CHAPTER IV.

THE NATURE AND REQUISITES OF PRODUCTION.

28. THAT men are getting wealth is only another way of saying that men are supplying their **wants.** Our wants, moreover, are various. "A man would not care to have many suits of clothes all alike; he may wish to have several suits, no doubt, but then some should be warmer, others thinner; some for evening dress, others for traveling, and so on. A library all made of copies of the same book would be absurd." *

Our wants, too, are infinite. No one exists whose wants are all satisfied. The greater our intelligence, the more are our wants. The uncultivated and ignorant care little for the best pictures or for the best books. The wants of a Zulu savage are much fewer than those of Mr. Gladstone. As society progresses, wants of a higher kind multiply. There is never more wealth in a country than people care for; there can never be too much wealth, because wealth is that which satisfies some want, and our wants are unlimited.

Since our wants are various, it follows that, after we have all we desire of one thing, it would be useless to produce more of it; but, if our wants are unlimited, there must be some things that we want which we do not have. Consequently, in speaking of production, we shall understand by it the production of those things which peo-

* Jevons's "Primer of Political Economy," p. 17.

ple want, and only in such quantities as are sufficient to meet those wants. No carpet-maker is so foolish as to make all the carpets he possibly can, for he knows that people need only a certain number of them. If he is so foolish, he suffers for his own blunder.

29. People do not produce for the pleasure of producing. Labor is hard and wearisome. One man wants food for his family, and so he sets to work to produce some of the things which the world wants, by which he can acquire the food he desires. He may be unable to produce the food himself, and so produces, say, a basket. He then exchanges the basket with a farmer for food. But it is plain that another person is necessary to this exchange—namely, the farmer. He also produced a portion of his crops in order to satisfy *his* desires, one of which was for a basket. In other words, for every proper act of production and exchange, a **pair of producers** working reciprocally is necessary. So that, in order that production should be properly adjusted, whenever A produces for B, B should be producing for A; and A must know what B wants, and B must know what A wants, if each would produce to a purpose, and serve the objects each had in view in working. Here we get the idea of **a market.** The fact that A can not find a market for his basket, shows that there is no one who, while able to produce what A wishes in exchange for his basket, also has a desire for a basket. In this case, there is no spring to exertion impelling B to produce what A wants. The business community form the machinery by which the actual desires of A are known to B, and *vice versa*. That is, business men are almost entirely engaged in studying how much people want of cottons, woolens, sugar, coffee, etc. They call it "studying the demand"; but this demand depends on whether other people are producing things to offer for the cottons, woolens, sugar, and coffee. A great **city market,** in which millions of goods are exchanged, depends

upon the existence of numberless producers, one member working for the other members and *vice versa*. There is never any danger of producing too much, but business men may not always find out the exact desire of each group of producers and thus enable the products of each to be properly adjusted to the other's wants. This is **ill-adjusted production.** So we see that, to be effective, production in modern times is generally reciprocal. To be sure, a hunter procures his own food, etc., but in these days primitive conditions are hardly to be considered.

Business men, of course, know more than others about the **facts** of the market in their own branch of industry; but they are often ignorant of the laws governing the production, exchange, and distribution of their own products.

30. In order to understand how each person may engage in production, and get that which satisfies his wants, it will be necessary to examine the **requisites of production.** It will be found that, to produce wealth in a continuous way, as we see it done all around us, three things are required:

1. **Land, or natural resources.**
2. **Labor.**
3. **Capital.**

If we reflect a moment about the production of anything we see about us, which we call wealth, we shall find that all these three factors enter into its making.

