description of existing organizations, practices, and ideals animating a nation or those at the helm of its public affairs. As far as results up to date show, we cannot be sure that politics is a science, for it has furnished us particulars rather than generalizations on government in any form. It is perhaps impossible for students of this subject to unearth laws valid for as long times and for as many people as those embodied in economic or sociological surveys. It remains to be seen whether it will become scientific in results as well as in mode of research or spirit of work. But this weakness does not, to be sure, prevent economists from benefiting by it. They may obtain from it instructive data on public control, on rules for administration, on the various laws effective at a time, on the legal conception of rights and duties regulating economic enterprise. Indeed, what we have called the legal background of our modern economic order is made up mainly of instruments of government, of court decisions and acts of legislatures which constitute the chief topic of political science. To this extent therefore it is an important contributor to economic lore.

§ 7. History and ethics too can be connected with economic inquiries, as the past has demonstrated more than once; but they should nevertheless be kept strictly on one side.

As regards history or historiography, we must first of all remember a difference in viewpoint or method, and secondly

one in subject matter. Historians do not attempt to discover permanent connections or laws of the sort emphasized by natural scientists or sociology and economics. They are interested in events for their own sake, in every detail that helps to illustrate the annals of the immediate or distant past. They have to do with individual facts and relations which happen only once. These themselves are their concern, not the psychological, moral, or political principles which underlie them. In other words, externals rather than abstract concepts count. When delving into the chronicles of mankind or of some portion of it we do not propose to find precepts for future conduct, nor even generalizations which will predict the course of later events. To do so is to step outside of the pale of real historiography, though it is true that many students have been so tempted.

We hear, for example, of "philosophy of history" as a special branch of historiography. It has been maintained that such a study of facts in the large, of long-time tendencies in the development of mankind covering many centuries, should be the ultimate aim of all historians, since it brings up a series of problems which are discussed nowhere else. The ideal of permanent laws or of a master principle guiding all social affairs is here in plain view. Certain periods of the past have offered much food for thought along this line. The catastrophe overcoming France at the end of the eighteenth century, for instance, has served to provide materials for such speculation. It has been interpreted as a single instance of a universal law of revolutions in force everywhere and in every age. We may argue that whenever certain conditions have outlived their usefulness, whenever a conflict arises between different customs or policies, or between a concrete situation such as modes of living and a set of legal traditions and enactments, that then social unrest or political upheaval follows. We may believe that the overthrow of central authorities at all times is due to a type of maladjustment, that the populace unconsciously demands a squaring of creeds or customs with tangible facts, that economic differences among classes now and then become too pronounced, urging a rehabilitation of the despised masses, that methods or means of production and exchange call for particular kinds of government or at least of practices in jurisprudence and in politics. The relation between civic rights and stages of economic development may be fairly definite at any time. States of scientific knowledge and moral criteria may change together. Inventions

may alter the external socio-economic environment so fast and so much that certain classes cannot keep pace with them, clinging instead to antiquated notions which widen the gap between them and the more progressive element.

All this may be true, and makes an attractive thesis; in fact, one which should be tested thoroughly as it contains data of the utmost importance to everybody. If such laws can be found, they will mean ever so much to us. But clearly, in setting ourselves this task we are transcending the duties of an historian. We are doing the work of sociologists, if not of economists. We are attacking one of the chief subjects of the former, namely, laws of social evolution, of progress and degeneration, of cyclical movements and periodic readjustments. The historian proper does not wish to enter upon such studies; at least can do so only in departure from his real field. For him no more is necessary than a graphic presentation of the one-time events as they actually occurred, of the order in which they happened, of the interlacing of strands of motives and policies in human beings who symbolize their country or epoch, who had more to do with the shaping of public policies than anybody else. These things form the subject matter of history or historiography. It is an art even more than a science, perhaps. Certainly it trades in the affairs of people whose feelings lead each time to unique externals of conduct amidst an ever changing objective environment—most of which is economic rather than the original physical one.

Of course, historians do know of cause and effect. They insist upon the necessity of sequences as they took place and as they report them. They are thoroughly scientific in being impersonal and in tracing the seemingly inevitable course of events from first to last. They reason from facts of human nature known to them by direct experience, or gleaned otherwise. They demonstrate the constancy of it even while they stress the infinite variety of externals. But we must remember that what is the theme of historians is *precisely the external manifestation*, not the objective laws which interest psychologists or biologists. Human emotion and will find expression through *beliefs which have content, and vary with times; through ambitions whose content changes also; through technical means and methods which are the same only for short periods; through a tangible environment of wealth which is forever in flux, and lastly through institutions and organizations whose visible form cannot be fixed forever,* **though it**

may last for centuries. Thus it is perfectly intelligible why historians should bank on elemental constant facts regarding man, and yet portray a kaleidoscopic variety of occurrences which never repeat themselves. There is uniqueness of happenings and purposiveness of actions which in historiography overshadow the objective causality so characteristic of real social sciences.

Not only this. We may also differentiate between history and economics on the score that the former considers all times, while the latter is anxious to restrict itself to existing conditions. The one finds its material in the externals and hence studies all transformations in them; the other uses certain externals such as a legal background for economic activities only as a partial key to problems that have nothing to do with individual events and relate only in part to tangible objects. Hence one seeks to cover the entire annals of mankind, while the other proceeds to analyze a particular class of relations as bound up with externals of environment for a given period. Here again the difference is real enough, though a casual reference to economic customs of the distant past may be construed as an approach to historical interests.

§ 8. To turn then to our last topic, *viz.* the relation of economics to ethics.[1]

In discussing this matter we may first of all reiterate a point made early in our exposition of economic principles, namely, that morals are not truth but norms, that economists speak of the Is, while ethicists are concerned with the Ought. The first tells us what actually exists, why certain types of relations reappear continually, why human beings behave with great uniformity in given situations, and so forth. The second group (moralists) set up standards relative to which existing things are judged, because of which quite commonly a change is demanded which expresses—to their mind—the fulfilment of the Ought. Ethics as a discipline must face this contemplation of aims based on a sense of responsibility, described as values of a superlative sort to which nothing else in life corresponds. What should *be* or should be done is always far more important than what is, once this latter has been found at fault.

Secondly, therefore, our two subjects differ in the use made of the idea of free will or purpose. Natural sciences exclude it from their work altogether. They insist that regularities occur mechanically, that is, cannot or should not be pictured as emanating from a rational being, whether it be divine or

[1] See also vol. 1, ch. 7.

human. The fundamental concept for them is causation or cause and effect. Things are somehow connected. They do recur in the same way under like conditions. There is no exception to this rule if our knowledge goes far enough. That is the axiom they cling to.

Of course, among social sciences this view is not carried out quite so rigidly. We shall have occasion to see that the voluntaristic conception of events vies with the deterministic at times, that will and causality become complementary keys to certain situations. Nevertheless, broadly speaking we may grant all scientists the privilege of working with a cosmic principle of causation or else of offering laws and permanencies themselves as a sufficient explanation of happenings. In either case law is a reality as well as a working hypothesis. It operates in the realm of physical occurrences where matter is everything, and it is understood to govern social relations. The economist has reason to believe that regularities are due to modes of reactions in thought or deed which man cannot escape, even though he is capable of varying his responses within certain limits.

This then is a notion which ethicists cannot defend. To them man is a rational and self-directing being who may vary his actions as much as he likes. The power of will is not hampered as long as no insuperable physical obstacles intervene. A man may wish to do right or wrong. He may withstand temptations, however great they are. He may act to-morrow at variance with habits of long standing. He is always responsible for his thoughts and practices, indeed even for his feelings. That is a typical attitude on the part of moralists who preach the Ought as against the Is.

When we ask what this Ought may be, we come to a third difference between economics and ethics. We shall discover that among experts there is much dissension on this point, but that in general there have always been two answers. One group has emphasized results of some sort, while the other has dwelled on spirit or motive. According to the former the supreme good is salvation of the soul, a faithful observance of injunctions stated in the Bible, or perhaps the promotion of the greatest happiness for the largest number of people. In fact, it has further distinguished between a principle of self-realization or eudæmonism and one of godliness in the Christian sense. According to the latter, nobility of sentiment and purpose is itself a virtue, hence the true goal of all men morally tempered. The test of supreme goodness here is the

conscious endeavor to do what is right, to do as well as one possibly can, to aim ever at the welfare of others, even if on occasions it entails heavy sacrifices. The spirit in which things are done, plans made, hopes cherished, and failures acknowledged, is everything. Motives count more than results. To have meant well is a lien on forgiveness and a promise of mercy, however severe the legal code. Thus altruism is a policy as much as an accomplishment. Whoever meets its requirement is truly virtuous. In short, form more than substance, motives more than consequence, decide one's moral status in many, if not in all, cases.

Economists cannot share this view in their own profession, whatever their opinion outside of it. To them, for example, three things are defensible morally, or to be more exact, a-morally and wholly independent of ethical norms. One is the principle of egoism, the second the importance of results, and the third the identification of the good with social prosperity. They hold, for one thing, that selfishness is a reality and operates in a manner which is as a rule conducive to social progress. Without subscribing to the formula of Adam Smith or his disciples *in toto* they can logically accept selfish traits in man as a force that harmonizes with social order and the economic development of nations. The grounds for this tenet are taken partly from sociology, and partly from economics itself.

For another thing, there is much evidence that results are in themselves important. Economists treat these irrespective of what moral worth or iniquity may lie back of them. To put it differently: They pay a great deal of attention to motives, as has here been observed repeatedly; but they attach no moral quality to them. There is no question of good or evil as the ethicist speaks of it. Motives exist and bring definite results. They must be studied and are largely elucidated by psychology and sociology; but the mere reckoning with them is sufficient for economic purposes.

