

BOOK III.



THE PRODUCTION OF WEALTH

CONTENTS OF BOOK III.

THE PRODUCTION OF WEALTH.

CHAPTER I.

THE MEANING OF PRODUCTION.

SHOWING THE MEANING AND PROPER USE OF PRODUCTION.

	PAGE
Production a drawing forth of what before exists—Its difference from creation—Production other than of wealth—Includes all stages of bringing to be—Mistakes as to it	323

CHAPTER II.

THE THREE MODES OF PRODUCTION.

SHOWING THE COMMON CHARACTER, YET DIFFERENT MODES OF PRODUCTION.

Production involves change, brought about by conscious will—Its three modes: (1) adapting, (2) growing, (3) exchanging—This the natural order of these modes	327
--	-----

CHAPTER III.

POPULATION AND SUBSISTENCE.

SHOWING THAT THE THEORY OF A TENDENCY IN POPULATION TO INCREASE FASTER THAN SUBSISTENCE HAS PREVIOUSLY BEEN EXAMINED AND CONDEMNED.

The Malthusian theory—Discussed in "Progress and Poverty" .	333
---	-----

317

CHAPTER IV.

THE ALLEGED LAW OF DIMINISHING RETURNS
IN AGRICULTURE.

SHOWING WHAT THIS ALLEGED LAW IS.

	PAGE
John Stuart Mill quoted as to the importance, relations and nature of this law—The <i>reductio ad absurdum</i> by which it is proved—Contention that it is a misapprehension of the universal law of space	335

CHAPTER V.

OF SPACE AND TIME.

SHOWING THAT HUMAN REASON IS ONE, AND SO FAR AS IT
CAN GO MAY BE RELIED ON.

Purpose of this work—Of metaphysics—Danger of thinking of words as things—Space and time not conceptions of things, but of relations of things—They cannot, therefore, have independent beginning or ending—The verbal habit which favors this idea—How favored by poets and by religious teachers—How favored by philosophers—Of Kant—Of Schopenhauer—Mysteries and antinomies that are really confusions in the meaning of words—Human reason and the eternal reason—Philosophers who are really word-jugglers	339
--	-----

CHAPTER VI.

CONFUSION OF THE SPACIAL LAW WITH AGRICULTURE.

SHOWING THE GENESIS OF THIS CONFUSION.

What space is—The place to which man is confined—Extension a part of the concept, land—Perception is by contrast—Man's first use of land is by the mode of adapting—His second, and for a long time most important, use is by growing—The third, on which civilization is now entering, is exchanging—Political economy began in the second, and growing still attracts most attention—The truth and error of the Physiocrats—The successors of Smith, while avoiding the error of the Physiocrats, also ignored their truth; and with their acceptance of the Malthusian theory, and Ricardo's explanation of rent as relating to agricultural land, they fell into, and have continued the habit of treating land and rent as agricultural—Difficulty of the single tax in the United States	351
--	-----

CHAPTER VII.

THE RELATION OF SPACE IN PRODUCTION.

SHOWING THAT SPACE HAS RELATION TO ALL MODES OF PRODUCTION.

PAGE

Matter being material, space must have relation to all production—This relation readily seen in agriculture—The concentration of labor in agriculture tends up to a certain point to increase and then to diminish production—But it is a misapprehension to attribute this law to agriculture or to the mode of growing—It holds in all modes and sub-divisions of these modes—Instances: of the production of brick, of the mere storage of brick—Man himself requires space—The division of labor as requiring space—Intensive and extensive use of land 357

CHAPTER VIII.

THE RELATION OF TIME IN PRODUCTION.

SHOWING THAT ALL MODES OF PRODUCTION HAVE RELATION TO TIME.

Difference between apprehensions of space and time, the one objective, the other subjective—Of spirits and of creation—All production requires time—The concentration of labor in time 365

CHAPTER IX.

COÖPERATION—ITS TWO WAYS.

SHOWING THE TWO WAYS OF COÖPERATION.

Coöperation is the union of individual powers in the attainment of common ends—Its ways and their analogues: (1) the combination of effort; (2) the separation of effort—Illustrations: of building houses, of joint-stock companies, etc.—Of sailing a boat—The principle shown in naval architecture—The Erie Canal—The baking of bread—Production requires conscious thought—The same principle in mental effort—What is on the one side separation is on the other concentration—Extent of concentration and specialization of work in modern civilization—The principle of the machine—Beginning and increase of division of labor—Adam Smith's three heads—A better analysis. 371

CHAPTER X.

COÖPERATION—ITS TWO KINDS.

SHOWING THE TWO KINDS OF COÖPERATION, AND HOW THE POWER OF THE ONE GREATLY EXCEEDS THAT OF THE OTHER.

	PAGE
The kind of coöperation which, as to method of union or how of initiation, results from without and may be called directed or conscious coöperation—Another proceeding from within which may be called spontaneous or unconscious coöperation—Types of the two kinds and their analogues—Tacking of a full-rigged ship and of a bird—Intelligence that suffices for the one impossible for the other—The savage and the ship—Unconscious coöperation required in ship-building—Conscious coöperation will not suffice for the work of unconscious—The fatal defect of socialism—The reason of this is that the power of thought is spiritual and cannot be fused as can physical force—Of “man power” and “mind power”—Illustration from the optician—Impossibility of socialism—Society a Leviathan greater than that of Hobbes	332

CHAPTER XI.

THE OFFICE OF EXCHANGE IN PRODUCTION.

SHOWING THAT IN MAN THE LACK OF INSTINCT IS SUPPLIED BY THE HIGHER QUALITY OF REASON, WHICH LEADS TO EXCHANGE.

The coöperation of ants and bees is from within and not from without; from instinct and not from direction—Man has little instinct; but the want supplied by reason—Reason shows itself in exchange—This suffices for the unconscious coöperation of the economic body or Greater Leviathan—Of the three modes of production, exchanging is the highest—Mistake of writers on political economy—The motive of exchange	337
--	-----

CHAPTER XII.

OFFICE OF COMPETITION IN PRODUCTION.

SHOWING THAT COMPETITION BRINGS TRADE, AND CONSEQUENTLY SERVICE, TO ITS JUST LEVEL.

“Competition is the life of trade,” an old and true adage—The assumption that it is an evil springs from two causes—one bad, the other good—The bad cause at the root of protectionism—Law of competition a natural law—Competition necessary to civilization	402
---	-----

CHAPTER XIII.	
OF DEMAND AND SUPPLY IN PRODUCTION	PAGE 404

CHAPTER XIV.	
ORDER OF THE THREE FACTORS OF PRODUCTION.	
SHOWING THE AGREEMENT OF ALL ECONOMISTS AS TO THE NAMES AND ORDER OF THE FACTORS OF PRODUCTION.	
Land and labor necessary elements in production—Union of a composite element, capital—Reason for dwelling on this agree- ment as to order	405

CHAPTER XV.	
THE FIRST FACTOR OF PRODUCTION—LAND.	
SHOWING THAT LAND IS THE NATURAL OR PASSIVE FACTOR IN ALL PRODUCTION.	
The term land—Landowners—Labor the only active factor	408

CHAPTER XVI.	
THE SECOND FACTOR OF PRODUCTION—LABOR.	
SHOWING THAT LABOR IS THE HUMAN OR ACTIVE FACTOR IN ALL PRODUCTION.	
The term labor—It is the only active factor in producing wealth, and by nature spiritual	411

CHAPTER XVII.	
THE THIRD FACTOR OF PRODUCTION—CAPITAL.	
SHOWING THAT CAPITAL IS NOT A PRIMARY FACTOR, BUT PROCEEDS FROM LAND AND LABOR, AND IS A FORM OR USE OF WEALTH.	
Capital is essentially labor raised to a higher power—Where it may, and where it must aid labor—In itself it is helpless	413

CHAPTER I.¹

THE MEANING OF PRODUCTION.

SHOWING THE MEANING AND PROPER USE OF PRODUCTION.

Production a drawing forth of what before exists—Its difference from creation—Production other than of wealth—Includes all stages of bringing to be—Mistakes as to it.

THE word production comes from the Latin, *pro*, before, and *ducere*, to draw, and its literal meaning is a drawing forth.

Production, as a term of political economy, means a drawing forth by man; a bringing into existence by the power of man. It does not mean creation, the proper sense of which is the bringing into existence by a power superior to that of man—that power namely which to escape negation our reason is compelled to postulate as the final cause of all things.

A solar system, a world with all the substances and powers therein contained, soil, water and air, chemical affinities, vital forces, the invariable sequences which we term natural laws, vegetables and animals in their species as they exist irrespective of the modifying influence of man, and man himself with his natural powers, needs and impulses, we properly speak of as created. How precisely

¹ No introduction or motto supplied for Book III. in MS. — H. G., Jr.

they came to be, and what and whence the originating impulse, we cannot tell, and probably in the sphere to which we are confined in this life can never know. All we can say with certainty, is that they cannot have been brought into existence by any power of man; that they existed before man was, and constitute the materials and forces on which his existence depends and on which and from which all his production is based. Since they cannot have come from what we call matter alone; nor from what we call energy alone; nor yet from any union of these two elements alone, they must proceed primarily from that originating element that in the largest analysis of the world that reason enables us to make we distinguish from matter and energy as spirit.

Nothing that is created can therefore in the politico-economic sense be said to be produced. Man is not a creator; he has no power of originating things, of making something out of nothing. He is a producer; that is to say a changer, who brings forth by altering what already is. All his making of things, his causing things to be, is a drawing forth, a modification in place or relation, and in accordance with natural laws which he neither originated nor altered, of what he finds already in existence. All his production has as its substratum what he finds already in the world; what exists irrespective of him. This substratum or nexus, the natural or passive factor, on which and by which the human or active factor of production acts, is in the terminology of political economy called land.

It is to be noted that when used as a term of political economy the word "production" has in some respects a narrower, and in some respects a wider, meaning than is often, in common use properly enough, attached to it. Since the production with which political economy primarily deals is the production of wealth, the economic term production refers to that. But it is important to bear in

mind that the production of wealth is not the only kind of production.

I have alluded to this fact before in Chapter XVIII. of Book II. Let me speak of it again.

I black my boots; I shave my face; I take a violin and play on it, or expend effort in learning to do so; I write a poem; or observe the habits of bees; or try to make an hour pass more agreeably to a sick friend by reading to him something which arouses and pleases his higher nature. In such ways I am satisfying wants or gratifying desires, cultivating powers or increasing knowledge, either for myself or for others. But I am not producing wealth. And so, those who in the coöperation of efforts in which civilization consists devote themselves to such occupations — boot-blacks, barbers, musicians, teachers, investigators, surgeons, nurses, poets, priests—do not, strictly speaking, take part in the production of wealth. Yet it may be misleading to speak of them as non-producers, without care as to what is really meant. Though not producers of wealth, they are yet producers, and often producers of the highest kind. They are producers of utilities and satisfactions; and as such are not only producers of that to which wealth is but a means, but may indirectly aid in the production of wealth itself.

On the other hand there is something we should note.

In common speech, the word production is frequently used in a sense which distinguishes the first from the later stages of wealth-getting; and those engaged in the primary extractive or formative processes are often styled producers, as distinguished from transporters or exchangers. This use of the word production may be convenient where we wish to distinguish between separable functions, but we must be careful not to import it into our habitual use of the economic term. In the economic meaning of the term production, the transporter or exchanger, or any

one engaged in any sub-division of those functions, is as truly engaged in production as is the primary extractor or maker. A newspaper-carrier or the keeper of a newsstand would for instance in common speech be styled a distributor. But in economic terminology he is not a distributor of wealth, but a producer of wealth. Although his part in the process of producing the newspaper to the final receiver comes last, not first, he is as much a producer as the paper-maker or type-founder, the editor or compositor or press-man.

For the object of production is the satisfaction of human desires, that is to say it is consumption; and this object is not made capable of attainment, that is to say, production is not really complete, until wealth is brought to the place where it is to be consumed and put at the disposal of him whose desire it is to satisfy.

Thus, the production of wealth in political economy includes transportation and exchange. The distribution of wealth, on the other hand, has in economic phraseology no relation to transportation or exchange, but refers, as we shall see when we come to treat of it, to the division of the results of production.

This fact has been ignored by the great majority of professed economists who with few exceptions treat of exchange under the head of the distribution of wealth instead of giving it its proper place under the head of the production of wealth.

CHAPTER II.

THE THREE MODES OF PRODUCTION.

SHOWING THE COMMON CHARACTER, YET DIFFERENT MODES
OF PRODUCTION.

Production involves change, brought about by conscious will—Its three modes: (1) adapting, (2) growing, (3) exchanging—This the natural order of these modes.

ALL production results from human exertion upon external nature, and consists in the changing in place, condition, form or combination of natural materials or objects so as to fit them or more nearly fit them for the satisfaction of human desires. In all production use is made of natural forces or potencies, though in the first place, the energy in the human frame is brought under the direct control of the conscious human will.

But production takes place in different ways. If we run over in mind as many examples as we can think of in which the exertion of labor results in wealth—either in those primary or extractive stages of production in which what before was not wealth is made to assume the character of wealth; or in the later or secondary stages, in which an additional value or increment of wealth is attached to what has already been given the character of wealth—we find that they fall into three categories or modes.

The first of these three modes of production, for both reason and tradition unite in giving it priority, is that in

which, in the changes he brings about in natural substances and objects, man makes use only of those natural forces and potencies which we may conceive of as existing or manifesting themselves in a world as yet destitute of life; or perhaps it might afford a better illustration to say, in a world from which the generative or reproductive principle of life had just departed, or been by his condition rendered unutilizable by man. These would include all such natural forces and potencies as gravitation, heat, light, electricity, cohesion, chemical attractions and repulsions—in short, all the natural forces and relations, that are utilized in the production of wealth, below those incident to the vital force of generation.

We can perhaps best imagine such a separation of natural forces by picturing to ourselves a Robinson Crusoe thrown upon a really desert island or bare sand key, in a ship abundantly supplied with marine stores, tools and food so dried or preserved as to be incapable of growth or reproduction. We might also, if we chose, imagine the ship to contain a dog, a goat, or indeed any number of other animals, provided there was no pairing of the sexes. We cannot, in truth, imagine even a bare sand key, in which there should be no manifestation of the generative principle, in insects and vegetables, if not in the lower forms of fish and bird life, but we can readily imagine that our Robinson might not understand, or might not find it convenient, to avail himself of such manifestations of the reproductive principle. Yet without any use of the principle by which things may be made to grow and increase, such a man would still be able to produce wealth, since by changing in place, form or combination what he found already in existence in his island or in his ship, he could fit them to the satisfaction of his desires. Thus he could produce wealth just as De Foe's Robinson Crusoe, whose solitary life so many of us have shared in imagination,

produced wealth when he first landed, by bringing desirable things from the wrecked ship to the safety of the shore before destructive gales came on, and by changing the place and form of such of them as were fit for his purpose, making himself a cabin, a boat, sails, nets, clothes, and so on. In the same way, he could catch fish, kill or snare birds, capture turtles, take eggs, and convert the food-material at his disposal into more toothsome dishes. Thus without growing or breeding anything he could get by his labor a living, until death, or the savages, or another ship came.