31. **Land, or Natural Resources.**—No single article of wealth is produced for which something is not taken from Nature, either in the form of materials or of forces. Take a coat, for example. "In the first place, sheep had to be reared, pastured, and sheared, in order that the wool necessary for the coat should be obtained. The breeding of the sheep required a considerable expanse of land on some Western prairie or in the interior

of Australia. It is obvious that without land there could be no grass, and therefore no wool. Now, land in its original state is a gift of Nature, which men can not make at all. In the further process of manufacture, a factory had to be erected, and machinery of brass and iron employed. A particular kind of earth was necessary to make the bricks out of which the factory was built, and the iron had to be extracted from iron-ore. Both these **materials** had to be taken out of the earth, and their ownership is associated with that of land. If the machinery was run by water-power, a river was necessary; if by steam-power, coal had to be dug from the earth to make the fires which produced the steam." *

Not merely materials, but also **forces,** are supplied by Nature. A ship may be propelled all the way from Liverpool to New York by the force of the wind alone. If it were not for the buoyant force of the water, the ship would sink to the bottom. Man "moves a seed into the ground, and the natural forces of vegetation produce in succession a root, a stem, leaves, flowers, and fruit. He moves a spark to fuel, and it ignites, and, by the force generated in combustion, it cooks the food, melts or softens the iron." †

32. **Labor.**—No matter how rich the soil, how luxuriant the grass, how fine the climate, how plentiful the iron, the coal, and the manifold resources of Nature, wealth can not be produced unless human labor performs its part. Pittsburg now produces vast quantities of coal and iron every day; but only one hundred years ago the Indians applied no labor to these rich gifts of Nature, and such things were never produced there. "A man would perish in the most fertile spot if he did not take some trouble in appropriating the things around him. Fruit growing wild on the trees must be plucked before it becomes wealth,

* Newcomb's "Principles of Political Economy," p. 70.

† Mill's "Principles of Political Economy," Book I, chap. i.

and wild game must be caught before it can be cooked and eaten." *

33. **Capital.**—In order to carry on production continuously, in these days, a man must have the use of some wealth while he is engaged in working. If he is making screws, he can not live on them; he must have food until the screws are made and exchanged for other things. If, as soon as he became hungry, he had to stop work, take his dog and gun, and hunt for some game, it would greatly interfere with steady work. So, also, other wealth must be given him to use while he is at work—for instance, tools, machinery, and buildings. Prof. Jevons says there is a good Japanese maxim—"Dig a well before you are thirsty." So a man must have ready for him when he begins to work all the appliances furnished by ingenious and curious machinery, and even buildings and steam-power. Some one must be willing to furnish these things for him, if he does not have them himself. **Capital is that part of wealth devoted to producing other wealth.**

34. **Exercises.**—1. Why does a shoemaker work all day long repairing shoes for other persons? How does he get his food? Can he live on shoes?

2. Because a shoemaker works on a shoe all day, does he care for but that one thing? Mention some of the things he probably gets by exchanging his shoes with others.

3. Would the poems of Shakespeare command a high price among the Zulus? Would a work of Michael Angelo buy as much corn in Central Africa as in the United States?

4. If all the various manufacturers of the United States were to turn with all their means to producing cotton cloth only, would there be people who would give their wealth for all the cloth produced? Would there be a "market" for all the cloth?

* Jevons's "Primer of Political Economy," p. 26.

5. A farmer gives money for some calico; how did he probably get the money? If he had had nothing to sell for money, would he have had anything with which to buy the calico?

6. If every person who owns land were to produce beets only, would a market be found for all the beets? Do people care for nothing but beets to eat? Would all other persons work and make things to exchange for beets only if they could induce some land-owners to produce corn or wheat for the things they offered?

7. Can you get along, in making anything, without using land? Does not a fisherman, if he stays on the water? Whence come his vessel, his fish-hooks, his fish-lines?

8. Wild strawberries are wealth in some places. Can they be gathered without labor?

9. It is very attractive to watch a cotton-mill in operation, or see melted iron poured into molds in a foundry. Why can not every man have a cotton-mill or a foundry, if he wish? What is required to pay the laborers each week? Could a man himself use that which he has already given away to laborers for wages?

CHAPTER V.

DIMINISHING RETURNS FROM NATURAL AGENTS.