And third, as far as the definition of the supreme good is concerned, economics has a perfect right to prefer its own. It says that wealth is a goal and a good, or a sum of goods. It shows how mankind seeks to become prosperous, why poverty is weakening and opulence as a rule strengthening. The increase of tangible assets is treated as a desirable goal, though again it is not presumed that this sort of "desirability" meets the demands of a moralist. Desirable things are what men want, the use of which gratifies them; that is all. A good is anything capable of filling a need or of satisfying any want

whatsoever. That is a basic definition economists must uphold. As soon as they qualify it morally or lay down conditions smacking of ethical implications they lay themselves open to criticism by scientists, and what is perhaps worse, land in logical difficulties and dilemmas which are little short of fatal to their work. What is good, therefore, is either admitted to be quite a-moral, or we go on the assumption that economic goods and activities are necessarily virtuous by a real moral standard.

The chasm between economics and ethics is, then, indisputably a wide one. We cannot pass over it by specious arguments. We must honor the viewpoint of each party and let each perform its services as it sees fit. But in spite of this divergence of aims or ideals we can allow two facts which must now be stated, lest we help to encourage an unfortunate confusion. In the first place all economic data *may be judged morally* by us if we like. There are none that do not lend themselves to such appraisal. It rests with us whether we want to be scientists or ethicists. Economists themselves may pass moral verdicts on their subject matter, indicting persons or criticising conditions. They may do this after they have presented principles or laws, after they have completed their matter-of-fact analysis. Or they may, as it were, make a detour into the land of preaching, stating at the same time what prompted them to do so, and what lessons may be drawn by the spectator. We can hardly object to such excursions, seeing that in the popular mind economic facts are nearly always colored by moral sentiments. The moral valuation is so deeply ingrained in us, is so natural to every thinking man, that even a scientist may claim it as one of his rights. We shall follow him with interest, provided only it is definitely understood that he has done with science, and has launched upon moralizing.

This being one of the points to bear in mind in connection with our tabulation of economic and ethical data, the second one may be stated as the *common moral approval of economic relations*. policies, motives, or deeds. In other words, in the majority of cases the ruling moral norm is undoubtedly in agreement with economic practices. We are safe in maintaining that most economic data find moral sanction. Whether we go to an oracle on morality or accept the general consensus of opinion, we feel reassured about our material. Social economies impress most critics to-day, if not at all times, as fruits of an *ethos*, of an ideal and endeavor which is essentially ethical. In this sense too economics and ethics are closely related.

PART III.

THE METHODS OF ECONOMICS

I. The Nature of Scientific Inquiry and of Descriptive Statistics

The chief aim of scientists, we have seen, is the analysis of types of relations and the discovery of laws which help to explain whatever events are presented to our senses. They do not succeed in full measure unless they find more than individual facts and yet again become familiar with a far greater number of facts than the untrained man. To achieve these ends, however, scientists must proceed like other workers. They must invent and perfect methods. They must rise superior to common sense.

This latter indeed deserves brief mention at the outset of our discussion of economic methods, since we may easily forget that it is the original source of human knowledge. For many purposes it proves adequate and quite reliable. Without it man could never have reached an advanced stage of civilization. Day by day we use this method, achieving notable results thereby. We find out many things as we grow older. We not only recognize objects, persons, or events recurring again and again; we also use our powers of analysis in the study of details and complex relations. We compare and classify according to resemblances and differences. We try out things or situations, varying moves, materials, and forces. If we were not able to open a window, for instance, we should resort to what is called trial and error. We should perhaps pull or push in several directions, pry at the window from one side, use levers, investigate the sashes or look for obstructions such as nails. In several ways we should attempt to do what we first set out to do, and eventually succeed. In such solutions of unforeseen difficulties we display abilities to judge facts, to measure quantities, to correlate things which on the surface are not interdependent, going meanwhile from assumptions to conclusions. Though we are not systematic, though the method is one of trying and of mistaking (hence of trial and error), we do not proceed in utter ignorance. Whatever knowledge we have acquired regarding the objects in the case, we may apply. We start with beliefs or hypotheses and conduct our inquiry accordingly. Not everything in these common sense

methods, therefore, is hit or miss at random. Without being trained particularly for our job we manage to differentiate, to select, and to dovetail steps so as to get satisfaction in the end. Thus our efforts are often rewarded with a solution of the problem.

In short, human beings can reason and generalize. They can infer from past events which happened together that they will recur in the future. They continually base predictions upon experiences up to date. To say, for example, that thunder follows lightning, that a blast from the north brings cold in the winter, that a friend of ours is reliable, that a nightingale sings, that men love company, and so on, is to make generalizations in the light of observed facts. Our adages especially are fine examples of inference which everybody understands. We agree that birds of a feather flock together, that practice makes perfect, that love is blind, that every lane has a turn, that where there is a will there is a way, and so forth. These old proverbs point to definite events in the lives of people who summed up their inferences in crisp, pithy sayings which successive generations find substantially true. Thus one might argue that laws are discovered by personal experience. It is a law that still waters run deep, or that honesty is the best policy, for frequently we do find depth of thought in quiet people, as a rule we are rewarded for treating our fellowmen fairly, with proper respect for what is "mine and thine." Common sense truly is useful enough.

It has weaknesses, however, and these have urged the devising of finer methods which we associate with science. It is weak because it depends too much upon personal experiences or upon bare hearsay, and not enough upon the verifications of contemporaries or those of the past. On the one hand it trusts to rumors without testing them; on the other it fails to coordinate careful efforts by many people so as to leave a growing fund of trustworthy information. Too much of what it teaches must be learned anew each generation!

Again, while we compare and analyze to some extent in using common sense, we do not always exercise sufficient care. We are superficial in classifications or rough in measurements. We do not perhaps revise our conclusions in spite of new data and an urgent need of a retesting. Inaccuracy is a frequent fault, and with this is paired the even more serious one of acting on bias or starting with prejudgments (prejudices). We are influenced by suggestions from others. We have preferences and superstitions of our own. We succumb to these

foibles without knowing it and are hampered accordingly in our investigations. All our learning, in so far as it comes through casual experiences, is apt to be marred by blemishes of the sort just mentioned. So our gain is not really as great as it appears. Even if we do not begin with wrong premises or reason fallaciously, we shall be liable to errors that must prove fatal on some occasions, indeed often prove so.

Science, by special measures, improves upon these naïve methods of common sense. It does much better because it adheres to standards methodically established and corrected when necessary. In general it relies upon three methods to carry out its work, the consideration of which will be our next task, since we are trying to decide what is the procedure of economists in arriving at their principles or laws. *The three methods are experimentation, statistics, and deduction* (or what will here also be called *reflection*, for reasons to be stated later). The question then is: Which one of these three is best suited to economics? Will every one do, or must we depend mainly upon one or two, and if so, what are the reasons for it?

To comment first on the experimental method.

By way of anticipation we may say at once that this method is not easily adaptable to our science. Specialists are pretty well agreed on this, and have been at all times. To be sure, we should not consider it as absolutely unfit or impracticable. Theoretically it might be tried on a large scale, and in a certain sense we do that anyway, especially nowadays. We may for instance establish protective duties in order to see how the results for industry vary from those observed under a free-trade policy. An entrepreneur may engage first laborers only, and then reduce their number while investing more money in machinery of some sort. The difference may interest him and prompt him to make certain inferences. Again, farmers may try systematically to find the combination of men and materials which will prove most productive in the cultivation of an acre of land. Governments may watch the change brought about by an introduction of monopolies which take the place for the time being of unrestricted competition. Or they may take over a number of public utilities, trying to ascertain what the outcome is as to costs, to say nothing of the effect upon consumers who pay prices and want service of a particular quality. In these and other fields the experimental method might be given a chance. It is in fact often put to use, as witness "scientific management" in plants and the amazing

number of reforms already inaugurated for the sake of obtaining better modes of living, forms of government, and so forth. Manifestly, these advocates of improvement hope to be able to see a difference that is appreciable, that can to some extent be measured. If we like, we can treat these changes as types of experimentation. In the future we may resort to them more determinedly, seeing in them a ready means of finding permanent truths or of proving that one type of event is followed by another. If we should succeed, we should come close to laboratory tactics.

It is clear, however, that such essays or experiments are not real ones. They do not compare favorably with those of the physical sciences. They will always be unsatisfactory because of a few facts which can quickly be stated.

In the first place, the laboratory method aims preëminently at a control of events, and of objects or forces subject to examination. It selects its facts or objects such as appear for instance in chemical analysis. It repeats experiments as often as it likes. It varies relative quantities of things or different kinds of them. It isolates them when necessary, employing ingenious devices for that purpose. It resorts to exceedingly fine instruments of measurement, recording all changes in the facts under investigation and possibly of incidental features. In this way its reasoning becomes fruitful. Hypothecation and inference from it lead to gratifying results. The control over events has made this possible. But this is something which social scientists cannot hope to accomplish. Since they study relations between human beings more than anything else—albeit not exclusively these—they must count with the freewill of their subject. They cannot bundle men as they would animals or mere matter. Psychic forces are worlds apart from those of the physicist. Besides, the technical difficulties of concentrating men or of establishing ideal communities for the purposes in hand would be almost insurmountable.

Secondly, if experiments were to be carried out with much care, public control or coercion would have to play its part, and that would do away with the very conditions to be studied, namely, with spontaneity of action and thought or striving. As soon as the experiment started, results would have to be untrue to what applies to normal facts where individuals follow their own bent. That certainly is the objection the economist could raise at the very beginning. The planful procedure of the experimentalist would defeat its own purpose.

Third—and speaking only in general, since this point will be discussed more at length later on—all such experiments would yield quite varying results. We should be more bewildered than enlightened. Because of the complex nature of our units for comparison and the instability of the concrete environment as well as of human thought and conduct, no two experiments would presumably agree. Things never would be the same in two successive trials. That is something we can readily understand without going here into details, for it is suggested by everyday experience.

Under these circumstances, then, we are naturally driven to either one or both of the two remaining scientific methods. We shall ask next what *statistics* can do. We shall be interested in knowing to what extent it can take the place of experimentation in economic research, remembering that it resembles it in being also a quantitative analysis. What type of problems does it deal with? What are the principal steps in its procedure, and what may be expected from its generalizations in the field of social science? This is the topic to which we shall now turn.

The general nature of statistical work and the wide range of facts it covers may be suggested from the following few examples.