For this mode of production, which is mechanical in its nature, and consists in the change in place, form, condition or combination of what is already in existence, it seems to me that the best term is "adapting."

This is the mode of production of the fisherman, the hunter, the miner, the smelter, the refiner, the mechanic, the manufacturer, the transporter; and also of the butcher, the horse-breaker or animal-trainer, who is not also a breeder. We use it when we produce wealth by taking coal from the vein and changing its place to the surface of the earth; and again when we bring about a further increment of wealth by carrying the coal to the place where it is to be consumed in the satisfaction of human desire. We use this mode of production when we convert trees into lumber, or lumber into boards; when we convert wheat into flour, or the juice of the cane or beet into sugar; when we separate the metals from the combinations in which they are found in the ores, and when we unite them in new combinations that give us desirable alloys, such as brass, type-metal, Babbitt metal, aluminum, bronze, etc.; or when by the various processes of separating and re-combining we produce the textile fabrics, and convert them again into clothes, sails, bags, etc.; or when by bringing their various materials into suitable forms

and combinations, we construct tools, machines, ships or houses. In fact, all that in the narrower sense we usually call "making," or, if on a large scale, "manufacturing," is brought about by the application of labor in this first mode of production—the mode of "adapting."

In the Northwest, however, they speak sometimes of "manufacturing wheat;" in the West of "making hogs," and in the South of "making cotton" (the fiber) or "making tobacco" (the leaf). But in such local or special sense the words manufacturing or making are used as equivalent to producing. The sense is not the same, nor is the suggested action in the same mode, as when we properly speak of flour as being manufactured, or of bacon, cotton cloth or cigars being made. Wonderful machines are indeed constructed by man's power of adaptation. But no extension of this power of adaptation will enable him to construct a machine that will feed itself and produce its kind. His power of adapting extended infinitely would not enable him to manufacture a single wheat-grain that would sprout, or to make a hog, a cotton-boll or a tobacco-leaf. The tiniest of such things are as much above man's power of adapting as is the "making" of a world or the "manufacture" of a solar system.

There is, however, another or second mode of production. In this man utilizes the vital or reproductive force of nature to aid him in the producing of wealth. By obtaining vegetables, cuttings or seeds, and planting them; by capturing animals and breeding them, we are enabled not merely to produce vegetables and animals in greater quantity than Nature spontaneously offers them to our taking, but, in many cases, to improve their quality of adaptability to our uses. This second mode of production, the mode in which we make use of the vital or generative power of nature, we shall, I think, best distinguish from the first, by calling it "growing." It is the mode of the

farmer, the stock-raiser, the florist, the bee-keeper, and to some extent at least of the brewer and distiller.

And besides the first mode, which we have called "adapting," and the second mode, which we have called "growing," there is still a third mode in which, by men living in civilization, wealth is produced. In the first mode we make use of powers or qualities inherent in all material things; in the second we make use of powers or qualities inherent in all living things, vegetable or animal. But this third mode of production consists in the utilization of a power or principle or tendency manifested only in man, and belonging to him by virtue of his peculiar gift of reason—that of exchanging or trading.

That it is by and through his disposition and power to exchange, in which man essentially differs from all other animals that human advance goes on, I shall hereafter show. Yet not merely is it through exchange that the utilization in production of the highest powers both of the human factor and the natural factor becomes possible, but it seems to me that in itself exchange brings about a perceptible increase in the sum of wealth, and that even if we could ignore the manner in which it extends the power of the other two modes of production, this constitutes it, in itself, a third mode of production. In the Yankee story of the two school-boys so cute at a trade that when locked in a room they made money by swapping jack-knives, there is the exaggeration of a truth. Each of the two parties to an exchange aims to get, and as a rule does get, something that is more valuable to him than what he gives—that is to say, that represents to him a greater power of labor to satisfy desire. Thus there is in the transaction an actual increase in the sum of wealth, an actual production of wealth. A trading-vessel, for instance, penetrating to the Arctic, exchanges fish-hooks, harpoons, powder and guns, knives and mirrors, green

spectacles and mosquito-nets for peltries. Each party to the exchange gets in return for what costs it comparatively little labor what would cost it a great deal of labor to get by either of the other modes of production. Each gains by the act. Eliminating transportation, which belongs to the first mode of production, the joint wealth of both parties, the sum of the wealth of the world, is by the exchange itself increased.

This third mode of production let us call "exchanging." It is the mode of the merchant or trader, of the store-keeper, or as the English who still live in England call him, the shopkeeper; and of all accessories, including in large measure transporters and their accessories.

We thus have as the three modes of production :

- (1) ADAPTING ;
- (2) GROWING ;
- (3) EXCHANGING.

These modes seem to appear and to assume importance in the development of human society much in the order here given. They originate from the increase of the desires of men with the increase of the means of satisfying them under pressure of the fundamental law of political economy, that men seek to satisfy their desires with the least exertion. In the primitive stage of human life the readiest way of satisfying desires is by adapting to human use what is found in existence. In a later and more settled stage it is discovered that certain desires can be more easily and more fully satisfied by utilizing the principle of growth and reproduction, as by cultivating vegetables and breeding animals. And in a still later period of development, it becomes obvious that certain desires can be better and more easily satisfied by exchange, which brings out the principle of coöperation more fully and powerfully than it could obtain among unexchanging economic units.

CHAPTER III.

POPULATION AND SUBSISTENCE.

SHOWING THAT THE THEORY OF A TENDENCY IN POPULATION TO INCREASE FASTER THAN SUBSISTENCE HAS PREVIOUSLY BEEN EXAMINED AND CONDEMNED.

The Malthusian theory—Discussed in “Progress and Poverty.”

IN proceeding to consider the laws of the production of wealth it would be expedient first to consider any natural law, if such there should be, which would limit the operation of man in production. In the Malthusian theory the scholastic political economy has held that there is a law of nature that produces a tendency in population to increase faster than subsistence. This, coming as it did, in the formative period of the institution of the science, was really the bulwark of the long-accepted political economy, which gave to the wealthy a comfortable theory for putting upon the Originating Spirit the responsibility for all the vice, crime and suffering, following from the unjust actions of men, that constitute the black spot of our nineteenth-century civilization. Falling in with the current doctrine that wages are determined by the ratio between capital and labor, deriving support from the principle brought prominently forward in current discussions of the theory of rent, that past a certain point the application of capital and labor to land yields a diminishing return, and

harmonizing with the theory of the development of species by selection, it became of the utmost importance, and for a long time imposed even upon well-disposed and fair-minded men a weight of authority of which they could not rid themselves. But in "Progress and Poverty" I devoted to it an entire Book, consisting of four chapters. In this, with what follows, I so disposed of the theory that it is not necessary to go over the reasoning again, but can refer to my previous work those who may wish to inquire as to the nature, grounds and disproof of that theory.

As the space of that work did not allow me to go over the whole scope of political economy, but only to cover its more salient points, it will be well here to examine, what I did not do thoroughly in that work, the doctrine of the law of diminishing returns in agriculture. Since this doctrine has not yet to my knowledge been questioned, it will be well to do this thoroughly.

CHAPTER IV.

THE ALLEGED LAW OF DIMINISHING RETURNS IN AGRICULTURE.

SHOWING WHAT THIS ALLEGED LAW IS.

John Stuart Mill quoted as to the importance, relations and nature of this law—The *reductio ad absurdum* by which it is proved—Contention that it is a misapprehension of the universal law of space.

BEFORE proceeding to the subject of coöperation it is necessary to consider, if but to clear the way, what is treated in standard economic works since the time of Adam Smith as the most important law of production, and indeed of political economy as a whole. This is what is called "The Law of Diminishing Production," or more fully and exactly, "The Law of Diminishing Returns in Agriculture." Of it John Stuart Mill ("Principles of Political Economy," Book I., Chapter XII., Sec. 2) says:

This general law of agricultural industry is the most important proposition in Political Economy. Were the law different nearly all the phenomena of the production and distribution of wealth would be other than they are.

This view of the importance of "the law of diminishing returns in agriculture" pervades the standard political economies, and is held by the most recent scholastic writers, such as Professor Walker of the United States and Pro-

fessor Marshall of England, as by Mill and his predecessors. It arises from the relation of this alleged law to current apprehensions of the law of rent, and especially from the support which it seems to give to the Malthusian doctrine that population tends to outrun subsistence—a support to which the long acceptance of that doctrine is due.

Thus, as the necessary consequence of this “law of diminishing returns in agriculture,” John Stuart Mill in Book I., Chapter XIII., Sec. 2, of his “Principles of Political Economy,” says :

In all countries which have passed beyond a rather early stage in the progress of agriculture, every increase in the demand for food, occasioned by increased population, will always, unless there is a simultaneous improvement in production, diminish the share which on a fair division would fall to each individual. . . . From this, results the important corollary, that the necessity of restraining population is not, as many persons believe, peculiar to a condition of great inequality of property. A greater number of people cannot, in any given state of civilization be collectively so well provided for as a smaller. The niggardliness of nature, not the injustice of society, is the cause of the penalty attached to overpopulation. An unjust distribution of wealth does not even aggravate the evil, but at most causes it to be somewhat earlier felt. It is in vain to say, that all mouths which the increase of mankind calls into existence bring with them hands. The new mouths require as much food as the old ones, and the hands do not produce as much.

As to the law itself, from which such tremendous consequences are confidently deduced—consequences which put us to the mental confusion of denying the justice of the Creator, and assuming that the Originating Spirit is so poor a contriver as to be constantly doing what any mere human host would be ashamed to be guilty of, bringing more guests to his table than could be fed—it is thus stated by Mill :

After a certain and not very advanced stage in the progress of agriculture ; as soon, in fact, as mankind have applied to cultivation

with any energy, and have brought to it any tolerable tools; from that time it is the law of production from the land, that in any given state of agricultural skill and knowledge, by increasing the labor, the produce is not increased in equal degree; doubling labor does not increase the produce; or to express the same thing in other words, every increase of produce is obtained by a more than proportional increase in the application of labor to the land.

This law of diminishing returns in agriculture it is further explained applies also to mining, and in short to all the primary or extractive industries, which give the character of wealth to what was not before wealth, but not to those secondary or subsequent industries which add an additional increase of wealth to what was already wealth. Thus since the law of diminishing productiveness in agriculture does not apply to the secondary industries, it is assumed that any increased application of labor (and capital) in manufacturing for instance, would continue to yield a proportionate and more than proportionate return. And as conclusive and axiomatic proof of this law of diminishing productiveness in agriculture, it is said that were it not for this peculiar law, and were it, on the contrary (as it is assumed it would be without it), the fact that additional application of labor would result in a proportionately increased production from the same land, one single farm would suffice to raise all the agricultural produce required to feed the whole population of England, of the United States or any other country, or of course, of the whole world, by mere increase in the application of labor.

This proposition seems to have been generally accepted by professional economists as a valid *reductio ad absurdum*, and to have carried the same weight in the common thought as has the similar proposition of the general Malthusian doctrine that *if* increasing population did not find increasing difficulty in getting subsistence, mankind

would in a little while be able only to find standing-room on one another's heads.

But analysis will show that this logical structure, which economic writers have deemed so strong and on which they have so confidently built, rests upon an utter misapprehension; that there is in truth no special law of diminishing productiveness applying to agriculture, or to the extractive occupations, or to the use of natural agents, which are the various ways which the later writers have of sometimes stating what the earlier writers called the law of diminishing productiveness in agriculture; and that what has been misapprehended as a special law of diminishing returns in agriculture is in reality a general law, applying as well to manufacturing and exchanging as to agriculture, being in fact nothing less general than the spacial law of all material existence and movement—inorganic as well as organic.

This will appear if we consider the relation of space to production. But to do this thoroughly and at the same time to clear the way for considerations which may prove of importance in other parts of this work, I propose to begin by endeavoring to fix the meaning and nature of space and time.

CHAPTER V.

OF SPACE AND TIME.

SHOWING THAT HUMAN REASON IS ONE, AND SO FAR AS IT
CAN GO MAY BE RELIED ON.

Purpose of this work—Of metaphysics—Danger of thinking of words as things—Space and time not conceptions of things but of relations of things—They cannot, therefore, have independent beginning or ending—The verbal habit which favors this idea—How favored by poets and by religious teachers—How favored by philosophers—Of Kant—Of Schopenhauer—Mysteries and antinomies that are really confusions in the meaning of words—Human reason and the eternal reason—"Philosophers" who are really word-jugglers.

MY purpose in this work is to explain the science of political economy so clearly that it may be understood by any one of common ability who will give to it reasonable attention. I wish therefore to avoid, as far as possible, everything that savors of metaphysics. For metaphysics, which in its proper meaning is the science of the relations recognized by human reason, has become in the hands of those who have assumed to teach it, a synonym for what cannot be understood, conveying to common thought some vague notion of a realm beyond the bounds of ordinary reason, into which common sense can venture only to shrink helpless and abashed.

Yet to trace to their root confusions involved in current economic teachings and to clear the ground for a coherent

political economy, it is necessary to fix the real meaning of two conceptions which belong to metaphysics, and which are beset by confusions that have not only disturbed the teaching of political economy, but of philosophy in the higher sense. These conceptions are those of space and time.

All material existence is in space and in time. Hence, the production of wealth, which in all its modes consists in the bringing about by human exertion of changes in the place or relation of material things, so as to fit them for the satisfaction of human desire, involves both space and time.

This may seem like a truism—a fact so self-evident as not to need statement. But much disquisition has been wasted and much confusion caused by the failure of economists to keep this in mind. Hence, to start from firm foundations, we must see clearly what is really meant by space and time. Here we come into the very heart of metaphysics, at a point where the teachings of what passes for the highest philosophy are most perplexed and perplexing.

In asking ourselves what we really mean by space and time, we must have a care, for there is a danger that the habitual use of words as instruments of thought may lead to the error of treating what they express as objects of thought, or things, when they really express not things, but only the qualities or relations of things. This is one of those sources of error which Bacon in his figurative classification called *Idols of the Forum*. Though a word is a thing, in the sense that its verbal form may be made an object of thought, yet all words are not things in the sense of representing to the mind what apart from mere verbal form may be made an object of thought. To clothe in a form of words which the eye and ear may distinguish from other words, yet which in their meaning involve con-

traditions, is not to make a thing, which in itself, and aside from that mere verbal form, can be thought of. To give a name to a form of words implying contradictions is to give name to what can be thought of only verbally, and which in any deeper sense than that is a negation—that is to say, a no thing, or nothing.