35. UNDER **natural agents** are included not merely land, but minerals under the surface, water-power, and similar gifts of Nature. The wealth of a country depends largely on the natural resources of its climate, soil, and mines. The rugged mountains which run southwest from Pennsylvania to Alabama are nearly useless for cultivation, but they abound in coal and iron and limestone; while new prairie lands, where there are no mines, yield grain with little exertion. Then the nearness of mines of coal and iron to rivers or to the sea adds greatly to their capacity for producing wealth. "England's present position in the world is in a great measure due to the fact that she not only has coal-mines and iron-mines, but also her coal and iron mines are near together." * In the United States, the Mississippi, the Ohio, and the St. Lawrence, and the Great Lakes, are means of producing goods more cheaply, since it is part of production to transport goods to a place where they are wanted.

The raw materials of every industry come from the soil in one form or another. A lead-pencil gets its covering of wood from the cedar-forests, its black-lead from mines, and its paint from lead ground with oil made from flax-seed. But, generally speaking, the greatest source of all products is **land**, for almost everything comes from the

* Marshall, "Economics of Industry," p. 9.

land. Therefore, we shall speak mainly of land in discussing natural agents, and use it as representing a class of things.

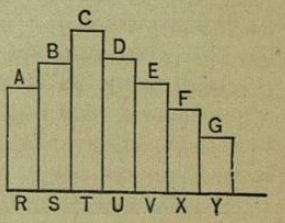
36. In order to learn how more wealth can be produced, so that the world may become richer, we must seek the rules according to which each of the requisites of production permits such an increase. Unless we consider how each factor can increase, we can not know how great the expansion of wealth may be. Our aim, then, shall be to study the increase of production from land; next, the increase of labor, that is, population; and, lastly, the increase of capital. In this chapter we shall consider only the principle according to which land yields its products, or, as it is called, the **law of diminishing returns.**

37. The supply of air or water is practically unlimited. Is it so of land? We know that on this globe there can be no more farms than would cover the fifty-one millions of square miles, which is the area of the continents and islands. This is a **limited amount.** The frugal and thrifty Dutch may sometimes reclaim a few acres from the sea by dikes; but men can not create land. The best we can do is to discover and open up lands which are unknown; and that process is going on in Africa, although even there we find people already using the land. Much land, such as the bald and rocky sides of the Appalachian and Rocky Mountains, can never be used for cultivation; and, of that which can be cultivated, not all is equally good for such things as people want for food. We can not well grow cotton and sugar in New York, nor wheat in Mississippi. The best land in any region, at all fitted for the cultivation of a particular crop, is of small extent, for a large part of the territory is always but indifferently adapted to the cultivation of a variety of products.

38. Just as every person is different from every other, so no piece of land is exactly like another in soil and fertility: one is high and dry, another is low and wet; one is

clayey, another is sandy; one is thin in soil, another is rich in deep loam. All fields in a farm, moreover, are not equally fitted for the same grain. Thus we find, for instance, that different States in the Union are in different degrees adapted for the wheat-culture. The thin, stony soil of New England can not compare with the rich prairies of Minnesota and Dakota in growing wheat. But we do not need to go beyond the nearest farm to discover that **lands vary** exceedingly in the amount which they can produce of given kinds of grains or vegetables.

39. Now, how can more food be got for our rapidly increasing population? If we were farmers, we should take into cultivation at first that land which now yields, for the least outlay, the greatest number of bushels of wheat, or oats, or corn, or potatoes. In some new lands the more the labor and the more the capital spent, the greater the product; but this will not be always true. **After a certain point is reached in the cultivation of every piece of land, it is found that, doubling the laborers and doubling the capital put upon the land will not double the number of bushels which the land will yield.** This is the **law of diminishing returns.** It is simply a physical fact; that is, it is a fact which Nature has disclosed to us, just as we say it is a fact that water runs down hill.