We may employ statistics in trying to find out what our chance is of drawing a certain combination of cards out of a plain whist deck in a single deal of thirteen cards. We may compute this chance either on *à priori* grounds, or proceed empirically, drawing again and again, perhaps thousands of times, and basing our conclusion upon these results. We may wish to find the range of different weights of walnuts taken from one tree, arranging them on the ground in order of size or grading them by grammes so that we can see how many nuts out of the aggregate belong to each weight. In all such cases we may either count the entire number of instances before us, or take samples at random in the hope that this is representative of the larger body. Again, a railroad company might wish to ascertain how many weeks in the year the average freight car is actually used in carrying goods, and what it does the rest of the time. It may find that four fifths of the year the average car out of, say, one hundred thousand, is not moving on the main tracks, but idling in yards, waiting to be "made up" with other cars into a train, standing on switchings awaiting orders for shipment, undergoing repairs, remaining idle for lack of business, and so on. The results

of the investigation may prove decidedly profitable to the corporation.

A government is usually interested in net birth or death rates for the entire population of the country, the changes from year to year being noted so that, after a few decades, one has a good view of a prevailing trend. Biologists try to learn of principles of heredity by counting the frequency with which some one trait or group of traits recurs in the offsprings. Hundreds of generations may be studied for this purpose, the degree of hereditariness being compared for both purebreds and hybrids. Employers in a factory may have noticed that accidents are more numerous in the afternoon than in the morning, and may wish to find out exactly what this variation is. It can be studied by hours for all workers on the grounds, or if these are too many, for particular groups taken at random. A public utility concern may measure fluctuations in the amount of electric current used by its patrons at different times of the day, this leading to practical applications in the control of power generators. A traction company in a city soon notices that its receipts are not the same for all days in the week, or for all months in the year. These data may be marshalled into arrays which put the lowest receipts at one end and the highest for some other month or week at the opposite end. With this as a starter a variety of problems may be taken up and put to good account. Indeed, the range of variations and the use of averages regarding them is recognized everywhere as important. Time series and their changes are widely observed, the most familiar example being perhaps the meteorological surveys of public authorities who record temperature, humidity, insolation or sunshine conditions day by day, and eventually secure data on the climate of a given region for long decades. Evidently such facts could never be gathered by casual observation. Statistics alone can bring them out.

Besides, statistics does not confine itself to a study of absolute magnitudes, ratios, or trends for some one class of events such as the per capita consumption of wheat. It aims especially at correlations or concomitant variations for two or more than two sets of events. We may, for example, wish to know whether the range of price fluctuations for butter is influenced by the absence or presence of cold-storage facilities, and whether this relation can quantitatively be stated for a number of years. It may be that the size of orders a business man gets for machinery determines to some extent the rate of net profit per total investment. Intelligence tests undertaken by edu-

cators or psychologists may tally closely or not at all with the earnings of the persons concerned, so that we shall perhaps rate the importance of the tests from an economic standpoint accordingly. Rent paid per average square yard in stores may correlate with the number of pedestrians passing by per average day or month, or again it may not. Perhaps we are interested in the effect that forests have upon acre yields in adjacent districts. We may have heard of the bad results of taking timber from the land, rainfall and its variations being governed by it. If we doubt this to be true we might among other things compare annual variations in crops per square mile with the density of timber stands nearby, or with the extent of wooded regions all around. If crops varied more after than before denudation, we might use this as an argument against it. Again, insurance companies find a correspondence between the number of fires per million houses and the types of flues or of building material used. Or take the case of producers who advertise their wares in a popular magazine. Perhaps they suspect that the number of sales or their total value varies with the amount of space given to advertising at one time, or with the ratio of such expenses to total marketing expenses. If this is the surmise, they will advertise in several ways, comparing responses by customers. It may be that some one method *is* the best!

In all of these last mentioned instances the object of statisticians would be a quantitative relation between several factors such as sales and method or scope of advertisements, fire frequency and kinds of chimneys in private houses, and so forth. We can see that correlations may be of two sorts. We may ask first, how often one frequency or size changes when that of a second item changes; and we may next ask whether the relative changes constitute a fixed ratio, whether they are proportional or not. Certain interest rates, for example, may rise and fall whenever the cash reserves of banks in big cities fall and rise. (Incidentally, this would be a negative correlation as compared with one in which different classes of events move in the *same* direction.) But in addition to this correspondence we may also find that interest rates rise as much as reserves fall, or that relative changes observe a fairly constant ratio, no matter how many of them we count. Both types of interdependence would probably prove significant.

Indeed, as some people see it, the main purpose of statistical measurements is the discovery of constancies which cover long

periods or extend over broad areas. There do exist regular connections between some events. We have regularities akin to the laws of natural science, though not nearly so stable or exact, of course. Thus statisticians are commonly credited with revealing uniformities which would never have been suspected to obtain without their guidance. We have remarkably constant averages for births and deaths per million of inhabitants, for marriage rates and numbers of children per average family. Insurance companies depend upon these permanent connections for their profits. They sell policies after having ascertained what the probabilities are of a certain event happening per thousand of possible cases, or how often it will probably happen. They do not know what particular person will die or be stricken with a disease or suffer from fire, but they can establish an average and be the more exact, the larger the numbers they are dealing with. The law of large numbers is their mainstay for practical applications, and where this proves misleading, they must consider additional cases in order to analyze conditioning factors and to deepen their classification of events to be insured against.

But constancies can be found in many fields besides this one. At post offices "dead letters" represent a fairly fixed percentage of all first-class mail items received. A trolley car company reports articles lost and found according to the number of passengers carried. Acre yields per average year in a decade; crimes per million inhabitants or per thousand of a certain race or occupation; tardiness of pupils in school; the inheritance of physical or psychic traits in plants and human beings respectively; the dispersion of sizes or of differences for any one trait; averages of weather per given month for long series of years; the amount spent by people on food relative to increases in their total incomes, or the relation between interest on call-loans and stocks of cash available in the banks of large cities—these and other data display a high degree of stability. For broad periods and extensive territories they are found constant or nearly so. The more we peer into such hidden relations, the more we are convinced of the services rendered by statistical inquiries.

Furthermore, even from the few illustrations here submitted we are able to gather several things.

In the first place, statistics is plainly a method rather than a science. The name is not well-chosen these days, since all sorts of problems are covered by statisticians. Originally they specialized in changes of population, of national wealth, of

conditions peculiarly interesting to statesmen or pertaining to public policies and affairs of *state*. Thus their work became known as *statistics*. But the nineteenth century has proven the possibility of mass analysis, the importance of studying large numbers, in a variety of fields. Social sciences, genetics, meteorology, actuaries, and business concerns aiming chiefly at an increase of net profits, have found statistics useful. A certain method has turned out to be necessary for discovering variations in large numbers of things which, as single occurrences, mean next to nothing. The method is everything, the subject matter nothing, for it belongs to several social and natural sciences besides involving practical applications in almost any kind of productive enterprise.

Secondly, statistics evidently is necessary whenever we wish to study large numbers of things or events, confident that they will bring out points which some one individual event cannot possibly suggest. A change in birth rates cannot be inferred from the history of a few families. The relation between marriage rates and economic prosperity for a nation is equally obscure to the casual observer. Insurance companies could do nothing with individual cases. The trend of prices for a half century can be ascertained only if many prices for each year and for long series of years are compared. And so on. Whenever the class of objects or events we study has certain characteristics which will be mentioned soon we shall find it advisable to resort to counting. We shall want to cover much ground, comparing long series of events, and striking averages so our work may be given a proper perspective. Statistics is truly a study in numbers or averages. It is the art of counting and comparing, of computing and of correlating things so as to bring out tendencies and interdependent fluctuations.

Third, another way of admitting the value of such a method is to remember that it treats of events not experienced by the student himself nor always to be perceived by our five senses. Statistical material is of that sort. No one individual lives long enough, is sufficiently observing, has retentive and intellectual faculties, to cope with the task. No one of us could master even a tiny fraction of the things to be classified, compared, and calculated. We are bound to go to others for their experiences and their knowledge of affairs in order to benefit. But aside from this dispersal in space which contrasts strikingly with the observations made by men in laboratory, there remains the abstract nature of statistical data. Such events as intelligence quotients, age, prices, income, party feelings, religious

convictions, atmospheric pressure, density of population per average square mile, trends in the per capita consumption of sugar, or correlations between any of these and some other factor, cannot be observed by the senses at all. It is doubtful even whether we can properly speak of all deaths as having been witnessed or of our having really *seen* a relation between criminal inclinations in a city and its educational status or church attendance. When we use such facts they become to us as *investigators,* mere words or abstractions. Statistics is a kind of mental analysis supplementary to the physical analysis of experimentalists. The former does not really *perceive* but *conceive.* It grasps ideas about things or associates mentally certain facts scattered over time and space. In this way it makes comparisons, arriving at interesting conclusions. The latter (that is, physical scientists) take the materials or instances of energy, perceive them directly with their senses or by means of instruments, and then watch them act in certain ways according to circumstances which may be varied or reproduced *ad libitum.* They conduct a physical analysis therefore, while statisticians indulge in mental analysis.

Fourth and finally, we must also stress the difference between descriptive and inferential statistics, for their bearing upon social science or economics in particular is not the same. When we try to understand what the statistical method can do for economics, we must ask, first, how far can statistical description or calculation be used, and secondly, on what grounds shall we attribute causal meanings to statistical series, inferring from them laws, or in other words making predictions which leave the impression that what happened before will happen again, that genuine laws do exist, that permanent connections of either a qualitative or a quantitative sort or of both may be read out of the numerical treatments before us. Statistics is descriptive when it simply tells what occurred, and inferential when it generalizes upon the strength of these records. Both phases deserve serious consideration by the economist, but they should be kept distinct.