Yet this is the trick of much that to-day passes for the most profound philosophy, as it was the trick of Plato and of much that he put into the mouth of Socrates. To try it, make up a word signifying opposite qualities, such as "lowhigh" or "squareround," or a phrase without thinkable meaning, such as a "fourth dimension of space." In this it will be wisest to use a tongue which being foreign to the vernacular is suggestive of learning. Latin or Greek, has long been used for this purpose, but among English-speaking people German will now do as well if not better, and those who call themselves Theosophists have taken Sanskrit or what they take to be Sanskrit very satisfactorily. Now, if you have the external associations of superior penetration, and will persist for a while in seeming to treat your new word or phrase as if you were really making it an object of deep thought, you will soon have others persuading themselves to think that they also can think of it, until finally, if it get the scholastic vogue, the man frank enough to say that he can get no meaning from it will be put down as an ignorant fellow whose education has been neglected. This is really the same trick as standing on a street and gazing into the sky, as if you saw something unusual there, until a crowd gathers to look also. But it has made great reputations in philosophy.

Now, in truth, when we come to analyze our apprehensions of space and time, we see that they are conceptions, not of things in themselves existing, but of relations which things in themselves existing may hold to each other—space being a relation of extension or place between one

thing and other things, such as far or near, hither or thither; and time being a relation of succession between one thing and other things, such as before or after, now and then. To think of space we must necessarily think of two points in place, and to make the relation of extension between them intelligible to our minds, we must also think of a third point which may serve as a measure of this relation. To think of time we must necessarily think of two points in appearance or disappearance, and to make this relation of sequence between them intelligible to our minds, we must also think of some third point which may serve as a measure of this relation.

Since space and time are thus not existences, but expressions of the relation to each other of things thought of as existing, we cannot conceive of their having beginning or ending, of their creation or annihilation, as apart from that of the things whose relation they express. Space being a relation of extension between things in place, and time a relation of succession between things in order of appearance or duration, the two words properly express relations which, like the relations of form and number with which mathematics deals in its two branches of geometry and arithmetic, are expressive of actual relation wherever the things they relate to have actual existence, and of potential relation wherever the things they relate to have merely potential existence. We cannot think of a when or where in which a whole was not equal to the sum of its parts, or will ever cease to be; or in which the lines and angles of a square were not, or can ever cease to be, equal to each other; or in which the three angles of a triangle were not, or can ever cease to be, equal to two right angles. Nor yet can we think of a when or where in which twice one did not make two, or can ever cease to do so; and twice two did not, or will ever cease to, make four. In the same way it is utterly impossible for us to

think of a when or where in which space and time could begin or could end, as apart from the beginning or ending of the things whose relations to each other they express. To try to think of space and time without a presumption of things whose relations to each other are thus expressed, is to try to think of shadow without reference to substance. It is to try to think of a no thing, or nothing—a negation of thought.

This is perfectly clear to us when we attach an article to the noun and speak of "a space" or "the space," or of "a time" or "the time," for in such speech the relation of one thing or set of things to another thing or set of things is expressed by some such preposition as "from," "before," "after" or "when." But when the noun is used without the article, and men speak of space by itself and time by itself without any word of particularization or preposition of relation, the words have by the usage of our English tongue the meaning of all space or space in general, or all time or time in general. In this case the habit of regarding words as denoting things in themselves existing is apt to lead us to forget that space and time are but names for certain relations in which things stand to each other, and to come to regard them as things which in themselves, and apart from the things whose relationship they express, can become objects of thought. Thus, without analyzing the process, we come to accept in our minds the naked words as representing some sort of material existences—vaguely picturing space as a sort of atmosphere or ether, in which all things swim, and time an ever-flowing current which bears all things on.

From this mode of mental picturing we are apt to assume that both space and time must have had beginning, before which there was no space and no time; and must have limits, beyond which neither space nor time can be. But when we try to think of this beginning or of these limits,

we think of something which for the moment we assume to be the first or farthest of existing things. Yet no matter how far we may carry this assumption, we at the same moment see that it may be carried further still. To think of anything as first, involves the possibility of thinking of something before that, to which our momentary first would become second. To think of an utmost star in the material universe, involves the possibility of thinking of another star yet further still.

Thus in the effort to grasp such material conceptions of time and space they inevitably elude us. From trying to think of what are only names for relations which things have to each other as if they were things in themselves, we come to a point not merely of confusion, but of negation—a conflict of absolutely opposing ideas resembling that brought about in the minds of the unwary by the schoolmen's question as to what would happen did an irresistible force meet an immovable body.

Now, this way of using the nouns space and time without an article, as though they mean things in themselves existing, has been much favored by the poets, whose use of words is necessarily metaphorical and loose. And it has been much favored by the teachers of religion, whose endeavor to embody spiritual truths tends to poetical expression, and who have been prone in all ages to make no distinction between the attribution to the higher power of what transcends our knowledge and of what is opposed to our reason—assuming the repugnance of human reason to accept the contradictions to which they give the name of mysteries to be proofs of its weakness.

Thus the habit of trying to think of space and time as things in themselves and not merely relations of things, has been embedded in religious literature, and in our most susceptible years we hear of beings who know not space or time, and of whens and wheres in which space and time

are not. And as the child recoils from the impossible attempt to think of the unthinkable and strives in vain to picture a when or where in which space and time have not been, or shall cease to be, he is hushed into silence by being told that he is impiously trying to measure with the shallow plummet of human reason the infinite depths of the Divine Mind.

But the disposition of the theologians to find an insoluble mystery in the contradiction that follows the attempt to think of space and time not as relations but as independent existences, has been followed or perhaps anticipated by philosophers who in the use of meaningless words, as though to them they really conveyed coherent ideas, have assumed what has passed for superior penetration. They (or at least those of them who have looked down upon the theologians with contempt) have not, it is true, called the inevitable conflict in thought which arises when we try mentally to treat of what is really a relation as though it were in itself a thing, a divine mystery. But they have recognized this conflict as something inherent, not in confusion of words, but in the weakness of human reason—which human reason they themselves pretend to go behind and instruct.

Kant, whose ponderous incomprehensibility is a striking example of what (whether it was before him or because of him) seems to have become a peculiarly German facility for inventing words handy for philosophic juggling, dignified this point of assumed necessary conflict by calling it an "antinomy," which term suggesting in its derivation the idea of a conflict of laws, was employed by him to mean a self-contradiction or mutual destruction of unavoidable conclusions of the human reason; a what must be thought of, yet cannot be thought of. Thus the word antinomy in the scholastic philosophy that has followed Kant takes the place of the word mystery in the theo-

logical philosophy, as covering the idea of a necessary irreconcilability of human reason.

Kant, for instance, tells us that space and time are forms of human sensibility, which, as well as I can understand him, means that our mental nature imposes upon us the wearing of something like colored glasses, so that when we consider things they always seem to us to be in space and in time; but that this is merely their appearance to us, and that "things in themselves," that is, things as they really exist outside of our sensibility or apprehension of them, or as they would be apprehended by "pure reason" (*i.e.*, some reason outside of human reason), are not in space and time at all.

In a passage I have already quoted, the much more readable Schopenhauer speaks of the destruction of the capacity for thinking which results from the industrious study of a logomachy made up by monstrous piecings together of words which abolish and contradict one another. But of this very thing, Schopenhauer himself with all his strength and brilliancy is a notable example. His industrious study of Kant had evidently reduced him to that state of mind of which he speaks, where "hollow phrases count with it for thoughts." His whole philosophy is based on Kant's "Critique of Pure Reason," which he speaks of as "the most important phenomenon that has appeared in philosophy for two thousand years," and a thorough understanding of which he declares in the beginning and over and over again to be absolutely necessary to an understanding of his own works. Likening the effect of Kant's writings on the mind to which they truly speak to that of the operation for cataract on a blind man, he adds:

The aim of my own work may be described by saying that I have sought to put into the hands of those upon whom that operation has been successfully performed a pair of spectacles suitable to eyes that

have recovered their sight—spectacles to whose use that operation is the absolutely necessary condition.

And through these spectacles of "The Fourfold Root of the Principle of Sufficient Reason" and the chief work to which that is preliminary, "The World as Will and Idea," Schopenhauer introduces us into what seems to natural reason like a sort of philosophic "Alice in Wonderland." If I can understand a man who seems to have a peculiar gift of lucid expression wherever it is applied to understandable things, and whose writings are illumined by many acute observations and sagacious reflections, this world in which I find myself and which from the outside is so immense, so varied, so wonderful, is from the inside, nothing but "I, myself"—my idea, my presentment, my will; and space and time are only in my seeming, appearances imposed upon me by the forms of my consciousness. I behold, for instance, a kitten, which by and by becomes a cat and has kittens of its own, and at the same time or at different times and places I see or remember to have seen many cats—tom-cats, pussy-cats, kitty-cats, black, white, gray, mottled and tortoise-shell cats, in different stages of age, from little cats whose eyes are not yet opened to decrepit cats that have lost their teeth. But in reality, on the inside of things as it were, there is only one cat, always existent without reference to time and space. This eternal cat is the idea of a cat, or cat idea, which is reflected in all sorts of guises in the kaleidoscopic facets of my apprehension. And as with cats, so with all things else in which this infinite and varied world presents itself to me—planets and suns, plants and trees, animals and men, matter and forces, phenomena and laws. All that I see, hear, touch, taste, smell or otherwise apprehend—all is mirage, presentment, delusion. It is all the baseless fabric of a vision, the self-imposed apprehensions of the evil dream, containing necessarily more pain than pleasure, in

which what we call life essentially consists; yet which he who suffers in it cannot escape by suicide, since that only brings him into life again in other form and circumstance; but from which the truly wise man must seek relief by starving himself to death without wanting to die; or in other words by conquering "the will to live," the only road to the final goal of annihilation or Nirvana, to which all life ultimately tends.

And this philosophy of negation, this nineteenth-century Buddhism without the softening features of its Asiatic prototype, that makes us but rats in an everlasting trap, and substitutes for God an icy devil, is the outcome of the impression made upon a powerful and brilliant but morbid mind by "the industrious study of a logomachy made up by monstrous piecings together of words which abolish and contradict one another," that strives to turn human reason as it were inside out and consider in the light of what is dubbed "pure reason" the outside-in of things.

The fact is, that this seemingly destructive conflict of thought that theologians call a mystery and philosophers call an antinomy—and which there must be very many of my readers who like myself can remember puzzling over in childhood in questionings of what might be beyond the limits of space and time, and what was before God was, and what might be after space and time had ceased—is not in reality a failure of reason, but a confusion in the meaning of words. When we remember that by space and time we do not really mean things having existence but certain relations to each other of things that have existence, the mystery is solved and the antinomy disappears in the perception of a verbal confusion—a confusion of the same kind as perplexes those who try to think at once of an irresistible force and an immovable body, two terms which being mutually exclusive cannot together exist.

There is a riddle about what a boy said, sometimes given among young people playing conundrums, which if not heard before, is almost certain to make the whole party "give it up," after trying all sorts of impossible answers, since its true and only possible answer, "The boy lied," is so obvious that they do not think of it.

We may be wise to distrust our knowledge; and, unless we have tested them, to distrust what we may call our reasonings; but never to distrust reason itself.

Even when we speak of lunacy or madness or similar mental afflictions as the loss of reason, analysis I think will show that it is not reason itself that is lost, but that those powers of perception and recollection that belong to the physical structure of the mind have become weakened or broken or dislocated, so that the things with which the reason deals are presented to it imperfectly or in wrong place or relation.

In testing for glasses an optician will put on you lenses through which you will see the flame of a candle above or below or right or left of its true position, or as two where there is only one. It is so with mental diseases.

And that the powers with which the human reason must work are limited and are subject to faults and failures, our reason itself teaches us as soon as it begins to examine what we find around us and to endeavor to look in upon our own consciousness. But human reason is the only reason that men can have, and to assume that in so far as it can see clearly it does not see truly, is in the man who does it not only to assume the possession of a superior to human reason, but it is to deny the validity of all thought and to reduce the mental world to chaos. As compared with the eternal reason which is manifested in the relations which we call laws of nature our human reason is clearly shallow and narrow; but that it is a perception and recognition of this eternal reason is perhaps the deepest fact of

our certainty. Not as yet dreaming that this earth which seems to our first perceptions to be so firmly fixed could be in constant motion, men did not for a long time perceive what a closer and wider use of reason now shows to be the case, that the earth revolves around the sun, not the sun around the earth, and spoke with literal meaning of sunrise and sunset. But as to the phenomena of day and night, and as to the proximate cause of these phenomena being in the relations of sun and earth towards each other, they were not deceived.

As for the philosophers since Kant or before him who profess to treat space and time as mere conditions of human perception, mental glasses, as it were, that compel us to recognize relations that do not in truth exist, they are mere jugglers with words, giving names such as "the absolute," "the unconditioned," "the unknowable" to what cannot be thought of, and then proceeding to treat them as things, and to reason with them and from them.

CHAPTER VI.

CONFUSION OF THE SPACIAL LAW WITH AGRICULTURE.

SHOWING THE GENESIS OF THIS CONFUSION.

What space is—The place to which man is confined—Extension a part of the concept "land"—Perception is by contrast—Man's first use of land is by the mode of "adapting"—His second, and for a long time most important, use is by "growing"—The third, on which civilization is now entering, is "exchanging"—Political economy began in the second, and "growing" still attracts most attention—The truth and error of the Physiocrats—The successors of Smith, while avoiding the error of the Physiocrats, also ignored their truth; and with their acceptance of the Malthusian theory, and Ricardo's explanation of rent as relating to agricultural land, they fell into, and have continued the habit of treating land and rent as agricultural—Difficulty of the single tax in the United States.

THE laws of our physical being, to which I have already called attention (Book I., Chapter II.), confine us within narrow limits to that part of the superficies of our sphere where the ocean of air enveloping it meets the solid surface. We may venture temporarily a little below the solid surface, in caves and vaults and shafts and tunnels; and a little above it, on trees, or towers, or in balloons or aërial machines, if such be yet constructed; but with these temporary aërial extensions of our habitat, which of themselves require not only a preliminary but a recurring use of the solid surface of the earth, it is to that solid

surface that our material existence and material production are confined. Physically we are air-breathing, light-requiring land animals, who for our existence and all our production require place on the dry surface of our globe. And the fundamental perception of the concept land—whether in the wider use of the word as that term of political economy signifying all that external nature offers to the use of man, or in the narrower sense which the word usually bears in common speech, where it signifies the solid surface of the earth—is that of extension; that of affording standing-place or room.

But a fundamental perception is not always a first perception. Weight is a fundamental perception of air. But we realize this only by the exertion of reason, and long generations of men have lived, feeling the weight of air on every part of their bodies during every second of their lives from birth to death, without ever realizing that air has weight. Perception is by contrast. What we always perceive neither attracts attention nor excites memory until brought into contrast with non-perception.