In order to understand this more clearly, let us refer to the accompanying diagram. Imagine that we are just beginning to work a little farm in the thinly settled parts of Dakota. With one laborer and $50 of capital (in the form of a plow and seed), only 10 bushels of wheat can be obtained, represented by AR. Of course, if more labor were to be had, more care could be taken; and, if more capital were in hand, better

fencing, tools, etc., could be used. So, if another laborer and $50 more of capital be applied to the same piece of land, the two men can so aid each other, and the better instruments will be so effective, that 12 bushels more can be produced, represented by BS. Thus we should have 22 bushels, by doubling the men and capital. It is even possible that another "dose of labor and capital"—that is, another laborer and another $50—might be so effective that 15 bushels more could be produced than before, represented by CT. The three laborers, with $150 of capital, might then produce 37 bushels, or AR + BS + CT. To this point, there has been an increasing return for every new "dose of labor and capital." But here the tide changes from an increasing to a diminishing return. If more food is wanted, and there is no other land to take, it must be had by spending more labor and capital on the same land. We can plow more deeply, or supply more fertilizers, but an additional fourth laborer, with additional capital of $50, will not cause as great an increase as before. More will be produced, but not in the same ratio to the outlay as before; in this case, perhaps, only 14 bushels—in all, 51 bushels, or AR + BS + CT + DU. From this time on, additional produce (if the conditions remain the same) can be had from the same piece of land, but only with increasing difficulty. As John Stuart Mill* has said, it is like stretching a rubber band—the more you wish to stretch it, the more force you must apply. That is, after CT is reached, new laborers and new capital will yield more, but in a diminishing ratio to the labor and capital applied. EV, FX, GY will be successively less.

40. There is scarcely a piece of land anywhere which would not yield more if new laborers were put to work draining the soil, hauling manure, or applying guano or

* "Principles of Political Economy," Book I, chap. xii, § 2.

expensive fertilizers; but the farmer always asks whether this new labor and this additional capital will produce so much more than before as to give him a reasonable profit. Some writers have, however, denied the law of diminishing returns. They think that, **as the number of laborers is increased** and as more capital is applied, **land will constantly yield more and more.** If this is so, why would not one farm do for all the United States? If labor and capital can increase the product without limit, then why not make additional applications to the same farm, and produce enough for all the United States from it? Now, no one believes that this can be done. It is not profitable to employ more than a certain amount of labor and capital on a crop of oats or wheat, because an excessive amount would be wasted without producing more oats or wheat. As soon as the population in a country becomes dense, it may be taken for granted that the return made to capital by land diminishes, unless something occurs to counteract it.

41. The **law applies in a similar way to mines.** The increase of production from mines is attended with an increasing outlay. The best mine may have its coal near the surface, and so it may cost little to carry it to the market; but, as more is mined, deeper shafts must be dug, longer galleries must be made right and left, more power will be needed to raise the coal the longer distance, and more expensive machinery will be required to lift the product as well as to provide air and pump water out of the mine. So that, in order to bring a ton of coal to the surface, it costs more, as more coal is required. But, of course, it is to be remembered that improvements in machinery can in a most marked way counteract the tendency toward a diminishing return from mines, or the natural tendency of the product to cost more. It is also to be observed that the richest mines may be completely exhausted, and so the poorer mines on the less productive

strata will then be taken up. In this way, the return to capital and labor becomes less, but not in the same regular way as in the case of land.

42. In considering the productiveness of land to-day as compared with that of five hundred years ago, or even a hundred years ago, we find that the same land is made to yield more now than then. Why is this? Because we have the experience of all our ancestors, the accumulated skill of the world, better knowledge of the soil, and of manures and fertilizers. Where men used to reap their grain with cradles (a scythe with a frame attached), they now use machines which, as they are driven along, cut and bind the grain; and, instead of the flail for threshing it out on the barn-floor, there is now the familiar threshing-machine. "Sulky plows," drawn by horses, do more work than the old plow, followed by the man in the furrow. Horse-rakes do the work of many men. More than this, the cost of sending wheat and corn by railways has been lessened.* So we see that there are many **improvements constantly tending to counteract the law of diminishing returns from land.** Whether the original tendency is the stronger, or the counteracting forces are the stronger, depends upon particular circumstances in each country. In the United States the progress of improvements is very striking. We have, moreover, scarcely taken up all our best lands as yet.