What might be called the technique of descriptive statistics consists mainly of the following steps, as suggested in our brief account of the types of questions answered by statisticians. To begin with, classes of things or events must be defined and made comparable for different periods or places. Whether it be a complex like live stock, intelligence, price levels, crops, and disability for work, or such relatively simple units as acres of land, per capita consumption of wheat, indi-

vidual prices, births, fires, and a particular type of crime, we must be careful to state exactly what our terms mean and what differences (if any) exist when we apply them to different series of events or to different problems. *Secondly,* quantitative differences for traits such as size, weight, output, and so forth, may have to be arranged in the order of maximum to minimum, so that total ranges of variation and amounts of deviation from an average can be shown and calculated. Coefficients of dispersion are indeed important at times. *Thirdly,* all questions involve counting because we are always dealing with numbers of cases, of units in a series, of relative frequencies and amounts of change in the course of time. How often a certain kind of event occurs in a given time; how many members there are in one class as against another; how the relative numerical strength of factors varies from place to place or time to time; these are data commonly of great significance and to be mastered only by diligent study. What is known as the distribution of events for any one class in successive periods, or for different classes at an instant of time, plays a conspicuous rôle in most statistical inquiries. *Fourthly,* the resort to averages is well nigh universal for the simple reason that aggregates for any one class of events can rarely be surveyed or compared with others. The average therefore is a vital concept, a device for condensing a long story into a few lines, for bringing outstanding features into strong relief, for establishing tendencies in time, and a basis for comparisons which mean more than any individual summation. Frequency averages scattered over time are particularly useful. Statisticians emphasize them even when they compute deviations from the mean. Sampling, like averaging, becomes indispensable in many cases, since the entire sum of units in a class or of classes in a larger grouping cannot be envisaged or analyzed. In taking a sample from a lump or totality of events we assume that it is representative of the whole, that the characteristics in question are brought out by it fully or approximately.

But in addition to these four measures statisticians also resort to *correlations.* As intimated before, they may wish to know whether two or more than two classes of events are quantitatively related, whether they change simultaneously or in close succession, how regularly they do this, and how nearly these relative or "sympathetic" movements maintain a fixed ratio. Such concomitant variations, if they can be found, may suggest either that they are accidental—which means that we are ignorant of ultimate reasons—or have a common cause

back of them, or stand in a relation of cause and effect. During the last half century these types of interdependence have become increasingly understood and enlightening. They have been exploited for practical purposes, so that to locate as many of them as possible is now an acknowledged task of statisticians.

Their procedure then is definite enough, even if one considers only such principal steps as have here been mentioned. When however one comes to a question of application to economics, one must bear in mind further points.

So far as the subject matter of our science is concerned, it is easy to overlook the variety of topics included in it, and hence likewise to overestimate the ground workable by statistics. When we study the treatises of practically all economists, we see clearly that a great deal of the work consists not so much of analysis with a view to finding permanent principles as of description or a mere statement of facts. One part we shall find to be made up of historical accounts, of how economic institutions developed, what changes have taken place before the present era, and so on. Both legislative and private measures are commonly subjected to such considerations. In the second place there are sure to be definitions, since without them many chains of reasoning cannot be forged later on. Nearly every economist starts by defining certain terms such as value, utility, production, capital, and so forth, and this attempt at clearness is resumed every now and then, as new problems are being broached. Third, there is in many cases a more or less extensive description of existing practices, organizations, acts of legislatures, and so on. These relations are stated without any pretence to deriving generalizations from them. It is felt simply that certain processes must be described for their own sake. It might be a phase of marketing, of turning out textiles, of farming, of banking, or of transportation. The multiplicity of topics thus to be handled is virtually endless. But in every instance the consideration of particulars, of facts obtaining at a given time and place, is the only object of the student and writer. Fourth, a few facts are borrowed from other sciences and taken over as explanatory material. If we want to explain the economic aspects of a law of fatigue, we may go to physiology or psychology for enlightenment. If specialization as a principle of labor is to be understood thoroughly, a resort to psychology is again advisable. And so we may incorporate a number of facts which represent distinct problems and grounds for gen-

eralization in some other science, but which to the economist are only incidentally useful.

Aside from these four groups of data however there are two which deserve special mention because they constitute the essence of economics, namely, the analysis of processes for the sake of tracing enduring connections or of discovering laws, and the formulation of these latter in lucid language, corollaries being a possible by-product. The study of production, exchange, consumption, pricing, and of the distribution or changes of national wealth has always been considered the chief task of economists. Even to-day it engages their attention as much as any other topic which is accorded space in their texts. What they desire above all is a clear understanding of the principles back of these processes, that is, of permanent connections which may serve as a final court of appeal for the elucidation of all other data. They define their field as a science, and they have established many laws capable of being verified by observation. So we should perhaps expect further developments along this line. It may be that in the future the four categories first mentioned will be given less consideration, while the analysis of processes in production, exchange, and so forth, will yield even more conclusions of a permanent value than have so far been formulated.

Still, whether this be so or not, we can detect without difficulty a notable difference between the first and the second group of topics. As regards definitions, historical accounts, data taken over as demonstrated truths from other sciences, and purely descriptive matter which tells of things as they appear for the time, they do not lend themselves to statistical treatment. For such matters it is unnecessary and unfit because no magnitudes or changes in them are involved. The relation is of classes of things or of traits and events as such, not of relative amounts or rates of change measurable by units. On the other hand, the relations constituting production, pricing, distribution, or changes in social wealth may be expressed largely in terms of figures and equations. It would indeed seem that they can easily be approached through statistics, and we might act on this contention.

The production, exchange, pricing, distribution, and growth of wealth involve an abundance of magnitudes that we can count up, compare, and correlate to our heart's content. We may combine the individualistic viewpoint, which rates values as rights to property and favors monetary measurements, with the social or collectivistic one which cares more about things,

volume, and ratios of different classes of goods or services. The one would predominate in the realm of price and distribution, the other in a study of production and changes of national wealth, while Exchange as a special division of economics would unite the two standards or adopt them alternately. But whatever our decision on this question, we shall have plenty of opportunity to work statistically. There are facts and relations in production such as objective costs or monetary outlays. There are varying rates of return by volume or value according to ratios of materials, labor types, and motive power used. There are numbers in the organization of men, in financial aspects, in phases of traffic and marketing, in the business of insurance companies or of public utilities. Whether it be the study of personal efficiency, of scientific management, of relations between output and trade, between savings and income distribution, or of such minor items as unemployment, occupational data, effects of climate, or the lay of the land upon the localization of industries, the use of figures may be attempted. In the analysis of price and distribution especially it will recommend itself because here we are dealing with ratios of quantities or with units, fractions, and multiples which pertain to particular commodities, services, groups of people, times or places. We expect statistical tabulations to some extent, and have grown familiar with them even in the treatment of long periods where the trend of business conditions forms the principal topic for discussion.

Thus, considering the variety of problems before us and the evident importance of quantitative measurements for purposes of comparison, we cannot doubt the value of a statistical method. It will increasingly take its place alongside of others; it will supply us with information which otherwise would be lost. As we have seen before, many events and connections between them escape our personal notice, or rather are imperceptible altogether, since they are scattered widely over space and time and do not take tangible form. Hence we must rely upon our mind and industry, upon the accumulation of vast masses of facts subject to variations, representing different relative magnitudes. Statisticians can accomplish much by this procedure when bringing it to bear upon the chief divisions of the science of economics. There is no doubt of this, nor should we be pessimistic with regard to future developments in such an inquiry.

In admitting this however we must add one word of caution which at the same time may be considered qualifying. We

must remember that *statistics is at its best when describing trends and correlations,* in other words, when comparing sets of quantitative relations or of absolute magnitudes for *different dates.* Intervals, successions of periods, and simultaneous changes mean most in the end. What the statistician wants is the drift of things, the proof of approximate constancy over long stretches, and an insight into concomitant variations. He has aims here quite similar to those of an experimentalist, for this one too bases his inferences upon repetitions and variations, watching for constant ratios or for permanent connections of classes of events. The longer the period we are dealing with, the broader the possible scope of our work, and the more important the sum total of our contribution to social (respectively economic) science. This being so, then, we *should be prepared for a greater emphasis upon the long-time viewpoint.* So far economics has pivoted chiefly about an analysis of such processes, upon an elucidation of such principles, as run their course within a brief time. A few months or years have provided a sort of standard time unit for this purpose. Indeed, we have often preferred to speak of static norm, of a cross-section of economic life which shows things at a standstill, thus acknowledging that the majority of economic principles *can* be revealed in such a short-time view. Yet the data for a long-time view also deserve attention. The study of business cycles, of varying costs of living, of price movements and the changes to which national wealth is subject, convinced us of the existence of laws which can be discovered in no other way. Statistical work, therefore, may find a rich field along roads of inquiry hitherto unfrequented. It may possibly do as much for the long range interpretation as the so-called deductive method has accomplished for the traditional static analysis.

Whether it can be *inductive* is, to be sure, still a different question. We must now turn to this in particular, distinguishing from the start between two subjects which may easily be confused, nay, have for some purposes been treated as one, though such treatment is always attended with some risk. The first relates to the nature of causality as such, of which the causal nature of statistical correlations is a special case. The second asks to what extent any generalization of social science or economics has logical validity, or more particularly, (and for our needs, first of all) whether statistics may be used inferentially as well as for description pure and simple. Only after we have given some thought to both of these topics, shall we

have a fairly adequate idea of the pros and cons of the statistical method.

II. Causality and Statistical Induction

Cause and effect is strictly speaking a set of invariable antecedents and consequents. That which precedes a certain event at all times and immediately, is its cause, and what follows without exception is the result or effect. If the striking of a match is always succeeded by ignition or by a flame, the striking is, in the absence of contradictory evidence, regarded as the cause of the flame, while the fire is the effect. All the discussions of philosophers, logicians, and psychologists have not yielded us anything more important than this confession that causation refers to a temporal series of specific events. We have invariably a sequence, and the time interval is in most cases rather short; in fact, it may be infinitely brief, as in the explosion resulting from a spark in the powder keg. If we have reduced our classes of events to ultimate homogeneous units and assume a universal law of uniformity of behavior, successions are immutable. Whatever the conditioning phenomena, the selected group or series under our inspection display an ironclad rule of order. Event or thing *A* links with *B* or *C or D,* and so on. That is the most precise and narrow view of the principle of causality.

As people use this word, however, it has come to mean more and to cover situations materially different, and this looser use of the term is hardly less common among professional investigators than among persons of no technical training or interest in abstract concepts. For good reasons cause and effect is attributed to larger complexes or sought in groups of events not recognized by physicists or philosophers. Thus our appraisal of statistical inference and of the validity of social laws in general must be governed somewhat by the broader aspects of the question.