Even in the now short Atlantic trip the passenger becomes so accustomed to the constant throb of the engines as not to notice it, but is aroused by the silence when it stops. The visitor in a nail-mill is so deafened that speech seems impossible; but the men working there are said to talk to each other without difficulty and to find conversation hard when they get again into the comparative silence of the street. In later years, I have at times "supped with Lucullus," without recalling what he gave me to eat, whereas I remember to this day the ham and eggs of my first breakfast on a canal-packet drawn by horses that actually trotted; how sweet hard-tack, munched in the middle watch while the sails slept in the trade-wind, has tasted; what a dish for a prince was sea-pie on the rare

occasions when a pig had been killed or a porpoise harpooned; and how good was the plum-duff that came to the fore-castle only on Sundays and great holidays. I remember as though it were an hour ago, that talking to myself rather than to him, I said to a Yorkshire sailor on my first voyage, "I wish I were home, to get a piece of pie." I recall his expression and tone, for they shamed me, as he quietly said, "Are you sure you would find a piece of pie there?" Thoughtless as the French princess who asked why the people who were crying for bread did not try cake, "Home" was associated in my mind with pie of some sort—apple or peach or sweet potato or cranberry or mince—to be had for the taking, and I did not for the moment realize that in many homes pie was as rare a luxury as plums in our sea-duff.

Thus, while the fundamental quality of land is that of furnishing to men place on which they may stand or move, or rest things on, this is not the quality first noticed. As settlers in a wooded country, where every foot of land must be cleared for use, come to regard trees as a nuisance to be got rid of, rather than as the source of value that in the progress of civilization they afterwards become, so in that rude stage of social development which we are accustomed to think of as the primary condition of mankind, where the mode of expending labor in production which most attracts attention is that we have called "adapting," land would be esteemed rich or poor according to its capacity of yielding to labor expended in this first mode, the fruits of the chase.

In the next higher stage of social development, in which that second mode of production, which we have called "growing," begins to assume most importance in social life, that quality of land which generally and strongly attracts attention is that which makes it useful in agri-

culture, and land would be esteemed rich or poor according to its capacity for yielding to labor expended in the breeding of animals and raising of crops.

But in the still higher stage of social development which what we now call the civilized world is entering, attention begins to be largely given to the third mode of production, which we have called "exchanging," and land comes to be considered rich or poor according to its capacity of yielding to labor expended in trading. This is already the case in our great cities, where enormous value attaches to land, not because of its capacity to provide wild animals to the hunter, nor yet because of its capacity to yield rich crops to the grower, but because of its proximity to centers of exchange.

That the development of our modern economy began in what was still mainly the second stage of social development, when the use of land was usually regarded from the agricultural point of view, is it seems to me, the explanation of an otherwise curious way of thinking about land that has pervaded economic literature since the time of the Physiocrats, and that still continues to pervade the scholastic political economy—a way of thinking that leads economic writers to treat land as though it were merely a place or substance on which vegetables and grain may be grown and cattle bred.

The followers of Quesnay saw that there is in the aggregate production of wealth in civilization an unearned increment—an element which cannot be attributed to the earnings of labor or capital—and they gave to this increment of wealth, unearned so far as individuals are concerned, the name of product net or surplus product. They rightly traced this unearned or surplus product to land, seeing that it constituted to the owners of land an income or return which remained to them after all expenditure of labor and investment of capital in production had been

paid for. But they fell into error in assuming that what was indeed in their time and place the most striking and prominent use of land in production, that of agriculture, was its only use. And finding in agriculture, which falls into that second mode of production I have denominated "growing," the use of a power of nature, the germinative principle, essentially different from the powers utilized in that first mode of production I have denominated "adapting," they, without looking further, jumped to the conclusion that the unearned increment of wealth or *surplus net* sprang from the utilization of this principle. Hence they deemed agriculture the only productive occupation, and insisted in spite of the absurdity of it that manufactures and commerce added nothing to the sum of wealth above what they took from it, and that the agriculturist or cultivator was the only real producer.

This weakness in the thinking of the Physiocrats and the erroneous terminology that it led them to use, finally discredited their true apprehensions and noble teachings, unpalatable as they necessarily were to the powerful interests who seemingly profit by social injustice, until the rise with the publication of "Progress and Poverty" of the new Physiocrats, the modern Single Taxers as they now call themselves and are being called.

But the economists who succeeded Adam Smith, while they avoided the error into which the Physiocrats had fallen, avoided as well the great truth of which this had been an erroneous apprehension, and greedily accepting the excuse which the Malthusian theory offered for putting upon the laws of God the responsibility for the misery and vice that flow from poverty, they fell into and have continued the habit of regarding land solely from the agricultural point of view, thus converting what is really the spacial law of all production into an alleged law of diminishing production in agriculture. Even Ricardo, who

truly though very narrowly explained the law of rent, shows in all his arguments and illustrations an inability to free himself from thinking of land as relating only to agriculture, and of rent only as agricultural rent. And although in England the relative importance of agriculture has during all this century steadily and rapidly declined, the habit of thinking of land as a place or substance for agricultural operations is still kept up. Not merely is the law of diminishing production in agriculture still taught as a special law of nature in the latest works treated as authoritative in colleges and universities, but in speaking of land and of rent, most English writers will be found to have really in mind agricultural land or agricultural rent.

What is true of England is true of the United States except so far as the influence of the single tax has been felt. But the greatest difficulty which the single tax propaganda meets in the United States is the wide-spread idea, sedulously fostered by those who should know better, that non-agricultural workers have no interest in the land question and that concentrating taxes on land values means increasing the taxes of farmers. To fostering this fallacy all the efforts of the accredited organs of education are directed.

CHAPTER VII.

THE RELATION OF SPACE IN PRODUCTION.

SHOWING THAT SPACE HAS RELATION TO ALL MODES OF PRODUCTION.

Matter being material, space must have relation to all production—
This relation readily seen in agriculture—The concentration of labor in agriculture tends up to a certain point to increase and then to diminish production—But it is a misapprehension to attribute this law to agriculture or to the mode of “growing”—It holds in all modes and sub-divisions of these modes—Instances: of the production of brick, of the mere storage of brick—Man himself requires space—The division of labor as requiring space—Intensive and extensive use of land.

PRODUCTION in political economy means the production of wealth. Wealth, as we have seen, consists in material substances so modified by human labor as to fit them for the satisfaction of human desires. Space, therefore, which has relation to all matter, must have relation to all production.

This relation of space to all production may be readily seen in agriculture, which is included in that mode of production we have called “growing.” In this, the concentration of labor in space tends up to a certain point to increase the productiveness of labor; but the point of greatest productiveness attained, any further concentration of labor would tend to decrease productiveness. Thus, if a Robinson Crusoe, having a whole island on which to

expend his labor, were to plant potatoes, each cutting a hundred yards apart from every other cutting, he would necessarily waste so much labor in planting, cultivating and gathering the crop that the return compared with his exertion would be very small. He would get a much larger return were he to concentrate his labor by planting his potatoes closer; and this increase would continue as he continued to exert his labor in lesser space, until his plants became too crowded, and the growth of one would lessen or prevent that of another. While if he continued the experiment so far as to put all his cuttings in one spot he would get no greater return than he might have had from the planting of one, and perhaps no return at all.

This spacial law of production holds good of course in labor exerted conjointly, as in labor exerted individually. On a given area, the application of labor to the growth of a crop or the breeding of animals may sometimes be increased with advantage, the exertion of two men producing more than twice as much as the exertion of one man; that of four men, more than twice as much as the exertion of two; and so on. But this increase of production with increased application of labor to any given area cannot go on indefinitely. A point is reached at which the further application of labor in the given area, though it may for a time result in a greater aggregate production, yields a less proportionate production, and finally a point is reached where the further application of labor ceases even to increase the aggregate result.

It is misapprehended appreciation of this law in so far as it applies to agricultural production, which has led to the formulation and maintenance in economic teaching of what is called "the law of diminishing productiveness in agriculture." But the law is not peculiar to agriculture nor to the second mode of production which I have called "growing." It is true that this mode of production con-



Chap. VII. RELATION OF SPACE IN PRODUCTION.

sists in the utilization in aid of labor of the power of reproduction which characterizes life, and that living things in their growth and expansion require more space than things destitute of life. The plants that we grow require space below the surface of the ground in which to expand their roots and drink in certain constituents, and space above the surface in which to expand their leaves and drink in air and light. And the animals that we breed require space for their necessary movements. But though the spacial requirements of living things may be relatively greater than those of things not living, they are no less absolute in the one case than in the other. That two material things cannot exist in the same space is no more true of brutes than of beets, nor of beets than of bricks.

In every form or sub-division of its three modes the exertion of human labor in the production of wealth requires space; not merely standing or resting space, but moving space—space for the movements of the human body and its organs, space for the storage and changing in place of materials and tools and products. This is as true of the tailor, the carpenter, the machinist, the merchant or the clerk, as of the farmer or stock-grower, or of the fisherman or miner. One occupation may require more elbow-room or tool-room or storage-room than another, but they all alike require space, and so must come to a point where any gain from concentrating labor in space ceases, and further concentration results in a proportionate lessening of product, and finally in an absolute decline. The same law, first of increasing and then of diminishing returns, from the concentration of labor in space, which the first exponents of the doctrine of diminishing returns in agriculture say is peculiar to that occupation, and its latter exponents say obtains in agriculture, and in the extraction of limited natural agents, such as coal, shows itself in all modes of production, and must

continue to do so, even did we discover some means of producing wealth by solidifying atmospheric air or an all-pervading ether, which some modern scientists suppose. For this alleged "law of diminishing returns in agriculture" is nothing more nor less than the spacial law of material existence, the reversal or denial of which is absolutely unthinkable.

To see this, let us take a form of production widely differing from that of agriculture—the production of brick. Brick is usually made from clay, but can be made from other inorganic substances, such as shale, coal-dust, marble-dust, slag, etc., and no part of its production involves any use of the principle of increase that characterizes life. Nor can any of the substances used in brickmaking be considered as limited natural substances or agents by any classification that would not destroy the distinction by including the whole earth itself as a limited natural agent. The production of brick is clearly one of the forms of production which those who uphold the doctrine of "diminishing returns in agriculture," or in its extension to the doctrine of "diminishing returns in the use of limited natural agents," would consider a form of production that can be continued indefinitely by the increased application of labor without diminishing returns.

Yet we have only to think of it to see that what is called the law of diminishing returns in agriculture applies to the making of brick as fully as to the growing of beets. A single man engaged in making a thousand bricks would greatly waste labor if he were to diffuse his exertions over a square mile or a square acre, digging and burning the clay for one brick here, and for another some distance apart. His exertion would yield a much larger return if more closely concentrated in space. But there is a point in this concentration in space where the increase of exertion will begin to diminish its proportionate yield.

361 . See 371

concentration of the work of baking bread effects a great saving of labor in the item of fuel alone. And it is so with other items.

The saving thus made by the concentration of work arises not only from physical laws but from mental laws as well. All our doing or accomplishing of things, except those that may be referred to instinct, require in the first place the exertion of conscious thought. We see this in the child as it learns to walk, to talk, to read and write. We see this as adults when we begin to do things new to us, as to speak a foreign tongue, to write shorthand, or use a typewriter or a bicycle. But as we do the same things again and again, the mental exertion becomes less and less, until we come to do them automatically and without consciously thinking of how we do them.

Now the result of what regarded from the standpoint of the whole or industrial organism is the separation of effort or division of labor in the production of wealth, is that the individual does fewer things but does them oftener. It is thus from the standpoint of the individual the concentration of effort or of labor, and so from the standpoint of the things to be done it involves a similar concentration in place and time, thus securing the saving of effort or increased efficiency of exertion which, to recur to our illustration, comes from doing one thing behind another and on a large instead of on a small scale.

Thus, when instead of each individual or each family endeavoring to hunt, fish, obtain vegetables, build habitations and make clothing or tools, for the satisfaction of their own needs, some devote themselves to doing one thing and some to doing another of the things required for the satisfaction of the general needs, what is the separation of function from the standpoint of the all or industrial whole is the concentration of function in its units, and special trades and vocations are developed.

And as the social organism grows by increase in numbers or the widening of the circle of exchanges, or both, this differentiation of function between its units tends constantly to increase, augmenting the efficiency of the productive powers of man to a degree to which we can assign no limits, and of which the marvelous increase in productive power which so strikingly characterizes our modern civilization affords but a faint forecast.

In civilized society where the division of labor has been carried to great lengths, we are so used to it that it is hard to realize how much we owe to it, and how utterly different our life would be without it. But as one tries to think to what we should be reduced without division of labor, he will see how large is the part it plays in the production of wealth—so large, indeed, that without it man as we know him could not exist. Take for instance the providing of clothing. If each one had to make his own clothing from the raw material, he could get nothing better than leaves or skins. Even with all the advantages which the division of labor gives in the making of cloth, of needles, thread, buttons, etc., let any one unused to it set himself to the making of a garment. He will soon realize how hard it is to make the first one; how much easier and better the second is made than the first, the third than the second, and so on, until the process ceases to require thought and becomes automatic. When by means of the division of labor, the making of clothing is so far concentrated that the clothing for some dozens or scores of men can be made together, then individuals can devote themselves solely to the making of clothes, with greatly increased economy. As the concentration of clothes-making proceeds further, and the making of clothes for hundreds, thousands, tens of thousands, and even hundreds of thousands of individuals is by the development of the ready-made clothing industry brought together, greater and greater economies

become possible. Separate individuals devote themselves to the making of particular garments, and then to the making of particular parts or to particular processes. Instead of one tailor cutting out a garment with a pair of shears and then proceeding to make it in all its parts, cutters who do nothing else cut out scores of garments at once with great knives; the operations of basting, lining, buttonholing, etc., are performed by different people who devote themselves to doing these things alone, and whose work is aided by powerful machines, the use of which becomes possible with the larger scale and greater continuity of employment this concentration permits.

It is this concentration and specialization of work, with the division of labor, that brings about the development of labor-saving machinery of all kinds. The essential quality of the machine is its adaptation for the doing of certain special things. The human body considered as a machine is of all machines that which is best adapted for the doing of the greatest variety of things. But for doing only one thing, for the increase of quantity at the expense of variety, man is able to make machines which within a narrow range are far superior to the tools nature gives him. And the same principle governs the employment of forces other than the force he can command in his muscles. The utilization of winds and tides and currents and falling streams, of steam and of electricity, and chemical attractions and repulsions, is dependent on this concentration.

Thus the division of labor involves and proceeds from the concentration of effort for the satisfaction of desires. It begins when there are two individuals who coöperate; it increases and becomes productive of greater and greater economies with the increase of the number who thus coöperate.

Adam Smith, who begins his "Wealth of Nations" by considering how coöperation increases the productive

powers of mankind, which he styles "the division of labor," refers to the economy which it produces under three heads:

1. The increased dexterity of workmen.
2. The saving of time by the greater continuity of employment.
3. The economy effected by the use of machinery.