"From similar considerations, it appears that many purely mechanical improvements, which have, apparently at least, no peculiar connection with agriculture, nevertheless enable a given amount of food to be obtained with a smaller expenditure of labor. A great improvement in

* In 1855 it cost 3.27 cents on an average in the State of New York to carry one ton one mile; now it costs only between .80 and .90 of a cent. If the people of New York had paid the charges of 1855 for the goods carried in 1883 (9,286,216,628 tons, one mile), it would have cost them over $220,000,000 more than it actually did.

the process of smelting iron would tend to cheapen agricultural implements, diminish the cost of railroads, of wagons and carts, ships, and perhaps buildings, . . . and would thence diminish the cost of production of food. . . . The first application of wind or water power to grind corn tended to cheapen bread as much as a very important discovery of agriculture would have done, and any great improvement in the construction of corn-mills would have, in proportion, a similar influence."*

43. **Exercises.**—1. Along the coast of Maine the lobster-fishery has almost ceased, because of the exhaustion of the supply. Is there any law of diminishing returns which affects the produce of this kind of food?

2. In a pair of shoes, study out the materials which enter into its manufacture of which it can be said that their production is affected by the law of diminishing returns.

3. Our pine-forests are constantly being destroyed, as in Maine, in the Adirondacks, and in the districts about the Great Lakes. Does the same labor and capital get out as much lumber as before, when forests were more accessible? If lumbermen must go farther away from the rivers and coasts, haul their logs in winter farther to the streams, take more time in floating the logs down to the mills in the spring, would it require more labor and capital to get out the same quantity of lumber than before? Does the law of diminishing returns apply to lumber?

4. When trout-brooks become exhausted near the haunts of men, and no trout can be found except in distant and remote streams, by long journeys and great skill, does the law of diminishing returns apply to such fisheries?

5. In a coal-mine where mules are used to haul out the cars full of coal, when the shaft becomes a quarter of a

* Mill's, "Principles of Political Economy," Book I, chap. xii. § 3.

mile long, will more mules be required to bring the same number of cars to the mouth than when the shaft was only half as long? Does this show an increased cost to the mine-owner? Does his coal cost him more than before?

6. Three tons to an acre is a very good yield of hay. Has any land ever been heard of where thirty tons an acre can be produced, or three hundred tons? Why not?

7. If a farmer should discover a new and cheap way of getting excellent fertilizers for his land, would that operate against the law of diminishing returns?

CHAPTER VI.

LABOR AND ITS INCREASE.

44. THERE is a very ingenious machine, only, perhaps, two feet square, used in making screws. It takes out of a hopper the pieces of the proper length cut off from a rod of steel, and arranges them in a row. An iron beak, like that of a crane, then reaches out, takes one piece at a time, and places it in a vise, where the head and the thread are cut in a moment. It is very clever and wonderful, simply because man's forces are combined with Nature's forces. Men can produce more when they work in connection with the forces of Nature. Men are constantly learning how to **get Nature's forces to do work for them,** as in the windmill or by water-wheels. Every year, as new machinery is invented, work is being transferred from man to some combination of the forces of Nature. Not many years ago most of the boots and shoes we wore were made by hand; now, as a lady enters a shoe-factory, she can see the leather for a shoe cut, sewed, soled, and finished by machinery while she makes a short visit. More wealth can be produced in our country if man's forces work more perfectly with Nature's forces.