Causes and effects both come in chains or bundles which we may identify with objects or events distributed over space as well as over time. From one standpoint every antecedent is a cause, and any number of consequents an effect, that is, *there is a plurality of connections which we may deem either successive or alternative.*

The shot of a projectile from the mouth of a gun, for example, may be regarded as a single effect due to a series of events such as the expansion of gases, an explosion of a charge, a spark set

to it, and an act of man starting the ignition. Each of these steps is a cause, or all of them together constitute the real cause, the hurling of the projectile being the sole effect before us. But instead of this we may also treat the act of firing as an only cause, and the rest of the events as a succession of effects observing a particular order. Or take the case of a death explained by a physician. If he likes, he can consider it one effect whose causes are a stopping of the heart, a hemorrhage in the brain, a disease such as hardening of the arteries, a wrong mode of living of long standing by the deceased, and indicated mainly by a total lack of exercise; and these may in turn point to an occupation which prevented exercise, or to an extravagant ambition which aimed at a career of success and fame at any cost. Some such diagnosis might be offered, and would be instructive enough as far as it went. One single effect is traced to a number of events which occurred in a definite order, which often do so in reality. Yet the doctor could also treat all facts except the ambition of the victim, as effects. He might mention them all as results of this first factor which now seems to be the only cause. Thus dependent upon our viewpoint we have one cause and several effects, or just the opposite, namely, several causes and one effect.

This is one way of bringing out the idea of multiple connections, and it has often been used to prove difficulties in inductive methods, especially in experimentation. Another way is to stress what was called a moment ago alternative plurality, namely, the existence of either several causes or of several effects, but *not* of such as constitute a single series of events at one time. In explaining the death of a person, for example, we may mention apoplexy, an accidental fall, a murderer's bullet, or extreme old age. All four events are known to bring about the end of life. If it is not one, perhaps it is the other. One effect has four possible causes. On the other hand, any one of several effects may spring from some one event called the cause. Lightning thus may start a conflagration, the fall of a tree, the killing of a person, or a cloudburst accompanied by torrential rains. These things are possible results of electric charges finding an equilibrium in the air or through contact with the earth. Each of them is a true effect and goes back to an antecedent recognized as lightning. But the four effects are not themselves interlaced into a causal series, even though both cloudburst and any one of the other three events *may* occur together. Thus our plurality of effects is of the alternative sort.

Again, causation need not refer to any kind of *sequence.* It need not mean even two events following in order in time. Although some philosophers and logicians have insisted that this is so, that causality without sequence of specific events in a definite order in time is unthinkable, scientists have not acted upon this declaration. They habitually speak of cause and effect with regard to events *existing at a given moment,* whether it be a long or a short time. They connect coexistences, in other words. For these too may be found a causal relation as well as a plurality of the alternative kind. Whether we like it or not, we must take note of such usages. We must grant that coexisting things do reveal at times causality,—the reason for this to be discussed presently.

When we talk of typhoid fever, for instance, we may explain it by four different elements, indicating that together they bring about the result. There is only one effect called typhoid, but we find four possible causes for it; we mention water containing bacteria in certain numbers per unit of water, or the susceptibility of some people to the disease, or their uncleanly habits, or hot, humid weather at a certain time of the year. These four things exist simultaneously, are not causally interrelated themselves perhaps, but do coöperate in spreading the trouble. Sometimes we distinguish between degrees of potency, rating bacteria highest. Sometimes we think of uncleanliness rather than of weather or susceptibility as a cause. And then again each of the four factors is considered a cause.

On the other hand, we may find many effects for one single cause, and yet both effects and cause may represent coexistence, that is, events which we do know to be occurring at the same time, as representing distribution in space rather than succession in time. Thus we may explain many conditions in the arctic regions by referring to the climate. Without inquiring into the reasons for it, we are able to understand that many things are connected with it, sequences being entirely out of our reckoning. To begin with, we find extreme cold in spite of long days, and perpetual snow or ice over large areas, as a result of which there is a lack of natural harbors, of navigable streams, of lakes or facilities for transportation and travel. People in such regions are sure to be isolated. The permanent crust of snow covers mineral resources so that they might as well not exist. The soil beneath, if it is fertile, cannot be cultivated at any price. There can be no flora, no shrubs, herbs, grains, fruits and vegetables. Of timber we find virtually none. Animals are mainly fish in the sea, and these hard to catch. Thus a popula-

tion of the far north (or south) has neither herbivorous animals that can be domesticated, nor dairy products in any form. It is scattered thinly over vast tracts, condemned to eke out a livelihood almost entirely by hunting, uncertain of an adequate supply of even the barest necessities, poor always, and exposed to dangers which decimate its ranks long before a ripe old age has been reached. In short, its mode of living reflects the dearth of riches and a lack of knowledge of anything but a few industrial arts or elementary steps in the chase of wild beasts. Men and women have their work divided along definite lines since the first are kept busy at things for which the latter are by nature unfit or much less fit. Of economic organization we see hardly anything. Morals, manners, notions of government, and religion conform to a low stage of economic living. The higher expressions of civilization are unknown. Because of one single factor in the whole situation (climate), all these conditions inevitably follow. Though all of them are coexistent, we nevertheless select one as a cause and the rest as effects. We somehow decide that climate is a cause, and the only one. At bottom we hold it responsible for all the various facts just mentioned.

This then may remind us in the next place of the peculiar relation between will and causation, or between the deterministic interpretation of natural sciences and the telic or volitional one of social investigators.

It must have occurred to us already that causes are sought in psychic data no less than in physical ones. While in the narrower sense a cause is always an object or event, a unit which we can reduce no further and which is absolutely homogeneous for physicists or chemists, for other scientists it consists of any sort of object or event, including traits in man or manifestations of his nature. We continually refer to persons as instigators, originators, sponsors, or causes. We point to them as the key to a condition or undertaking. Human beings are real causes to us, though in the very next breath we may credit them with freedom of will and well nigh infinite powers of variation in their thoughts and deeds.

It would seem therefore as if some scientists—psychologists, historians, and social students being most directly involved—fuse two conceptions which cannot be logically reconciled. It seems as if they apply now the formula of natural science, now that of ethics or philosophy, treating man at one time as if he were bound by inexorable laws, and the next as if he could adapt his conduct to any circumstances that might arise. It is easy to take this view. But perhaps it is better to assume that

as a rule human nature appears to be a constant, really does represent a bundle of reactions which obey laws no less than do interactions between portions of matter, while occasionally we find it most convenient to treat will and causation as synonyms. We say that somebody has planned to do this or that and acts entirely on his convictions or motives; but we mean also that the expressions of this will-power are causes relative to succeeding events. In this way the purposive and mechanistic versions are combined. If we ask how such and such an event came about, we accuse somebody of being responsible. He or she or a group of people resolved to do so and so. They planned and executed their plans. They were under the sway of passions or prejudices. They showed motives and definite intentions. Hence the result. But this judgment of ours is not incompatible with the other that man always behaves in such a manner under like provocations. We may well treat the result as an effect of traits in human nature which, being fixed and beyond our control, function like true objective causes. In so far as cause means simply a regular antecedent or set of them, many forms of self-expression in us are equivalent to causes; for they recur again and again and lead to events of a particular sort which figure as outcome or consequent. Causation is merged in free will from this standpoint.

Indeed, we may enlarge upon this thought by confessing frankly that social sciences in general, and economics in particular, constitute a blend of science and philosophy. Not all of their subject matter is adaptable to an objective treatment; that is, when discussing it in terms of causality we have not actually exhausted the possibilities of our interpretation. Economics may very well be considered a theme for philosophers. It is permeated with notions of value in the absolute sense. It treats of events connected with human will, with feelings and innate strivings, with acts of valuation, with motives galore, and with ultimate aims or ideals which underlie much of the subject of pricing and production. There is nothing gained by denying this fact. We are brought in close proximity to it every now and then. We admit it even when divorcing moral criteria entirely from an analysis of facts themselves.

So we should not be surprised at the union of will and causation on many occasions. We may insist that men are free to determine their conduct, and that such an idea is diametrically opposed to determinism. Undoubtedly we should be right on both counts. Yet will is not always contrasted with cause, nor do we cease to be scientific on that account. To save appear-

ances we might distinguish between will as a hidden or abstract power and the perceivable expressions of human nature resulting from it. We might argue that these policies, manners, and specific deeds are the cause in social science, while the reality of will offers opportunities for those who take a telic view of history and of social processes. Lovers of subtleties might be inclined to grasp at this straw. Ultimately however we must revert, first, to a combination of physical with psychic relations in economics, and secondly to a treatment of human activities from both the telic and the deterministic standpoint. As noted earlier, we have purely physical events such as production, consumption, and phases of exchange, and in addition relations between these and psychic data on the one hand, and between human beings or psychic data alone. Thus the economist is bound to speak of physical causality at one time, and of psychic causality the next time. Either he treats these latter as causal connections, or he explains them as manifestations of design and will, in which case he may emphasize possibilities of variation in spite of an underlying constancy of human nature.

Now, when we go back from this consideration of the current definitions or uses of the idea of causality to their application in the field of statistics, we must first of all remember that figures in themselves do not mean anything. In the simplest case they suggest only magnitudes, or differentials and fluctuations of magnitude, for which the class of events by previous definition supplies the description. To speak of one thousand is to say next to nothing unless we know to what this refers. If it is one thousand dollars or degrees of heat, that is the first useful intimation we get. Similarly, if these ciphers indicate trends of change or correlations in economics, they tell nothing definite until we know of the reasons for them. Ordinarily we associate quantities and their variations with qualities, and not only that, we also wish to group about them other facts which are not figures, but events or tangible objects in space or time. If these are furnished, our tabulations, lines, and pictures mean something; otherwise not. This is so because, as suggested, ciphers as such have no contents or connotations for us. They do not, like words, remind us of *things*. They are not meant to indicate qualities, objects, or relations between them, but units in the abstract. Statistical series therefore must be given a background or setting. They must be linked with the real substance of experience. They must be surrounded with knowledge or relations in space and time. If we know that

certain permanent relations exist between certain physical facts, between individuals and groups in society, or between these and their objective environment, then they may be used to invest statistical summaries with flesh and blood. In so far as these primary materials of life give generalizations, statistics may be tested by them, yielding us perhaps a causal nexus. Without fail our figures and calculations are referred back to such preëstablished connections.