But on a larger and fuller survey we may perhaps best analyze the advantages that result from the coöperation of labor as follows:

A. The combination of labor permits a number of individuals by direct union of their powers to accomplish what severally would be impossible.

B. The division of labor, with the concentration and coöperation it involves, permits the doing for many (or a larger number) of what may with a less expenditure be done by one (or by a smaller number):

1. By the saving of time and effort, as in the preceding illustration, where one man goes on a journey which to accomplish severally four men would have to make.

2. By utilizing the differing powers of individuals, as where those who excel in physical strength devote themselves to things requiring physical strength, while those who are inferior in physical strength do the things which require less physical strength, but for which they are otherwise just as capable, thus producing the same net results as would a bringing up of all to the highest level of physical strength; or where those who excel in other qualities do the things for which such qualities are best adapted, thus practically bringing up the level of the accomplishment of all to that of the highest qualities of each.

3. By increasing skill, consequent upon those who do a larger amount of that same kind of work being able to acquire facility in it.

4. By accumulating knowledge. The same tendency which increases the incommunicable knowledge called skill, also tends to increase the communicable knowledge properly so called, which consists in a knowing of the relations of things to other external things, and which constitutes a possession of the economic body or Greater Leviathan, transferable by writing or similar means.

5. By utilizing the advantages of doing things on a large scale instead of on a small scale, and of doing them successively instead of separately.

6. By utilizing the natural forces, and by the invention and use of machines and of improved processes, for the use of which the large scale of production gives advantages.

CHAPTER X.

COÖPERATION—ITS TWO KINDS.

SHOWING THE TWO KINDS OF COÖPERATION, AND HOW THE POWER OF THE ONE GREATLY EXCEEDS THAT OF THE OTHER.

The kind of coöperation which, as to method of union or how of initiation, results from without and may be called directed or conscious coöperation—Another proceeding from within which may be called spontaneous or unconscious coöperation—Types of the two kinds and their analogues—Tacking of a full-rigged ship and of a bird—Intelligence that suffices for the one impossible for the other—The savage and the ship—Unconscious coöperation required in ship-building—Conscious coöperation will not suffice for the work of unconscious—The fatal defect of socialism—The reason of this is that the power of thought is spiritual and cannot be fused as can physical force—Of “man power” and “mind power”—Illustration from the optician—Impossibility of socialism—Society a Leviathan greater than that of Hobbes.

WE have seen that there are two ways or modes in which coöperation increases productive power. If we ask how coöperation is itself brought about, we see that there is in this also a distinction, and that coöperation is of two essentially different kinds. The line of distinction as to what I have called the ways of coöperation, and have in the last chapter considered, is as to the method of action or how of accomplishment; the line of distinction as to what I shall call the kinds of coöperation, and am

about in this chapter to consider, is as to the method of union or how of initiative.

There is one kind of coöperation, proceeding as it were from without, which results from the conscious direction of a controlling will to a definite end. This we may call directed or conscious coöperation. There is another kind of coöperation, proceeding as it were from within, which results from a correlation in the actions of independent wills, each seeking but its own immediate purpose, and careless, if not indeed ignorant, of the general result. This we may call spontaneous or unconscious coöperation.

The movement of a great army is a good type of coöperation of one kind. Here the actions of many individuals are subordinated to and directed by one conscious will, they becoming, as it were, its body and executing its thought. The providing of a great city with all the manifold things which are constantly needed by its inhabitants is a good type of coöperation of the other kind. This kind of coöperation is far wider, far finer, far more strongly and delicately organized, than the kind of coöperation involved in the movements of an army, yet it is brought about not by subordination to the direction of one conscious will, which knows the general result at which it aims; but by the correlation of actions originating in many independent wills, each aiming at its own small purpose without care for or thought of the general result.

The one kind of coöperation seems to have its analogue in those related movements of our body which we are able consciously to direct. The other kind of coöperation seems to have its analogue in the correlation of the innumerable movements, of which we are unconscious, that maintain the bodily frame—motions which in their complexity, delicacy and precision far transcend our powers of conscious direction, yet by whose perfect

adjustment to each other and to the purpose of the whole that coöperation of part and function that makes up the human body and keeps it in life and vigor is brought about and supported.

A beautiful instance of coöperation of the first kind is furnished by the tacking of a square-rigged ship under full sail. The noble vessel, bending gracefully to the breeze, under her cloud of canvas, comes driving along, cleaving white furrows at her bow and leaving a yeasty wake at her stern. Suddenly her jibs fly free and her spanker flattens, as she curves towards the wind; her foreyards round in and their sails begin to shake, and at length, as what were their weather braces are hauled taut, to fill on the other side. The after sails that at first held the wind as before, begin in their turn to spill; then their yards are shifted, and they too take the wind on a different side; and with every sheet and tack in its new place the vessel gathering again her deadened headway, begins to drive the foam from her bow as she bends on the other side to cut her way in a new direction. So harmonious are her movements, so seemingly instinct with life, that the savage who sees for the first time such a vessel beating along the coast might take her for a great bird, changing its direction with the movement of its wings as do sea-gull and albatross.

And between ship and bird there are certain resemblances. Both are structures in which various parts are combined into a related whole and distinct motions are correlated in harmonious action. And in both movement is produced by the varying angles at which flat surfaces are by a mechanism of joints and ligaments exposed to the impact of air. In a bird, however, the parts in their motions obey instinctively and unconsciously the promptings of the conscious will. But in the ship the motions of the parts are produced by the distinct action of a number

of conscious wills, ranging from one or two dozen in a merchant vessel to several hundred in an old-fashioned ship of war. Their coöperation is produced, not instinctively and unconsciously, but by intelligent obedience to the intelligent orders of one directing will, which prescribes to every man his place and function, directing when, how, and by whom, each motion shall be made. The bird veers, because when it wills to veer, nerve and tendon directly respond with the necessary motions. The ship tacks because the separate wills that manage her rudder and sails consciously obey the successive commands which prescribe each of the necessary motions from the first order, "Full for stays!" to the last, "Belay all!" A series of intelligent directions, consciously obeyed by those to whom they are addressed, bring about and correlate the movements of the parts.

Nor could the manœuvres of a ship be carried on without such intelligent direction. Any attempt to substitute independent action, no matter how willing, for responsive obedience to intelligent direction would be certain ere long to result as in the traditional coasting schooner, manned by two—captain and mate—where the captain who was steering, irritated by some gratuitous advice of the mate who was tending jib-sheets, yelled out to him, "You run your end of this schooner and I'll run mine!" Whereupon there was a rattle of chain at the bow, and the mate yelled back, "Captain, I've anchored my end of this schooner; you can run your end where you choose!"

Now, much of the coöperation of man in producing social effects is of the nature of that by which a ship is sailed. It involves the delegation to individuals of the power of arranging and directing what others shall do, thus securing for the general action the advantages of one managing and correlating intelligence. But while coöperation of this kind is indispensable to producing

certain results by conjoined action, it is helpless or all but helpless to bring about certain other results involving a longer series and more complicated and delicate actions and adjustments.

To continue our illustration: The bird structurally is a machine as the ship is a machine, which the conscious will of the bird, controlling certain voluntary movements, causes to rise or fall, to sweep in this direction or in that, to be carried with the gale or to tack in its teeth, in short to execute all the movements, sometimes swift and sometimes slow, but nearly always graceful, of which this bird machine is capable. But the conscious will that controls the voluntary motions of the bird; the intelligence that is the captain of this aerial craft, will not account for the machine itself; for its consummate arrangements and adjustments and adaptations. These not merely infinitely transcend the intelligence of the bird, but of the highest human intelligence. The union of lightness with strength, of rigidity with flexibility, of grace with power; the appropriateness of material, the connection and relation of parts, the economies of space and energy and function, the applications of what are to us the most complex and recondite of physical laws, make the bird as a machine, as far superior to the best and highest machines of man's construction, as the paintings of the great master are to the rude slate-drawings of the prattling child.

The bird is not a construction as man's machines are constructions. It was not built, but grew. Its first tangible form, as far as we can trace it, was a limy envelop containing a substance called the yolk, swimming in a sticky fluid, the white. Under certain conditions and without external influence except that of gentle and continued heat, the molecules of the contained substance began, by some influence from within, and seemingly, of themselves, to range themselves into cells, and cells to

form into tissue and bone, and turning in related order into heart and lungs, backbone and head, stomach and bowels, brain and nerve, wings and feet, skin and feathers, until at length a tiny living thing pecked its way out, leaving an empty shell, and with a little eating and sleeping, a little hardening of gristle and lengthening of feathers, the "it" of it, the new captain of the new air-ship, began to try rudder and sails and paddles, until having "learned the ropes," and got accustomed to the measurement of distance and the "feel" of motion, it started off boldly to skim and to soar, to get food and digest it, to live its life and propagate its kind.

The veriest savages must at times ponder over the mystery of the egg, as we civilized men at times ponder over the mystery of common things—for to them as to us it would be an insoluble mystery. But it is the ship, not the bird, that would most excite their wonder and admiration, for the savage would see in the ship as soon as he came close to it, not a thing that grew, but a thing that was made—a higher expression of the same power which he himself exercises in his own rude constructions. He would see in it, when he came to look closely, but a vastly greater and better canoe, and would wonder and admire as he who has begun to paint stands in wonder and admiration before the picture of a master, which one who knew nothing of the difficulties of the art would pass with little notice. As the savage would understand the kind of coöperation called into play in the managing of a vessel, so would he attribute the building of the vessel to coöperation of the same kind. Since a larger canoe than one man can build may be built by the same man if he can unite the exertions of others in cutting, rolling, hewing and hollowing a great log, so would it seem to our savage that it was in this way that the ship of civilization was built. And the admiration which the ship would excite in him

would be an admiration of the men who sailed it, whom he would naturally take to be the men who built it, or at least to be men who could build it. The superiority of the ship to the rude canoes with which he was familiar he would attribute to superiority of their personal qualities—their greater knowledge and skill and power. They would indeed seem to him at first as very gods.

Yet the savage would be wrong. The superiority of the ship does not indicate the superiority of individual men. If driven ashore with the loss of their ship and all its contents, these men would be more helpless than so many of his own people, and would find it more difficult to make even a canoe. Even if they had saved tools and stores, it would be only after long toil that they could succeed in building some rude, small craft unfitted for a long voyage and rough weather, and not in any respect comparable with their ship. For a modern ship is rather a growth than a direct construction in that as between the kind of coöperation required for its production and that which suffices for that of a canoe, there is a difference which suggests something not altogether unlike the difference between a work of nature and a work of man.

The coöperation required in the making of a large canoe or in the sailing of a ship is exceedingly simple as compared to that involved in the construction and equipment of a well-found, first-class ship. The actual putting together, according to the plans of the naval architect, of the separate parts and materials which compose such a ship, would require, after they had been assembled, some directed coöperation. But if coöperation of this kind could suffice for even putting the parts together after they had been made and assembled, how could it suffice for making those various parts from the forms in which nature offers their material, and assembling them in the place where they were to be put together?

Consider the timbers, the planks, the spars; the iron and steel of various kinds and forms; the copper, the brass, the bolts, screws, spikes, chains; the ropes, of steel and hemp and cotton; the canvas of various textures; the blocks and winches and windlasses; the pumps, the boats, the sextants, the chronometers, the spy-glasses and patent logs, the barometers and thermometers, charts, nautical almanacs, rockets and colored lights; food, clothing, tools, medicines and furniture, and all the various things, which it would be tiresome fully to specify, that go to the construction and furnishing of a first-class sailing-ship of modern type, to say nothing of the still greater complexity of the first-class steamer. Directed coöperation never did, and I do not think in the nature of things it ever could, make and assemble such a variety of products, involving as many of them do the use of costly machinery and consummate skill, and the existence of subsidiary products and processes.

When a ship-builder receives an order for such a ship as this he does not send men into the forest, some to cut oak, others to cut yellow pine, others to cut white pine, others to cut hickory and others still to cut ash and lignum-vitæ; he does not direct some to mine iron ore, and others copper ore, and others lead ore, and others still to dig the coal with which these ores are to be smelted, and the fire-clay for the smelting-vessels; some to plant hemp, and some to plant cotton, and others to breed silkworms; some to make glass, others to kill beasts for their hides and tallow, some to get pitch and rosin, oil, paint, paper, felt and mercury. Nor does he attempt to direct the manifold operations by which these raw materials are to be brought into the required forms and combinations, and assembled in the place where the ship is to be built. Such a task would transcend the wisdom and power of a Solomon. What he does is to avail himself of the resources of a high

civilization, for without that he would be helpless, and to make use for his purpose of the unconscious coöperation by which without his direction, or any general direction, the efforts of many men, working in many different places and in occupations which cover almost the whole field of a minutely diversified industry, each animated solely by the effort to obtain the satisfaction of his personal desires in what to him is the easiest way, have brought together the materials and productions needed for the putting together of such a ship.

He buys of various dealers in such things, knees, beams, planking, spars, sails, cables, ropes, boats, lanterns, flags, nautical instruments, pumps, stoves; and he probably contracts for various parts of the work of putting together the hull, such as calking, sheathing, painting, etc.; of making the sails and rigging the spars. And each of these separate branches of collation and production will be found on inquiry to reach out and ramify into other branches having necessary relations with still other branches. So far from any lifetime sufficing to acquire, or any single brain being able to hold, the varied knowledge that goes to the building and equipping of a modern sailing-ship, already becoming antiquated by the still more complex steamer, I doubt if the best-informed man on such subjects, even though he took a twelvemonth to study up, could give even the names of the various separate divisions of labor involved.

A modern ship, like a modern railway, is a product of modern civilization; of that correlation of individual efforts in which what we call civilization essentially consists; of that unconscious coöperation which does not come by personal direction, as it were from without, but grows, as it were from within, by the relation of the efforts of individuals, each seeking the satisfaction of individual desires. A mere master of men, though he

might command the services of millions, could not make such a ship unless in a civilization prepared for it. A Pharaoh that built pyramids, a Genghis Khan who raised mounds of skulls, an Alexander, a Cæsar, or even a Henry VIII. could not do it.

The kind of coöperation which I have illustrated by the tacking of a ship is a very simple matter. It could be readily taught, the difficulties of language aside, to Malays, or Somalis, or Hindus, or Chinamen, or to the men who manned the Roman galleys or the viking ships. But that kind of coöperation which is involved in the making of such a ship is a much deeper and more complex matter. It is beyond the power of conscious direction to order or bring about. It can no more be advanced or improved by any exertion of the power of directing the conscious actions of men than the conscious will of the individual can add a cubit to his stature. The only thing that conscious direction can do to aid it is to let it alone; to give it freedom to grow, leaving men free to seek the gratification of their own desires in the ways that to them seem best. To attempt to apply that kind of coöperation which requires direction from without to the work proper for that kind of coöperation which requires direction from within, is like asking the carpenter who can build a chicken-house to build a chicken also.