In case the series before us relates to individual events only, that is, to sums or averages of frequencies like mortality rates, price levels, acre yields, and so forth, interest centers chiefly in the constancy or change of frequencies *from time to time,* and if a change should be noticed we naturally attribute this to changes elsewhere. Our whole life's experience—to say nothing of experimental methods—teaches us that variation at one point hinges on variation at another. Events are always interlinked somehow. So we seek an explanation in whatever direction seems most promising, whither our understanding of the nature of the event in question leads us. If we are studying mortality rates, for instance, we look for a cause of a notable change in either external conditions surrounding men, or in modes of living characteristic of them. It is relatively easy to clear up such a variation, since death is a physical fact whose sources have long been studied with care. At other times the solution is more difficult, and yet we have one advantage as long as we are dealing with single classes of events only, for we are free to scour for an explanation in many directions. The problem of causality here does not tempt us to gross fallacies.

Suppose however the statistician has to do with correlations, not with averages and changes therein of single events. What may then be his questions? Plainly, he now has a more difficult task, for he must judge on the functions of two or three or even more variables *relative to each* other. What he wishes to know is whether they have a common outside cause or represent in part cause and in part effect, and which one in that case is cause and which effect. Barring his plea of ignorance under the title of "chance correlation", he hopes to locate a definite cause for these specific items before him. He is not as free as in the former instance, for he has to prove that his correlations are independent of one another, or on the contrary stand in a causal relation.

So, in passing over to this matter we do well to distinguish immediately between two types of correlations, namely, the coexistential and the sequential. As we usually think of them we

overlook the difference. We call them often concomitant variations because a change in one class of events is accompanied by one in the other. There is certainly a parallel between this sort of correspondence and the one which natural scientists observe when they find particular things change in definite succession, and perhaps in a fixed ratio. But statistical correlations may refer to real coexistences as well as to sequences, so that the phrase "concomitancy" is misleading.

A genuine coexistence is that of size and weight in human beings, the correlation being usually high and readily explained. The laws of growth suggest at once why big people should usually weigh more than slightly built ones or those of diminutive stature. On the other hand, a spurious coexistence is that of rates of net profit and the size of orders for goods sold, or the well known correlation between wholesale and retail prices. In these two cases we seem to be dealing with simultaneous events. We are prone to regard profits and size of orders as events happening at the same time, for profits do begin with sales in one sense. Similarly our two classes of prices may be treated as coexistences if we place them in a long period of time, say several months or years. When we do that, they both constitute a part of this period, and so may be represented as concomitants. In reality however they are not. Sales in the first case do precede profits, since many things must be done before net profits can be calculated. Much time and a long series of events may lie in between. As regards our two sets of prices, too, this lapse of time is evident upon further thought. Though we may speculate on the necessity or non-necessity of wholesale quotations coming always first, we can hardly doubt that virtually always the two will be separated by a certain interval. Coexistence here is apparent rather than real.

Indeed, in the very great majority of cases correlations do signify sequences; but this does not rid us of perplexing questions. We may believe that the two correlates—ignoring a larger number for the sake of simplification—are governed by a common third factor, or we may incline toward the supposition that one is a cause and the other an effect; and of course, there are also cases of plural causality, of which a word soon. Whether then we are facing a causal relation of any sort depends upon the degree of qualitative or quantitative correlation, upon the number of cases tested or upon the validity of our samples. On the one hand we deduce causality from such premises as the law of numbers and of distribution. It prompts the belief that a high correlation cannot be "chance". On the

other hand we proceed inductively, looking for permanent connections already known and demonstrably relevant to the case before us. The more we know of such connections in the realm of physics or of social processes, and the closer their bearing upon our correlation, the more convinced we are of its causal nature. If many samples of a high death rate, for instance, can be found in communities formerly boasting a low one, but whose water supply has been changed, we suspect at once a causal connection between these two facts. Our knowledge of diseases prompts us to consider the changed water supply a cause, and the changed mortality an effect. Often the establishment of cause and effect is made easy by such previous information. But at other times it is difficult or impossible, one reason being perhaps the fact that our two correlates go back to a common third antecedent.

Apropos of this problem we are often baffled by what is known as time-lag. The theoretical question for those studying statistical causality is what amount of time may lapse between events treated as cause and effect, or how precise our measurement of time should be. The lag may be enough to suggest just the opposite of what we know on other grounds to be true. Students of the long-time view of economic processes, and particularly those of business cycles, have in recent years met with many instances of such a distorted presentation of actual facts. Marriage rates, for example, may actually rise during or immediately after a national business depression. The figures prove this, and we might infer that depressions stimulate the mating of people, were there not evidence to the contrary all around us. But when we consider that prosperous years have preceded the bad, that young men or women have saved money *then,* and that this forms the financial basis of their marriage, we need not be surprised that rates may rise at the very time when conditions are least favorable.

Again, plurality of causes is just as common in statistics as in laboratory analysis. Many of our correlations point to a variety of causes according to our way of looking at them. If we find a high degree of numerical correspondence between rates of net profit on the one side and either price levels, or a ratio of advertising to total expenses or methods of management or the average size of orders on the other side, we may not know where to find the cause. Varying the combination, leaving out now this, now that element, we not only find a diminution of returns, but what is here more to the point, it appears as if each element were most essential to rates of net profits.

Experiments would often leave this impression, reminding us of the older conundrum of joint costs or of point producers, where we are asked to measure the share of each factor in the aggregate final result. The truth of the matter is: In such cases no imputation is safe or verifiable. We have here another instance of alternative plurality of causes, that is of coexistences any one or two of which may be regarded as a sufficient explanation of the effect. A great deal of causal analysis in every social science consists precisely of this sort of reasoning or onesided imputation.

Ignoring then such risks in statistical inference as spring from faults in classification or from errors in measurement, we may now grant that causality in statistics, as distinct from its generalizations, cannot always be traced, and can scarcely ever be given a quantitative rating. We cannot say that a cause is effective to such and such a degree, nor may we have an inkling of it at all. We are sure only of our figures, being determined to explain them in terms of physical or psychic relations if we can.

But this, of course, suggests also that statistical generalizations apart from causality must be unsafe, so that the stability of whatever series we find is not as great as we might wish or suspect. In the first place we notice, upon a little reflection, that the constancies so often dwelt upon, and admitted by us some time ago, refer to physical events rather than to those concerning the economist, or else that they appear in averages which are intended to hide the fluctuations from moment to moment. We hear of permanent percentages for birth and death, for marriages or divorces, for things lost and found, and so on. We are told about constants regarding acre yields, damage by fires, industrial accidents, per capita consumption of a commercial article, and so forth. Apparently we have here examples of what statistical research can do to develop economic laws of great importance. We must however bear in mind that *most of these regularities are founded either upon the physical constitution of man or upon habits of a physiological origin, and besides represent averages for a series of time units, perhaps for years, so that pronounced fluctuations may be hidden from view.* For business purposes this may be quite convenient even while a scientist has questions that remain unanswered. Thus we must not overrate the significance of statistical regularities for a study of economic processes.

Secondly, the chief reason for this instability or for the unreliable nature of statistical generalization is always to be found

in the subject matter, and notably in the kind of *classes* used for counting, correlations, and inductions. In a single sentence: These units with which all social scientists and statisticians deal are highly complex, comprise so many events grouped under one name that we can hardly expect them to yield constant relations. We treat of such composite facts as soil fertility, climate, efficiency, family incomes, price levels, capital equipment, the management of a plant, and railroad ton-mileage per day or year. Sometimes they refer to physical substances or processes alone, say, yields of corn per average acre or on any one acre per average year. Sometimes we have psychic data like intelligence or the price of commodities on the market. Sometimes we may not be sure whether we should think of the event as either physical or psychical, as for instance in the study of frequencies for disease, levels of living, and volume of trade, or of correlations for industrial accidents and times of day, or for changes in price levels relative to amounts of circulating money. In all these cases which may enter into economic analysis we must either use event-complexes as single classes or give up hopes of finding trends and concomitant variations. Most of our units are inevitably composite in make-up. Soil fertility depends upon many things, of which a dozen physical and chemical properties are only one set. Climate embraces humidity, temperature, air currents, their velocity and pressure, rates of variation by the hour or day, insolation or sky conditions, and so on. The income of a family may spring from several sources since children or the wife may earn as well as the father, and in addition gifts or legacies perhaps play a part. Price levels are supposed to comprise so many different goods and services that their composite nature as one class is obvious. Capital not only means capitalization or investment or outstanding stocks; it may also refer to tangible assets comprising a great variety of machines, tools, and so forth, so that our relating it quantitatively to output or to net profits or to the growth of consumables in a country is bound to be risky. That is, if we wish to be exact in our quest for causality and permanency of correlations we shall find the complex nature of our units—what a moment ago was called the event-complex—embarrassing. There is scarcely a class of things or events adaptable to statistical inquiry but it consists really of a number of distinguishable elements. We lump them all under one heading. We speak of ton-mileage as a single fact because it tells of numbers of miles covered by a ton of freight; but we know very well that both tons and miles imply other factors which

may be significant when we establish correlations or tendencies.

In general, we infer from the complex nature of our units that back of them must lie a great number of variables hidden from view and discoverable only in part. The danger is always that we can state trends or correlations, but cannot be sure of all the events responsible for them at any one time or at intervals of time. Precisely because our classes are built out of heterogeneous facts we must expect them to connect with an indefinite number of things. The management or organization of a plant, for example, may serve as a single factor when we compare rates of return or labor turnover or wage-scales, and so forth. It would seem as if this points to a very definite set of facts traceable in detail. And in some respects this is quite true. But back of it lies an indeterminate number of variables partly physical in make-up, partly psychic, partly purely personal, and partly linked with an outside world whose happenings cannot be controlled by anybody. Thus our first thought in connection with the discussion of the composite nature of statistical classes is the implied number of uncertain factors underlying them. We cannot prove them to be so many or so few. We cannot ascertain exactly what sort of events they may represent. We cannot argue like a player with dice or cards that there are so many possibilities and such and such probabilities. Conditions are never the same, and as to possible issues, there is an endless variety. All this is evident enough when we consider the material handled by either economists or statisticians.

More particularly must we trace the instability of trends or correlations to the variability of physical and human nature. We should remember that these events or connections reflect physical facts and expressions of mind or body which cover a wide range from moment to moment. The physical environment is never quite the same, though wonderfully constant when compared with social relations. There are changes in climate and in its several components. There are changes in soil properties or the various uses of them by farmers. We have fluctuations in richness of mineral wealth and in topographical conditions bearing upon travel or transportation. These things mean quantities no less than qualities; in fact, the former loom up largest when we survey economic processes. Thus we must expect changes that are important even though we deal with huge numbers.

Besides, these changes are as nothing compared to those due

directly to human activities in every field. Valuations are peculiarly mobile and ephemeral. Standards and customs are being revised continually. Inventions not only affect the mode or extent of use of natural resources, but also react upon supply and demand and economic relations in general. Supposing that the population did not grow or decline—a circumstance we must usually reckon with—we should still have interactions, first, among different individuals or groups of men, secondly, between either one and their self-created tangible environment consisting preëminently of items of wealth, and third, between either one and the surroundings provided by nature from earliest days on. Because of this diversity of connections our statistical generalizations must always be tentative or expressive of tendencies. That is, while in the great majority of cases a certain event or series of them will occur, and while this experience for long periods may justify us in hazarding predictions or enunciating economic laws, we are never quite sure of our ground. Exceptions appear. Laws prove to be probabilities, whether we have found a causal basis or not.

This, of course, leads to the further admission that most economic laws, irrespective of methods used, state tendencies only, being subject to revision from time to time because some of the conditions to which they relate have changed.

To be sure, generalizations applied to purely physical facts in the realm of production, or to certain phases of exchange, consumption, and the growth of wealth may be considered almost as enduring and trustworthy as those of physics. When we say that net rates of return from an acre of soil decline after a while, that the efficiency of a person is raised by a proper distribution of his effort over time, that a direct quantitative relation exists between degrees of specialization and volume of trade, that exchange rests on a desire by two or more than two parties to fill wants or to get things for less cost than their own production of it represents, that habits of eating and drinking affect our health by degrees and hence our working capacities, that division of labor and the use of tools is advantageous by increasing our output per unit of cost, that invention and thrift are essential to a development of capital and national wealth—when we offer such statements we are undoubtedly safe. Nearly always there is evidence to support our contention. What we proclaim is as true almost as the law of gravitation.

But the majority of our generalizations do not pertain to physical relations only. They refer to an interaction between man and his environment, to acts of valuation, to motives and meth-

ods of work, to ratings of worth, to processes by which economic rights and duties, abilities and aspirations are illustrated. Price for instance is a psychic rather than a physical fact. To prove that it is invariably determined by supply and demand, or that want intensities must be compared with expenses of production if we wish to understand it, is also to suggest the possibility of options. Even though our task is less exacting than the statistician's who tries to establish trends or permanent quantitative relations between classes of events, we have to grant the hypothetical nature of all our conclusions. Whatever our procedure, whether we rely upon specific premises or reason from personal observation or from data submitted by others, we find our economic laws failing at times. Within a few months or years of our announcing them there may appear new variables which necessitate a modification of our conclusion, especially if we have couched it in terms of magnitudes which suggest precision and rigidity of connections.

III. The Method of Reflection

This being so, our third method of science, or what we shall hereafter call the method of reflection rather than that of deduction, cannot claim to establish exact laws any more than statistics. In point of exactitude it is not superior. On the contrary, we may deem it inferior because it does not profess to generalize upon quantitative relations, but instead is content with a qualitative analysis. It has never yet been used to prove the existence of fixed ratios or of fixed relative changes measurable in figures or in any other symbols. It deals always with classes of events or things and their interconnections; hence it may be considered the method *par excellence* for qualitative analysis. Yet this limitation is in a gratifying degree offset by the other fact that by means of reflection we may treat interrelations and kinds of subject matter which in its absence are amenable to neither experimentation nor statistics. In other words, it does possess virtues which are worth while. It is invaluable very much in the same sense that a particular tool proves convenient where nothing else can be used. For this reason it deserves our careful consideration.

To illustrate its general nature and procedure before passing over to particular points.

Suppose we take the well known fact of a division or specialization of labor, and make out of it a problem for our present needs. Suppose we ask ourselves just exactly what it means, why people adopt it everywhere and have done so early in the

history of civilization, what other facts go with it, and what may be stated for or against it in the light of those results interesting peculiarly the economist. If these questions are put, and we are desirous of answering them with some care, we may proceed as follows, using the method of reflection without being perhaps conscious of it.

In order to find out what specialization means, we look about us, watching people at their labors, asking them what they are doing, comparing their moves or uses of materials and types of products—if they are tangible—with many others. Either we do this immediately after formulating our problem, or what is more likely, we already feel certain of this one topic. Past observation and perhaps readings have told us what specialization or division of labor is. If we make inquiries and meditate at length upon this one question, we do it only because we wish to be nice in our definition or to ascertain how far specialization has gone. In all likelihood we are astonished at the variety of callings. More of them are brought to our attention than at first suspected. Even if we do not wander from place to place, following men at work, our memory of past scenes gives us a new idea of the degree of specialization reached among white folk. Thus one step in our analysis has been taken.

Next we no doubt wonder *why* there is so much of it. What accounts for the popularity and progressive development of division? That is a natural query, and one which may haunt us until we gain enlightenment.

If we like, we can ask people why they took up a certain vocation. We can listen to their opinions, as far as they go. We may feel that there are many motives and circumstances governing the choice of work. Or instead of that we may read biographies of great men and little, finding out how they came to enter upon such and such a career. Or we may look into ourselves, answering honestly the question why *we* decided to do this rather than that. Instantly the reality of powers of choice, of diversity of interests, and of pure chance become clear to us. Or we may go on the supposition, suggested by experiences in other fields, that people do different things because governments compel them to, or because of a servile status into which they were born. Whatever the original causes of slavery, we know that it can become an institution and leave people for generations under the tyrannical rule of a small minority. Hence we might explain specialization as an order imposed from above and carried out by others abjectly. Perhaps we are inclined at this point to go into the history of our subject, to

read in books telling of the distant past, to consult chronicles or anthropological data, to take notes on records which go back thousands of years. That is then an incidental phase of the deductive method. But whether this comes up or not, we soon decide that the reasons must be definite and potent, since specialization has increased steadily and found favor in the earliest days of which we possess information.

Thus we are very likely to stop at two particular thoughts, namely, as regards differences in surroundings or among human beings, and as to effects upon efficiency. It may be that this second fact occurs to us first. As we reflect, we meet with it again and again. Either by considering our own case which gives hundreds of proofs of advantage in specialization going back many years in our life, or by watching events in the outside world we strike the great truth. If that should happen, then we may either rest satisfied or go further, asking what precisely is the ground for this greater efficiency. Surely, there are connections which do not appear on the surface!

So we may go again to producers, taking their word. Or we may experiment in a sort of a way, doing now this, now that, comparing our sensations and efforts as jack-of-all-trades with what we accomplish when specializing long and intently upon one class of work. Or we may simply take the familiar sayings of others that one cannot do everything, that practice makes perfect, and so on. Or we may go to psychologists who have experimented carefully on a few phases of specialization. Quite probably they have data for us in books, supposing that nothing appears in newspapers, at conventions, and so on. Various truths about specialization may thus be discovered. We hear perhaps of the learning process, of steps in habituation as a physiologist sees them, of the neural mechanism for response to stimuli. We are told about limits in attention and memory. We draw parallels between work and play, between amateurish and professional methods. We can see the higher speed of some workers. We compare costs in time, energy, and materials used. We either do this in a mill, mine, office, and so forth, or reflect upon what we have seen earlier, upon data supplied by governmental and other statistical bureaus. There is a wealth of facts to draw from, and in spite of disagreements on minor points we do not doubt the superiority of specialization. Indeed, if we are business men ourselves, we need only to think of the modern competitive system, of the rôle played by costs in production and trade, in order to know why specialization is necessary. Thus again our conclusion is as before.

Still, suppose we had not struck upon this principle of enhanced efficiency, we might try to explain division of labor by the other thought mentioned a while ago, namely, by the indisputable inequality among human beings, if not in their environment. As regards this latter, we should grant at once that nature favors one industry, while hindering another. Coffee from Brazil, wheat from the Argentine, diamonds from South Africa, wool from Australia, or potash from Germany seem to be natural products. Men are expected to earn a living by plying trades corresponding to the resources of a country. This in itself explains a certain degree of specialization for people inhabiting different regions. We may then however remember also that people follow a hundred different vocations, within a single square mile in cities for instance. What is here the reason for division of labor? We think again and stumble upon differences of taste, interest, aptitude, and so on, among individuals. We again take our own case, or that of friends and relatives. Or we may have watched people at work, attempting to do a particular task. We have found one versatile, one impractical. One could use his fingers skillfully, a second seemed to be "all thumbs". One excelled in arithmetic or drawing or carving, while others startled us with their power of reasoning, of imagining situations and describing them, or of organizing men into an effective machine. All these ideas may whirl through our brain as we reflect on the reasons for specialization. The subjective side of it stands out prominently. We consider innate preferences or special gifts as against the results of training, parental upbringing, necessity of circumstance, and so on. Thus we find it quite natural that different people should do different things. Even though we have not covered all angles in our approach, we have learned a great deal. We have resurrected our knowledge, so to speak. What was slumbering, has been aroused to action. What was proven to us inductively years ago, now serves as raw material for a new question or as verification of conclusions suddenly divined.