This is the fatal defect of all forms of socialism—the reason of the fact, which all observation shows, that any attempt to carry conscious regulation and direction beyond the narrow sphere of social life in which it is necessary, inevitably works injury, hindering even what it is intended to help.

And the rationale of this great fact may, I think, at least in some measure, be perceived when we consider that the originating element in all production is thought or intelligence, the spiritual not the material. This spiritual

element, this intelligence or thought power as it appears in man, cannot be combined or fused as can material force.

Two men may pull or push twice as much as one man, and the physical force of one hundred thousand men properly brought to bear will one hundred thousand times exceed the physical force of a single man. But intelligence cannot be thus aggregated. Two men cannot see twice as far as one man, nor a hundred thousand determine one hundred thousand times as well. If it be true that "In a multitude of counselors there is wisdom," it is only in the sense that in a large comparison of views and opinions eccentricities and aberrations are likely to be eliminated. But in this elimination the qualities necessary for superior judgment and prompt direction are also lost. No one ever said, "In a multitude of generals there is victory." On the contrary the adage is, "One poor general is better than two good ones."

In the first kind of coöperation, as for example, when ten men pull on the same rope in the same way in obedience to the direction of one man, there is a utilization of the physical force of ten at the direction of the mental force of one. But there is at the same time a loss or rather non-utilization of the mental force of ten. The result can be no greater than if the ten men who are pulling were for the time utterly devoid of intelligence—mere automata. And we can readily conceive of such extensions in the applications of machinery to the utilization of natural physical forces that the captain of a ship might by touching an electrical keyboard, so give responsive motion to rudder, sheets and braces, as to tack ship without a crew, which would be a long approach in the mechanism of a ship to the mechanism of a bird.

But in the kind of coöperation that I have called spontaneous, where the direction comes from within, what is utilized in production is not merely the sum of the

p. 3

In the same superficial area required for the production of one brick, two bricks may be produced to advantage. But this concentration of labor in space cannot be continued indefinitely without diminishing the return and finally bringing production to a stop. To get the clay for a thousand bricks without use of more surface of the earth than is required to get the clay for one brick, would involve, even if it were possible at all, an enormous loss in the productiveness of the labor. And so if an attempt were made to put a thousand men to work in making brick on an area in which two men might work with advantage, the result would be not merely that the exertion of the thousand men could not produce five hundred times as much as the exertion of two men, but that it would produce nothing at all. Men so crowded would prevent each other from working.

Or let us take that part of the production of bricks that of all parts requires least space—that which consists merely in the storage of bricks after they are made, so as to have them in readiness when required.

Two bricks must occupy twice as much cubical space as one brick. But if placed one on top of the other, the two require for resting-place no more superficial area than the one; while, as it requires on the part of a man of ordinary powers practically no more exertion to lay down or take up two bricks on the same surface than to lay down or take up one, there would be a greater gain in the productiveness of labor so applied to the storage of brick than if applied to the storing of brick side by side on the surface of the ground. But this economy in the storage of brick could not be continued indefinitely. Though two bricks may be rested one on top of the other without any more use of superficial area than is required for the resting of one brick, this is not true of a thousand bricks, nor even of a hundred. Much less than a hundred bricks so placed

as to rest upon the superficies required for the resting of one brick would become so unstable as to fall with the slightest jar or breeze. Before ten or even half a dozen bricks had been rested one on top of another it would become evident that any further extension of the perpendicular would require a further extension of base. And even with such extension of base as would permit of perpendicular solidity, a point would finally be reached where, even if the surface continued solid, the weight of the upper bricks would crush the lower bricks to powder. Thus it is no more possible indefinitely to store bricks on a given area than on a given area indefinitely to grow beets.

Up to a point, moreover, which is about waist-high for an ordinary man, it requires less exertion to place or take from place the last brick than the first brick, or in other words, labor at this point is more productive. But this point of greatest productiveness reached, the productiveness of labor begins to decline with the further application of labor on the same area, until the point of no return or non-productiveness is reached. The reaching of this point of no return to the further application of labor in the storing of bricks on a given area may be delayed by the invention and use of such labor-saving devices as the wheelbarrow and steam-engine, but it cannot be prevented. There is a point in the application of labor to the storage of bricks on any given area, whether a square foot or a square mile, where the application of successive "doses of labor" (to use the phrase of the writers who have most elaborately dwelt on this assumed "law of diminishing productiveness in agriculture") must cease to yield proportionate returns, and finally where they must cease to yield any return.

Thus the law of diminishing returns which has been held as peculiar to agriculture is as fully shown in the

mere storage of bricks as it is in the growing of crops or the breeding of animals. It is quite as true that all the bricks now needed in the three kingdoms could not be stored on a single square yard, as it is that all the food needed in the three kingdoms could not be grown on a single acre. The point of greatest efficiency or maximum productiveness in the application of labor to land exists in all modes and all forms of production. It results in fact from nothing more nor less than the universal law or condition that all material existence, and consequently all production of wealth, requires space.

Nor has the spacial requirement of production merely regard to the material object of production; it has regard as well to the producer—to labor itself. Man himself is a material being requiring space for his existence even when in the most passive condition, and still more space for the movements necessary to the continuous maintenance of life and the exertion of his powers in the production of wealth. For an hour or two men may, as in listening to a speech or looking at a spectacle, remain crowded together in a space which gives them little more than standing-room. But to bring a few more into such a crowd would mean illness, death, panic. Nor in such narrow space as men may for a while safely stand, could life be maintained for twenty-four hours, still less any mode of producing wealth be carried on.

The division of labor permits the concentration of workers whose particular parts in production require comparatively little space, and by building houses one story above another in our cities we economize superficial area in furnishing dwelling and working places in much the same way as by storing bricks one upon another. Improvements in the manufacture of steel and in the utilization of steam and electricity have much increased the height to which such structures can be carried, and we already have in our

large American cities buildings of over twenty stories in which production of some sort is carried on. But though the requirement of superficial area may thus be pressed back a little by making use of cubical area (and in the tallest buildings of New York and Chicago rent is estimated in cubic not in square feet) this is only possible to a slight degree. The intensive use of land shown in the twenty-story building is in fact made possible by the extensive use of land brought about by improvements in transportation, and every one of these monstrous buildings erected lessens the availability of adjoining land for similar purposes.

CHAPTER VIII.

THE RELATION OF TIME IN PRODUCTION.

SHOWING THAT ALL MODES OF PRODUCTION HAVE RELATION TO TIME.

Difference between apprehensions of space and time, the one objective, the other subjective—Of spirits and of creation—All production requires time—The concentration of labor in time.

AS space is the relation of things in extension, so time is the relation of things in sequence.

But time, the relation of sequence, seems when we think of it, to be, so to speak, wider than space, the relation of extension. That is to say, space is a quality or affection of what we call matter; and while we conceive of immaterial things which having no extension have no relation in space, we cannot conceive of even immaterial things as having no relation in sequence.

Our apprehension of space is through our senses, the direct impressions of which are uncertain and misleading, but which we habitually verify and correct and give some sort of exactness to, through other impressions of our senses. Our first and simplest measure of space is in the impression of relative distance produced through the sight, or in the feeling of exertion required to move ourselves or some other object from point to point, as by paces or stone's throw or bow-shot; and these give way to more

exact measurements, such as by lines, inches, feet, miles, diameters of the earth or of the earth's orbit. Deprived of the senses, which make us cognizant of matter, it is impossible to see how we could have any impression or idea of space.

Our impression of time, however, is not primarily through our senses. Though we correct and verify and give some exactness to it through them, there is a purely subjective apprehension of time in our own mental impressions or thoughts, which do not come all at once, but proceed or succeed one another, having to each other a relation of sequence. It is through this succession of mental impressions that we are in the first place and directly conscious of time. But while our direct consciousness of space must vary widely, our direct impressions of time are more variable still, since they depend upon the rapidity and intensity of mental impressions. We may seem to have lived through years in the intense activity of a vivid dream, and to be utterly unconscious of the passage of time in a sound sleep. And while we can conceive the impression of space to be very different on the part of a sloth and that of a greyhound, it may be that the brief day of an animalcule may seem as long to it as does a century of life to the larger elephant.

But the reason of man enables him to obtain more exact measures of sequence from the uniformities of natural phenomena, such as days or years, moons or seasons, and from the regularity of mechanical movement as by sand-glasses or dials, or by clocks or watches.

Time seems indeed to be necessary to and in some degree coincident with all perceptions of space. But space does not seem necessary to time. That is to say, we seem to be able to imagine an immaterial being, or pure intelligence, not limited by or having necessary consciousness of relations of extension, and this is the way in which we

usually think of unembodied spirits, such as angels or devils; and of disembodied spirits, such as ghosts. But we cannot really think thus of them with regard to relations of sequence. We can indeed think of them as knowing nothing and regarding nothing of our measures of time—of a day being to them as a thousand years, or a thousand years as a day, for that these measures are only relative we can see for ourselves. But we can also see that in the realm of spirit there is and must be the same relation of preceding and succeeding, of coming before and coming after, as in the realm of matter; and that this relation of sequence or time is really clearer and closer to that in us which we must think of as our immaterial part than is that of extension or space to our physical parts.

We usually think of creation, the bringing into existence by a power superior to and anterior to that of man, as taking place at once as by the Divine fiat: "God said, Let there be light: and there was light." But it would seem on analysis, that in this way of thinking we are considering rather the mental action which we conceive of as in itself immaterial—which our experience so far as it goes, and our reason so far as it can reach, teach us must lie back of all material expression—than of the material expression itself. All speculations and theories of the origin of the cosmos, all religions which are their popular expression, conceive of the appearance of material phenomena as in order or sequence, and consequently in time. Save in its childlike measurement of time by days, the ancient Hebrew account of the genesis of the material world recognizes this necessary order or sequence as fully as do modern scientists, for whose almost as vague measurements millenniums are too short. And so far as we can see, thought itself is in sequence and requires time, and its continued exertion brings about weariness. It, at any rate, seems to me that if we consider the essential and

not merely the crude expression of the Hebrew scripture that in six days God created the heavens and the earth and rested on the seventh, it may embody a deep truth—the truth that exertion, mental as physical, requires a season of rest.

But, all such speculations aside, it is certain that all production of wealth takes place in sequence and requires time. The tree must be felled before it can be hewn or sawed into lumber; lumber must be seasoned before it can be used in building or wrought into the manifold articles made of wood. Ore must be taken from the vein before it can be smelted into iron, or from that form turned into steel or any of the manifold articles which by subsequent processes are made from iron or steel. Seeds must be planted before they can germinate; there must be a considerable interval of time before the young shoots can show themselves above the ground; then a longer interval before they can grow and ripen and produce after their order; grain must be harvested and ground before it can be converted into meal or flour or changed by labor from that form into other forms which gratify desire, all of which, like fermenting and baking, require time. So, in exchanging, time is required even for the concurrence and expression of human wills which result in the agreement to exchange, and still more time for the actual transference of things which completes the exchange. In short, time is a necessary element or condition in all exertion of labor in production.

Now, from this necessary element or condition of all production, time, there result consequences similar to those which result from the necessary element or condition of all production, space. That is to say, there is a law governing and limiting the concentration of labor in time, as there is a law governing and limiting the concentration of labor in space. Thus there is in all forms of production

a point at which the concentration of labor in time gives the largest proportionate result; after which the further concentration of labor in time tends to a diminution of proportionate result, and finally to prevent result.

Thus there is a certain degree of concentration of labor in time (intensity of exertion), by which the individual can in any productive occupation accomplish on the whole the largest result. But if a man work harder than this, endeavoring to concentrate more exertion in a shorter time, it will be to the relative and finally to the absolute loss of productiveness—a principle which gives its point to the fable of the hare and the tortoise.

And so, if I go to a builder and say to him, "In what time and at what price will you build me such and such a house?" he would, after thinking, name a time, and a price based on it. This specification of time would be essential, and would involve a certain concentration of labor in time as the point of largest return or least cost. This I would soon find if, not quarreling with the price, I ask him largely to lessen the time. If I be a man like Beckford—the author of "Vathek," for whom Fonthill was built by relays of workmen, who lighted up the night with huge fires—a man to whom cost is nothing and time everything, I might get the builder somewhat to reduce the time in which he would agree, under bond, to build the house; but only by greatly increasing the price, until finally a point would be reached where he would not consent to build the house in less time no matter at what price. He would say: "Although I get bricks already made, and boards already planed, and stairs and doors, and sashes and blinds, and whatever else may be obtained from the mill, and no matter how many men I put on and how much I disregard economy, the building of a house requires time. Cellar cannot be dug and foundations raised, and walls built and floors laid, and roof put on, and partitioning and plastering,

and plumbing, and painting and papering be done all at once, but only one after another, and at the cost of time as well as labor. The thing is impossible."

And so, although the concentration of labor in agriculture may with decreasing efficiency hasten beyond the normal point the maturity of vegetables or fruit or even of animals, yet the point of absolute non-productiveness of further applications of labor is soon reached, and no amount of human exertion applied in any way we have yet discovered could bring wheat from the seed to the ear, or the chick from the egg to the laying hen, in a week.

The importance in political economy of this principle that all production of wealth requires time as well as labor we shall see later on; but the principle that time is a necessary element in all production we must take into account from the very first.

CHAPTER IX.

COÖPERATION—ITS TWO WAYS.

SHOWING THE TWO WAYS OF COÖPERATION.

Coöperation is the union of individual powers in the attainment of common ends—Its ways and their analogues: (1) the combination of effort; (2) the separation of effort—Illustrations: of building houses, of joint-stock companies, etc.—Of sailing a boat—The principle shown in naval architecture—The Erie Canal—The baking of bread—Production requires conscious thought—The same principle in mental effort—What is on the one side separation is on the other concentration—Extent of concentration and specialization of work in modern civilization—The principle of the machine—Beginning and increase of division of labor—Adam Smith's three heads—A better analysis.

COÖPERATION means joint action; the union of efforts to a common end. In recent economic writings the word has been so much used in a narrower sense that its meaning in political economy is given in the latest American dictionary (the Standard) as "a union of laborers or small capitalists for the purpose of advantageously manufacturing, buying and selling goods, and of pursuing other modes of mutual benefit; also, loosely, profit-sharing."

This is a degradation of a word that ought not to be acquiesced in, either in the interests of the English language or in the interests of political economy, and at the risk of being misunderstood by those who have become accus-

tomed to associate it with trivial schemes of profit-sharing or namby-pamby "reconciliations" of capital and labor, I shall use it as an economic term in its full meaning—understanding by coöperation that union of individual powers in the attainment of common ends which, as already said (Book I., Chapter V.), is the means whereby the enormous increase of man's power that characterizes civilization is secured.

All increase in the productive power of man over that with which nature endows the individual comes from the coöperation of individuals. But there are two ways in which this coöperation may take place.

1. By the combination of effort. In this way, individuals may accomplish what exceeds the full power of the individual.

2. By the separation of effort. In this way, the individual may accomplish for more than one what does not require the full power of the individual.

This first way of coöperation may be styled the combination of labor, though perhaps the most distinctive term that could be used for it would be, the multiplication of labor, since the second way is well known by the term Adam Smith adopted for it, "the division of labor."

The one, the combination of labor, is analogous to the application in mechanics of that principle of the lever by which larger masses are moved in shorter distance or longer time, as in the crowbar. The other, the division of labor, is analogous to the application of that principle of the lever by which smaller masses are moved in longer distance or shorter time, as in the oar.

To illustrate: The first way of coöperation, the combination of labor, enables a number of men to remove a rock or to raise a log that would be too heavy for them separately. In this way men conjoin themselves, as it were, into one stronger man.

Or to take an example so common in the early days of American settlement that "log-rolling" has become a term for legislative combination: Tom, Dick, Harry and Jim are building near each other their rude houses in the clearings. Each hews his own trees, but the logs are too heavy for one man to get into place. So the four unite their efforts, first rolling one man's logs into place and then another's, until the logs of all four having been placed, the result is the same as if each had been enabled to concentrate into one time the force he could exert in four different times. Examples of the same principle in a more elaborate state of society are to be found in the formation of joint-stock companies—the union of many small capitals to accomplish works such as the building of railroads, the construction of steamships, the erection of factories, etc., which require greater capitals than are possessed by one man.

But while great advantages result from the ability of individuals, by the combination of labor, to concentrate themselves as it were into one larger man, there are other times and other things in which an individual could accomplish more if he could divide himself, as it were, into a number of smaller men.

Thus in sailing a boat, one man of extraordinary strength would be equal to two men of half his strength only in such exertions as rowing, hoisting the heavier sails, or the like. In other things, two men of ordinary strength would be able to do far more than the one man of double strength, since where he would have to stop one thing to do another, they could do both things at once. Thus while he would have to anchor in order to rest, they could move on without stopping, one sailing the boat while the other slept. There was a King Alphonso of Castile, celebrated by Emerson, who wished that men could be concentrated nine into one. But the loss of available power that would thus result

would soon be seen. How often now when beset by calls or duties which require, not so much strength as time, does the thought occur, "I wish I could divide myself into half a dozen." What the division of labor does, is to permit men, as it were, so to divide themselves, thus enormously increasing their total effectiveness.

To illustrate from the example used before: While at times Tom, Dick, Harry and Jim might each wish to move logs, at other times they might each need to get something from a village distant two days' journey. To satisfy this need individually would thus require two days' effort on the part of each. But if Tom alone goes, performing the errands for all, and the others each do half a day's work for him, the result is that all get at the expense of half a day's effort on the part of each what otherwise would have required two days' effort.

It is in this manner that the second way of coöperation, the separation of effort, or to continue the term adopted by Adam Smith and sanctioned by long usage, the division of labor, saves labor; that is to say, permits the accomplishment of equal results with less exertion, or of larger results with equal exertion. But out of this primary saving of exertion arise other savings of exertion.

Let me illustrate from a domain outside of political economy the general principle from which these gains proceed. Nothing, perhaps, better shows the flexibility of the human mind than naval architecture. Yet, from the rude canoe to the monster ironclad, in all the endless variety of form that men have given to vessels intended to be propelled through the water, one principle always obtains. We always make such vessels longer than they are broad. Why is it that we do so? It is that a vessel moving through the water has two main points of resistance to overcome—(1) the displacement of the water at her bow, the resistance to which is shown by the ripple or wave that

arises there, and (2) the replacement of the water at her stern, the resistance to which is shown by the suction or wake or "dead water" that she drags after her. In addition she must also overcome skin friction, shown, if one looks over the side of a vessel moving in smooth water, by the thin line of "dead water" or small ripples at her sides. But this, area for area, is slight as compared with the force required for displacement and replacement.

When the Erie Canal was first built its locks were constructed to accommodate boats of a certain length. The enlargement of these locks so as to admit boats of double that length is now going on, but is not yet entirely completed, so that to pass through the entire canal, boats of the shorter length must still be used. Each of these boats is usually pulled by two horses or mules. But whoever passes over the railroads that parallel this great waterway will notice that for much of the distance the boats are now run in pairs, the bow of one boat being fastened to the stern of its predecessor, and that instead of four horses for the two boats only three are used. What makes this economy possible is that the displacement for the two boats is mainly borne by the first boat, and the replacement for the two is mainly borne by the second boat. As the additional force required to move two boats instead of one is thus not much more than the additional skin friction, three animals suffice instead of four. If the boats were so constructed as to fit closely together the economy would be still greater.

Now, what we do in building a vessel is virtually to place one cross-section behind another cross-section so that the whole may be moved with no more resistance of displacement and replacement than would be required to move any one cross-section. The principle is the same as that which would prompt us if we had to carry two bodies through a wall, to carry the second through the hole that

it would be necessary to make for the first, instead of making another hole. In addition to this the increase of length without increase of width which results virtually from the placing of the cross-sections behind each other, permits the graduation or sharpening of entrance and egress, thus allowing displacement and replacement to be effected in longer times or more gradually, and with lessened resistance; although the fact that resisting surface does not increase proportionately to increase in cubical capacity, enables the large vessel to outstrip the small vessel with the same proportionate expenditure of power, even if built on the same lines.

Now these principles, or rather this principle, for at bottom they are one, have their analogues in our making of things. Just as ten thousand tons can be transported in one vessel at much greater speed or with much less expenditure of power than in ten thousand vessels of one ton each, so can production be facilitated and economized by doing together things of like kind that are to be done.

Take for instance the baking of bread. To bake a loaf of bread requires the application of a certain amount of heat for a certain time to a certain amount of dough. To heat an oven to this point requires a certain expenditure of fuel; to maintain it for this time a certain other expenditure of fuel; and a certain expenditure of fuel is lost in the cooling of the oven after the bread is baked. To bake one loaf of bread in an ordinary oven thus requires a much greater relative expenditure of fuel than is required to bake at one time as many loaves as the oven will hold; and a larger oven will bake more loaves with a proportionately less expenditure of fuel than a smaller one, since the loss of heat that escapes from the work of baking is relatively less; and if one batch of bread is succeeded by another batch without suffering the oven to cool, another great relative saving is made. So that the

p. 377 follow

physical power of the units, but the sum of their intelligence. If I may be permitted to use for a moment the term "man power" and symbol M as expressing the physical force which one individual can exert, and the term "mind power" and symbol M' as suggesting quantitatively the individual power of intelligence or thought, the best possible result of the exertion of one hundred thousand men in coöperation of the first kind would be $100,000 \text{ man power} \times 1 \text{ mind power}$ or $100,000 \text{ MM}'$; while of the same number of men employed in the second kind of coöperation it would be $100,000 \text{ man power} \times 100,000 \text{ mind power}$ or $10,000,000,000 \text{ MM}'$.

The illustration is clumsy, but it may serve to suggest the enormous difference which we see developed in the two kinds of coöperation, and which as it seems to me arises at least in important part from the fact that while in the second kind of coöperation the sum of intelligence utilized is that of the whole of the coöperating units, in the first kind of coöperation it is only that of a very small part.

In other words it is only in independent action that the full powers of the man may be utilized. The subordination of one human will to another human will, while it may in certain ways secure unity of action, must always where intelligence is needed, involve loss of productive power. This we see exemplified in slavery and where governments have undertaken (as is the tendency of all government) unduly to limit the freedom of the individual. But where unity of effort, or rather combination of effort, can be secured while leaving full freedom to the individual, the whole of productive power may still be utilized and the result be immeasurably greater.

The hardening of muscular tissue, which comes to us as the years of our lives go by, has deprived the delicate mechanism which once adequately moved the lenses of my

eyes of what opticians call their power of accommodation, so that to my natural sight printed pages that I once read comfortably are now indistinguishably confused. By piercing a small pinhole in a piece of cardboard and holding it close to one of my eyes, while I shut the other, I can cut off from my vision so many of the rays of light that the few which reach my retina do not interfere with each other, and I can thus see the same printed page for a few moments distinctly. But this is by the sacrifice of otherwise available rays of light. Now by means of a properly ground pair of spectacles which deflect so as to utilize for the eyes the interfering rays of light I can use them all.

To attempt in social affairs to secure by coöperation of the first kind that alignment of effort which by natural law belongs to coöperation of the second kind, is like attempting to secure by cardboard and pinholes the definiteness of vision that can be far better secured by spectacles. Such is the attempt of what is properly called socialism.

Imagine an aggregation of men in which it was attempted to secure by the external direction involved in socialistic theories that division of labor which grows up naturally in society where men are left free. For the intelligent direction thus required an individual man or individual men must be selected, for even if there be angels and archangels in the world that is invisible to us, they are not at our command.

Taking no note of the difficulties which universal experience shows always to attend the choice of the depositaries of power, and ignoring the inevitable tendency to tyranny and oppression, of command over the actions of others, simply consider, even if the very wisest and best of men were selected for such purposes, the task that would be put upon them in the ordering of the when, where, how

and by whom that would be involved in the intelligent direction and supervision of the almost infinitely complex and constantly changing relations and adjustments involved in such division of labor as goes on in a civilized community. The task transcends the power of human intelligence at its very highest. It is evidently as much beyond the ability of conscious direction as the correlation of the processes that maintain the human body in health and vigor is beyond it.

Aristotle, Julius Cæsar, Shakespeare, Newton, may be fairly taken as examples of high-water mark in the powers of the human mind. Could any of them, had the control of the processes that maintain the individual organism been relegated to his conscious intelligence, have kept life in his body a single minute? Newton, so the tradition runs, stopped his tobacco-bowl with his lady's finger. What would have become of Newton's heart if the ordering of its beats had been devolved on Newton's mind?

This mind of ours, this conscious intelligence that perceives, compares, judges and wills, wondrous and far-reaching as are its powers, is like the eye that may look to far-off suns and milky ways, but cannot see its own mechanism. This body of ours in which our mind is cased, this infinitely complex and delicate machine through which that which feels and thinks becomes conscious of the external world, and its will is transmuted into motion, exists only by virtue of unconscious intelligence which works while conscious intelligence rests; which is on guard while it sleeps; which wills without its concurrence and plans without its contriving, of which it has almost no direct knowledge and over which it has almost no direct control.

And so it is the spontaneous, unconscious coöperation of individuals which, going on in the industrial body, the Greater Leviathan than that of Hobbes, conjoins

individual efforts in the production of wealth, to the enormous increase in productive power, and distributes the product among the units of which it is composed. It is the nature and laws of such coöperation that it is the primary province of political economy to ascertain.

CHAPTER XI.

THE OFFICE OF EXCHANGE IN PRODUCTION.

SHOWING THAT IN MAN THE LACK OF INSTINCT IS SUPPLIED BY THE HIGHER QUALITY OF REASON, WHICH LEADS TO EXCHANGE.

The coöperation of ants and bees is from within and not from without; from instinct and not from direction—Man has little instinct; but the want supplied by reason—Reason shows itself in exchange—This suffices for the unconscious coöperation of the economic body or Greater Leviathan—Of the three modes of production, “exchanging” is the highest—Mistake of writers on political economy—The motive of exchange.

IT is a curious fact, having in it suggestions that it would lead beyond our purpose to follow, that the living things that come nearest to the social organization of man are not those to whom we are structurally most allied, but those belonging to a widely separated genus, that of insects. The coöperation by which ants and bees build houses and construct public works, procure and store food, make provision for future needs, rear their young, meet the assaults of enemies and confront general dangers, gives to their social life a striking superficial likeness to that of human societies, and brings them in this apparently far closer to us than are animals to whom we are structurally more akin.

The coöperation by which the social life of such insects is carried on seems at first glance to be of the kind I have called directed coöperation, in which correlation in the efforts of individual units is brought about, as it were from without, by such subordination of some of the units to other units as secures conscious obedience in response to intelligent direction. The republican monarchy of the bees has its queen, its drones, its workers; the ants range themselves for march, for battle, or for work, in militant or industrial armies.

Yet closer observation shows that this is more in seeming than in fact, and that the great agency in the correlation of effort which the insects show is something which impresses the units not from without but from within their own nature, the force or power or impulse that we call instinct, which operating directly on the individual unit, brings each, as it were, of its own volition, to its proper place and function with relation to the whole, in something of the same way in which the vital or germinative force operates within the egg-shell to bring the separate cells into relations that result in the living bird.

Now of this power or impulse that we call instinct conscious man has little. While the involuntary and unconscious functions of his bodily frame may be ordered and maintained by it or something akin to it, and while it may in the same way furnish the sub-stratum of what we may call his mental frame, yet instinct, so strong in the orders of life below him, seems with man to fade and withdraw as the higher power of reason assumes control. What of instinct he retains would not suffice even for such social constructions as those of ants or bees or beavers. But reason, which in him has superseded instinct, brings a new and seemingly illimitable power of uniting and correlating individual efforts, by enabling and disposing him to exchange with his fellows. The act of exchange is

that of deliberately parting with one thing for the purpose and as a means of getting another thing. It is an act that involves foresight, calculation, judgment—qualities in which reason differs from instinct.

All living things that we know of coöperate in some kind and to some degree. So far as we can see, nothing that lives can live in and for itself alone. But man is the only one who coöperates by exchanging, and he may be distinguished from all the numberless tribes that with him tenant the earth as the exchanging animal. Of them all he is the only one who seeks to obtain one thing by giving another. A dog may prefer a big bone to a little bone, and where it cannot hold on to both, may keep one in preference to the other. But no dog or other animal will deliberately and voluntarily give up one desirable thing for another desirable thing. When between two desired things the question "Which?" is put to it, its answer is always the answer of the child, "Both," until it is forced to leave the one in order to hold the other. No other animal uses bait to attract its prey; no other animal plants edible seeds that it may gather the produce. No other animal gives another what it itself would like to have in order to receive in return what it likes better. But such acts come naturally to man with his maturity, and are of his distinguishing principle.

Exchange is the great agency by which what I have called the spontaneous or unconscious coöperation of men in the production of wealth is brought about, and economic units are welded into that social organism which is the Greater Leviathan. To this economic body, this Greater Leviathan, into which it builds the economic units, it is what the nerves or perhaps the ganglions are to the individual body. Or, to make use of another illustration, it is to our material desires and powers of satisfying them what the switchboard of a telegraph or telephone or other

electric system is to that system, a means by which exertion of one kind in one place may be transmuted into satisfaction of another kind in another place, and thus the efforts of individual units be conjoined and correlated so as to yield satisfactions in most useful place and form, and to an amount enormously exceeding what otherwise would be possible.