Of course, we need not stop at this point. Having satisfied ourselves as to what division of labor is, how it came about or why it has spread throughout the world, we may now inquire into consequences. We doubtless discover a relation between division and exchange. This first of all may strike our eye. We find the two together invariably. We hazard the guess that where division goes far, output is big, and volume of trade steady and large. There is much evidence to bear us out on this point. So perhaps we wonder whether trade causes specializa-

tion, or whether it is the other way about. On reflection we decide that people cannot specialize unless they are given certain things by others or own a surplus of them. Perhaps, too, we are told of the need of our first having things before we try to buy anything else. For several reasons we may put specialization ahead of trade, making it the cause rather than an effect. Whether we accept the opinion of others anent this topic, or try to imagine situations in which people exchange before having specialized, or consult historical records, or rely upon analogies for guidance, we finally agree upon a definite causal and possibly quantitative relation between exchange and the extent of a division of labor.

Hence other facts are suggested to us, if we do not come upon them by independent routes. We wonder about the effect of specialization upon the individual worker, asking for personal views, testing out cases in a factory, or on the farm, and so forth. Sometimes our own experience answers this question; sometimes stories heard long ago guide our decision. So we may find favorable and unfavorable items. Here the division means efficiency, there a stunting of certain faculties. Now it pleases us by stimulating inventiveness, the very narrowness of our range of duties enabling us to scheme out things, to devise means and methods which further promote efficiency and specialization. Now we regret a clash of interests among classes who turn out different goods, who follow different vocations, who obtain profits and wages from different fields, who cannot agree on what is most or least necessary for a nation. In the end this may lead us to thoughts on education, public policies, or on ethics. The farther we roam in our endeavor to analyze all the aspects of specialization, the more we discover. Newspapers and books, our own experiences, the verdict of strangers or friends, the spectacle of workers before our eyes, the indirect evidence of products, of modes of living, or of relations among men at home or in the workshop—all these sources are open to us. From them we garner our treasure of facts. With them we build up beliefs after having weighed all pros and cons and reasoned calmly.

To return then to the characteristics of the method of reflection: It is partly an introspection and partly a review of facts furnished by the outside world. We do look into ourselves, asking what we should do under certain circumstances, what our basic motives and types of reaction, and so on. This practical form of self-consciousness can hardly be dispensed with if we wish to understand economic life wholly. But even

more than this we must rely upon the statements of others, upon events going on before our eyes, upon recollections of things seen and heard that belong to our surroundings. These facts of the world about us must contribute largely to our success as social investigators. It is seen, therefore, that the deductive method calls especially for memory and knowledge, for ability to picture situations, for powers of abstraction and of cogent reasoning. We should have a broad range of knowledge, varied information from many fields, the visualizing qualities which are sometimes called constructive imagination, a penchant for abstracting common properties from a large array of heterogeneous facts, a gift for discerning causal relations among events or things seemingly quite independent of one another, and withal a good training in the principles of logic. However optional such requirements may appear when one starts out upon the method of reflection, in the end their value is sure to be appreciated.

But in emphasizing the need of inference by way of a mental analysis, as distinct from the physical one of the laboratory, one must not think merely of deduction. As in virtually all studies, deduction blends with induction without one's becoming aware of it. Alternately it is now this, now that, type of reasoning, the number of steps involved in this process being so enormous even during a single hour's work that a faithful, detailed description of them would be almost impossible.

As far as deduction is employed, it may rest either on data taken from other sciences, or on assumptions regarding human nature, or on such specific facts as the modern legal background of economic organization or a set of technical means for production. If we go to other scientists for information, they will usually have provided it by systematic research, using experimentation, statistics, or reflection according to the nature of their subject. If we depend on the elemental traits of man, we use either what comprehension we have of ourselves, or the findings of psychologists, biologists, the average man, and so forth. In other words, while we may treat psychic or physical data as premises for purposes of further ratiocination, they will in the majority of cases have been verified previously by somebody else, whether it be a professional investigator or the general run of people. With respect to human nature this is quite probable. We know, for instance, that men are ruled by self-assertion or self-interest. We connect with this fundamental feature the widespread and dominant longing for gain or for advantages at a least possible sacrifice. In analyzing pricing we argue that

goods go to the highest bidder in an auction, or that price is fixed at a point where the largest number of sellers and buyers can be satisfied. That is a reasonable view, and one which tallies well with everyday experiences. To start with this desire for maximum gain is to assume less than may appear; or rather, it is to assume that everybody is familiar with this inductively acquired truth so that the argument thereafter may meet with approval.

Of course, sometimes our assumptions represent facts merely, as in the case of the existing rights of private property, of contract, of vocation, and so forth, which constitute the modern legal framework for economic activities. Such things are not to be proven by induction, but to be grasped directly by our senses and henceforth used. And then again we may engage upon a process of reasoning without having offered more than a postulate, without pretending in the least that anybody has demonstrated its truth. In discussing the problem of international trade and policies, for example, we may start out with the idea that people naturally know best what they can do best, that without any guidance or compulsion by governments they select occupations and turn out products for which they are best adapted by virtue of inborn aptitudes, environmental conditions, and what not. That being our rather arbitrary assumption, we may conclude that protective tariffs are futile or detrimental to nations.

On the other hand, though we offer this assumption first, we may also express doubts later on, asking ourselves what would happen if tariffs did exist, if people were not left entirely to their own devices. We may enter upon a procedure not unlike the variations of the experimentalist. We may say: First this, and with it such other facts; now something else, and then what new facts? *If* we change from free trade to protection, what will be the result? We might urge officials to make such a trial, to register effects or compare conditions before and after. To a certain extent we are right in attributing differences to the change of policies in this one field, although we have seen long ago that amidst so many variables the test of concomitant variations is not reliable at every point. If however we do not approve of experimenting in this bold fashion, we may instead resort to our imagination. We may speculate on what differences would arise upon the adoption of duties after a free list. The deductive method includes this particular phase of mental analysis. It permits us to picture a variety of situations, inferring results from analogy or from premises advanced con-

sciously or unconsciously. As a rule, that is exactly what we do. We say to ourselves: Supposing things were not so, what would follow? What will disappear or loom up if some one condition is abolished? Or we wonder what else must be true if something we are told is really true. The implications of a theorem are continually before us. The more thoroughly trained we are, the keener our powers of vision, and the more original our way of looking at facts, the more we exhaust implications in a formal statement of an actual fact. In this way induction combines with deduction, giving us new notions or truths accepted by everybody.

To give but a single example of this union of deduction and induction in what we call here the method of reflection: We may begin with the obvious proposition that costs of production differ at different places, whether they be close together or hundreds of miles apart. We may then also state that people as a rule buy where things are cheapest, quality, and so forth, being the same. These two statements represent truths inductively arrived at either by economists or by anybody who is interested in economic problems. As a result we conclude that there is trade between different regions whenever costs do differ. But not only that. We furthermore bear in mind the costs of transportation. We remember that freight charges vary mainly with distances, although other factors help to determine rates also. This again is a fact derived from induction, from a number of observations extending perhaps over years. So we pass over again to a deductive step, just as we did in concluding that goods are exchanged between two or more than two districts when costs differ appreciably. We now say that traffic is limited by costs of transportation; for over long distances they mount up, and this perhaps offsets or more than offsets local advantages in production, so that buyers refuse to take imported things on account of the greater price resulting from freight rates. This is an easy deduction for us to make.

Yet even here we may not stop. We may reason in addition that something depends upon the value of an article relative to its bulk or weight. Suppose it is a watch we are thinking of. Suppose the labor expense in it gives it a high value, while it weighs but a few ounces and can be easily carried in a bit of a box. Here we have big values and small volumes. We perhaps reason that such an item may be transported over long stretches in spite of steep freight rates, for these latter comprise but a small fraction of the final price. So, from this standpoint, our original opinion about the radius within which com-

modities can be exchanged profitably is modified. Again we have used verifiable facts, but found differences between classes of goods which led to a revised statement regarding size of markets. Induction and deduction have been mixed imperceptibly in our pondering on established data. So far from the deductive method being exclusively deductive, it is even more inductive. It is both according to what step in our analysis we point. Precisely because facts are important, because we proceed empirically and unite enumeration and analogy or mental variation with inference from specific premises, we are right in distinguishing between the mathematical method and what has here been termed reflection. The second method of economics is no less experimental than that of the laboratory, though the invisibility of our variations and comparisons puts us at a sad disadvantage. It does indeed seem at times as if social scientists go day-dreaming when in reality they are hard at work, employing their analytical powers and technical apparatus of facts as conscientiously as any natural scientist.

In view of these salient features of both the statistical and the deductive method, then, we may now perhaps venture a verdict as to the scientific nature of economics. Having surveyed certain fundamentals of scope and method, how shall we decide?

We must, of course, grant that in some respects our material is subjective. It turns on human wants, feelings, judgments, and so on. It must rest on valuations and on inconstancies which a physicist does not know. The temporary nature of many of our generalizations cannot be denied. Neither do we cease to regret our inability to undertake exact measurements, or to provide inductions which are as universally valid as those of, say, a chemist. These two or three truths we better restate. But after these have been given their full weight, we may repeat also the following.

In the first place, there is room for a quantitative statistical analysis for many purposes. Secondly, many of our assertions come from other sciences and have there been demonstrated to be true or to be as reasonable as our state of knowledge can make them. Third, for the most part the economist confines himself to a qualitative analysis by way of reflection (deduction), counting upon personal experience, upon authenticated facts contributed by others, or upon assumptions which are often no more arbitrary than the last hypotheses of physical scientists. Fourth, as regards the results of economic inquiry, they consist partly of statistical tabulations, partly of indi-

vidual facts, partly of descriptions of details or of historical accounts and definitions, partly of laws objectively verified or verifiable such as those for rates of return, fatigue and efficiency, pricing and the effects of consumption, and so forth, and partly of theories for which no proof can be given at the time. Of these latter there is undoubtedly a goodly number, and a first glimpse of the subject-matter may leave the impression that theories hold the fort from beginning to end to the exclusion of everything else. That however is not so. The history of economics exonerates us on this score. So it is undoubtedly fair that we treat economics as a science. By tests of method, of achievements, and of the spirit animating every investigator, it becomes scientific in spite of its manifest shortcomings. This is perhaps an appropriate last statement to make in an estimate of the scope and method of economics.

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