Of the three modes of production which I have distinguished as adapting, growing and exchanging, the last is that by which alone the higher applications of the modes of adapting and growing are made available. Were it not for exchange the coöperation of individuals in the production of wealth could go no further than it might be carried by the natural instincts that operate in the formation of the family, or by that kind of coöperation in which individual wills are made subordinate to another individual will. These it is evident would not suffice for the lowest stage of civilization. For not only does slavery itself, which requires that the slaves shall be fed and clothed, involve some sort of exchange, though a very inadequate one, but the labor of slaves must be supplemented by exchange to permit the slave-owner to enjoy any more than the rudest satisfactions. It was only by exchanging the produce of their labor that the American slave-owner could provide himself with more than his slaves themselves could obtain from his own plantation, and a slave-based society in which there was no exchanging could hardly carry the arts further than the construction of the rudest huts and tools. When we speak of pyramids and canals being constructed by enforced labor we are forgetting the great amount of exchanging which was involved in such work.

Many if not most of the writers on political economy have treated exchange as a part of distribution. On the contrary, it properly belongs to production. It is by

exchange and through exchange that man obtains and is able to exert the power of coöperation which with the advance of civilization so enormously increases his ability to produce wealth.

The motive of exchange is the primary postulate of political economy, the universal fact that men seek to gratify their desires with the least exertion. This leads men by a universal impulse to seek to gratify their desires by exchange wherever they can thus obtain the gratification of desire with less exertion than in any other way; and by virtue of the natural laws, both physical and mental, explained in Chapter II. of this Book, this is from the very origin of human society, and increasingly with its advance, the easiest way of procuring the satisfaction of the greatest number of desires.

And in addition to the laws already explained there is another law or condition of nature related to man which is taken advantage of to the enormous increase of productive power in exchange.¹

¹ A note, "Leave six pages," written in pencil, appears on the last page of this chapter in the MS. The indications are that it was intended not for this, but for the next succeeding chapter, which was left unfinished. — H. G., Jr.

CHAPTER XII.

OFFICE OF COMPETITION IN PRODUCTION.

SHOWING THAT COMPETITION BRINGS TRADE, AND CONSEQUENTLY SERVICE, TO ITS JUST LEVEL.

[“Competition is the life of trade” an old and true adage—The assumption that it is an evil springs from two causes—one bad, the other good—The bad cause at the root of protectionism—Law of competition a natural law—Competition necessary to civilization.]¹

THAT “competition is the life of trade,” is an old and true adage. But in current thought and current literature there is so much assumption that competition is an evil that it is worth while to examine at some length its cause and office in the production of wealth.

Much of this assumption that competition is an evil and a wrong that should be restricted and indeed abolished in the higher interests of society springs from the desire of men unduly to profit at the expense of their fellows by distorting natural laws of the distribution of wealth. This is true of the form of socialism which was known in the time of Adam Smith as the mercantile system or theory, and which still exists with but little diminished strength under the general name of protectionism. Much of it again has a nobler origin, coming from a righteous in-

¹ No summary of this chapter appears in the MS. The summary here presented and inclosed by brackets is supplied for the reader's convenience. — H. G., Jr.

dignation with the monstrous inequalities in the existing distribution of wealth throughout the civilized world, coupled with a mistaken assumption that these inequalities are due to competition.

I do not propose here to treat either of protectionism or socialism proper, my purpose being not that of controversy or refutation, but merely that of discovering and explaining the natural laws with which the science of political economy is concerned. But the law of competition is one of these natural laws, without an understanding of which we cannot fully understand the economy or system by which that Intelligence to which we must refer the origin and existence of the world has provided that the advance of mankind in civilization should be an advance towards the general enjoyment of literally boundless wealth.

The competition of men with their fellows in the production of wealth has its origin in the impulse to satisfy desires with the least expenditure of exertion.

Competition is indeed the life of trade, in a deeper sense than that it is a mere facilitator of trade. It is the life of trade in the sense that its spirit or impulse is the spirit or impulse of trade or exchange.

CHAPTER XIII.
OF DEMAND AND SUPPLY IN PRODUCTION.¹

¹ No more than the title of this chapter was written. The reader will find the subject of demand and supply in production treated in "Progress and Poverty" and in "Social Problems."—H. G., Jr.

CHAPTER XIV.

ORDER OF THE THREE FACTORS OF PRODUCTION.

SHOWING THE AGREEMENT OF ALL ECONOMISTS AS TO THE NAMES AND ORDER OF THE FACTORS OF PRODUCTION.

Land and labor necessary elements in production—Union of a composite element, capital—Reason for dwelling on this agreement as to order.

ALL economists give the factors of production as three—land, labor and capital. And without exception that I know of, they name them in this order. This, indeed, is the natural order; the order of their appearance. The world, so far as political economy takes cognizance of it, began with land. Reason tells us that land, with all its powers and potentialities, including even all vegetable and animal life, existed before man was, and must have existed before he could be. But whether still “formless and void,” or already instinct with the lower forms of life, so long as there was in the world only the economic element land, production in the economic sense could not be, and there was no wealth. When man appeared, and the economic element labor was united to the economic element land, production began, and its product, wealth, resulted. At length (for in the myths and poems in which mankind have expressed all the wisest could tell of our far beginnings they have always

loved to picture a golden age devoid of care), or more probably almost immediately (for the very first of our race must have possessed that reason which is the distinguishing quality of man), the greater power that could be gained by using wealth in aid of labor was seen, and a third factor of production, capital, appeared.

But between this third factor and the two factors which precede it, a difference in nature and importance is to be noted. Land and labor are original and necessary factors. They cannot be resolved into each other, and they are indispensable to production, being necessary to production in all its modes. But capital is not an original factor. It is a compound or derivative factor, resulting from the union of the two original factors, land and labor, and being resolvable on final analysis into a form of the active factor, labor. It is not indispensable to production, being necessary, as before explained, not in *all* modes of production, but only in *some* modes. Nevertheless, the part that it bears in production is so separable, and the convenience that is served by distinguishing it from the original factors is so great, that it has been properly recognized by the earliest and by all subsequent writers in political economy as a separate factor; and the three elements by whose union wealth is produced in the civilized state are given by the names and in the order of (1) land, (2) labor, and (3) capital.

It may seem to the reader superfluous that I should lay such stress upon the order of the three factors of production, for it is not more self-evident that the mother must precede the child than that land must precede labor, and that labor must precede capital. But I dwell upon this question of order because it is the key to confusions which have brought the teaching of the science of political economy to absurdity and stultification. Such of these writers as have condescended to make any definitions of the terms

they use have indeed in these definitions recognized the natural order of the three factors of production. But whoever will follow them will see that without seeming conscious of it themselves they soon slip into a reversal of this order, and, literally making the last first, proceed to assume that capital is the prime factor in production. Socialism, which gives such undue prominence to capital and yet is so completely at sea as to the real nature and functions of capital has the root of its absurdities in the teachings of the scholastic economists.

But the results of this confusion as to the nature and order of the factors of production will be more fully treated when we come to consider the distribution of wealth. All that it is necessary to do here is to point out the true order of the factors of production and to make clear what they are. Let us proceed to consider them one by one.



CHAPTER XV.

THE FIRST FACTOR OF PRODUCTION—LAND.

SHOWING THAT LAND IS THE NATURAL OR PASSIVE FACTOR IN ALL PRODUCTION.

The term "land"—"Landowners"—Labor the only active factor.

MAN produces by drawing from nature. Land, in political economy, is the term for that from which he draws—for that which must exist before he himself can exist. In other words, the term land in political economy means the natural or passive element in production, and includes the whole external world accessible to man, with all its powers, qualities and products, except perhaps those portions of it which are for the time included in man's body or in his products, and which therefore temporarily belong to the categories, man and wealth, passing again in their re-absorption by nature into the category, land.

The original and ordinary meaning of the word, land, is that of dry superficies of the earth as distinguished from water or air. But man, as distinguished from the denizens of the water or the air, is primarily a land animal. The dry surface of the earth is his habitat, from which alone he can venture upon or make use of any other element, or obtain access to any other material thing or potency. Thus, as a law term, land means not merely the dry superficies of the earth, but all that is above and all that

may be below it, from zenith to nadir. For the same reason the word land receives like extension of meaning when used as a term of political economy, and comprises all having material form that man has received or can receive from nature, that is to say, from God.

Thus the term "land" in political economy means the natural or passive factor, on which and by or through which labor produces, and can alone produce.

But that land is only a passive factor in production must be carefully kept in mind. It is a thing, but not a person, and though the tendency to personification leads not merely in poetry but in common speech to the use of phrases which attribute sentiment and action to land, it is important to remember that when we speak of a smiling, a sullen, or an angry landscape, of a generous or a niggard land, of the earth giving or the earth receiving, or rewarding or denying, or of nature tempting or forbidding, aiding or preventing, we are merely using figures of speech more forcibly or more gracefully to express our own feelings by reflection from inanimate objects. In the production of wealth land cannot act; it can only be acted upon. Man alone is the actor.

Nor is this principle changed or avoided when we use the word land as expressive of the people who own land. Landowners, as landowners, are as purely passive in production as land itself; they take no part in production whatever. When Arthur Young spoke of the "magic of property turning sands to gold" he was using a figure of speech. What he meant to say was that the effect of security in the enjoyment of the produce of labor on land was to induce men to exert that labor with more assiduity and intelligence, and thus to increase the produce. Land cannot know whether men regard it as property or not, nor does that fact in any degree affect its powers. Sand is sand and gold is gold, and the rain falls and the sun

shines, as little affected by the moral considerations that men recognize as the telegraph-wire is affected by the meaning of the messages that pass through it, or as the rock is affected by the twitter of the birds that fly over it.

I speak of this because although their definition of land as a factor in production is precisely that which I have given, there is to be found in the accepted treatises on political economy a constant tendency to the assumption that landowners, through their ownership of land, contribute to production.

That the persons whom we call landowners may contribute their labor or their capital to production is of course true, but that they should contribute to production as landowners, and by virtue of that ownership, is as ridiculously impossible as that the belief of a lunatic in his ownership of the moon should be the cause of her brilliancy.

We could not if we would, and should not if we could, utterly eschew metaphors; but in political economy we must be always careful to hold them at their true meaning.

CHAPTER XVI.

THE SECOND FACTOR OF PRODUCTION—LABOR.

SHOWING THAT LABOR IS THE HUMAN OR ACTIVE FACTOR IN ALL PRODUCTION.

The term labor—It is the only active factor in producing wealth,
and by nature spiritual.

ALL human actions, or at least all conscious human actions, have their source in desire and their end or aim in the satisfaction of desire. The intermediary action by which desire secures its aim in satisfaction, is exertion. The economic term for this exertion is labor. It is the active, and from the human standpoint, the primary or initiative, factor in all production—that which being applied to land brings about all the changes conducive to the satisfaction of desire that it is possible for man to make in the material world.

In political economy there is no other term for this exertion than labor. That is to say, the term labor includes all human exertion in the production of wealth, whatever its mode. In common parlance we often speak of brain labor and hand labor as though they were entirely distinct kinds of exertion, and labor is often spoken of as though it involved only muscular exertion. But in reality any form of labor, that is to say, any form of human exertion in the production of wealth above that which

cattle may be applied to doing, requires the human brain as truly as the human hand, and would be impossible without the exercise of mental faculties on the part of the laborer.

Labor in fact is only physical in external form. In its origin it is mental or on strict analysis spiritual. It is indeed the point at which, or the means by which, the spiritual element which is in man, the Ego, or essential, begins to exert its control on matter and motion, and to modify the material world to its desires.

As land is the natural or passive factor in all production, so labor is the human or active factor. As such, it is the initiatory factor. All production results from the action of labor on land, and hence it is truly said that labor is the producer of all wealth.

CHAPTER XVII.

THE THIRD FACTOR OF PRODUCTION—CAPITAL.

SHOWING THAT CAPITAL IS NOT A PRIMARY FACTOR, BUT PROCEEDS FROM LAND AND LABOR, AND IS A FORM OR USE OF WEALTH.

Capital is essentially labor raised to a higher power—Where it may, and where it must aid labor—In itself it is helpless.

THE primary factors of production are labor and land, and from their union all production comes. Their concrete product is wealth, which is land modified by labor so as to fit it or better fit it for the satisfaction of human desires. What is usually distinguished as the third factor of production, capital, is, as we have seen, a form or use of wealth.

Capital, which is not in itself a distinguishable element, but which it must always be kept in mind consists of wealth applied to the aid of labor in further production, is not a primary factor. There can be production without it, and there must have been production without it, or it could not in the first place have appeared. It is a secondary and compound factor, coming after and resulting from the union of labor and land in the production of wealth. It is in essence labor raised by a second union with land to a third or higher power. But it is to civilized life so necessary and important as to be rightfully accorded in

political economy the place of a third factor in production. Without the use of capital man could raise himself but little above the level of the animals.

I have already, in Chapter II. of this Book, generalized the various modes of production into three, adapting, growing and exchanging. Now in the first of these modes, which I have called adapting, the changing of natural products either in form or in place so as to fit them for the satisfaction of human desires, capital may aid labor, and in the higher forms of this mode must aid labor. But it is not absolutely necessary, to the lower forms at least. Some of the smaller and less powerful animals might be taken and the natural fruits and vegetables obtained, some rude shelter and clothing produced, and even some rude forms of wealth adapted from the mineral world, without the application of capital.

But in the second and third of these modes, those namely of growing and exchanging, capital must aid labor, or is indispensable. For there can be no cultivation of plants or breeding of animals, unless vegetables or animals previously brought into the category of wealth are devoted not to the consumption that gives direct satisfaction to desire, but to the production of more wealth; and there can be no exchanging of wealth until some wealth is applied by its owners, not to consumption, but to exchange for other wealth or for services.

It is to be observed that capital of itself can do nothing. It is always a subsidiary, never an initiatory factor. The initiatory factor is always labor. That is to say, in the production of wealth labor always uses capital, is never used by capital. This is not merely literally true, when by the term capital we mean the thing capital. It is also true when we personify the term and mean by it not the thing capital, but the men who are possessed of capital. The capitalist pure and simple, the man who merely controls

capital, has in his hands the power of assisting labor to produce. But purely as capitalist he cannot exercise that power. It can be exercised only by labor. To utilize it he must himself exercise at least some of the functions of labor, or he must put his capital, on some terms, at the use of those who do.

I speak of this because it is the habit, not only of common speech but of many writers on political economy, to speak as though capital were the initiatory factor in production, and as if capital or capitalists employed labor; whereas in fact, no matter what the form of the arrangement for the use of capital, it is always labor that starts production and is aided by capital; never capital that starts production and is aided by labor.

It cannot be too clearly kept in mind that labor is the only producer either of wealth or of capital. Appropriation can produce nothing. Its sole power is that of affecting distribution under penalty of preventing production. This may put wealth or capital in the hands of the appropriator, by taking it from others; but can never bring it into existence.