45. We often make great mistakes in talking about **laborers.** Who compose the laboring class? Are the hod-carrier and the man with a pick and shovel included in this class? Certainly. Shall we include, also, the skilled artisan, who forms, fits, and polishes the steam-engine in a

great factory which runs so smoothly that there is no noise but that of the wind caused by the great wheel? Certainly. Shall we include the man who sits at a desk all day designing engines, studying plans for the artisans to work upon? Certainly. Shall we include the man who sits a while in the office? He is engaged in consulting the designer, accepting or rejecting his plans, telling the men where to work, and in deciding whether an addition shall be built for more workmen or not. We see him running out to borrow the capital at the bank with which to build the addition; coming back to send a letter to Sweden for a particular kind of iron, and deciding how he can buy it in the best way and how much to pay; then sending an agent to the Cape of Good Hope to see if his engines can not be sold there, and he be enabled to employ more men; watching so that the men can have uninterrupted work; preventing waste; learning to whom he can sell his engines, and yet not be cheated; studying how best to protect the buildings from fire? Certainly this man is a laborer. Because one labors only with his hands, is he alone to be included in the honorable class of laborers? Certainly not. We must conclude that not all labor is physical, done with hands or with muscle. We can not look in any direction without noticing that many laborers are working with their heads, and that **labor is mental as well as physical.** A schoolmaster is not less a laborer because he does not use his hands. He is paid wages for mental work just as a hod-carrier is paid wages for physical work. Yet, if a man is well dressed and very intelligent, if he does agreeable work, or mental work in-doors, many people are apt to think wrongly that he is not to be classed as a laborer. We shall soon find that no such distinction can be drawn in political economy. All labor, mental and physical, is to be treated alike.

46. In fact, physical. mental, and moral qualities all

affect the amount of wealth produced by any laborer. Strong and healthy parents are likely to give a laborer **physical vigor**; and many qualities, both good and bad, come to him by inheritance; but each man can improve his physical power by regularity of living, wisdom in his diet, by habits of cleanliness, or by observing sanitary rules. In the temperate climates men work with best success, where the heat is not enervating, and where their energies are not sapped by malarious diseases. As medical skill increases, life is prolonged, and the longer a man lives, the more he can produce. Some races, moreover, are much more hardy and muscular than others; the American laborer, for instance, is vastly superior to the Mexican, who works for from ten to fifty cents a day.

47. The **mental power** of any laborer, however, is of peculiar importance to his productive capacity. An increase of intelligence results in an increase in the power to produce, and raises the laborer who possesses it in the scale of comfort. "Clearness of mind, quickness of apprehension, strength of memory, and the power of consecutive thought," which come from mental training, make the difference between a desirable and an undesirable laborer, and enable the former soon to pass into more remunerative work than the latter. General Walker says: "The intelligent is more useful than the unintelligent laborer. (a) Because he requires a far shorter apprenticeship; he can learn his trade in a half, a third, or a quarter the time which the other requires. (b) Because he can do his work with little or no superintendence; he is able to carry instructions in his mind, and to apply them with discretion to the varying conditions of his work. (c) Because he is less wasteful of materials. In some branches of manufacture the value of the materials used is equal to the amount paid in wages. (d) Because he readily learns to use machinery, however delicate or intricate. Brains are not alone required for the invention of machines; they are required for their

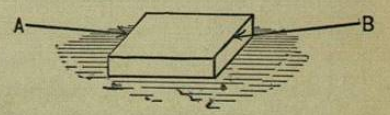
adjustment, their ordinary use, and their occasional repair." * Moreover, any education, which not only gives mental alertness but technical skill, is a great gain to the laborer. He thereby learns the principles according to which machinery is run, as well as the nature of its operations. He gains the means of easily adapting himself to new machinery, because he understands the underlying principles, and by practice he attains earlier in life that deftness and dexterity with his fingers which often so amaze a visitor in manufacturing establishments. I have seen a woman tying up packages and labeling them so rapidly that my eyes could not follow each operation.

48. The **moral qualities** of self-respect, prudence, self-control, cheerfulness, and will-power have no small influence on the quantity of wealth produced. An honest, upright character has a distinct money-value to every laborer. These are the things which permit a man to rise in the scale of laborers. The chance to improve his social position will add to his self-respect and his pride in good work. His prudence will teach him steadiness and persistence; his self-control will master the difficulties of his work, and keep the desired end in view through the dull monotony of labor. The laborer, moreover, who is working in such a way that he shares in the results of his own work, will have a peculiar energy and efficiency. When a man is working for himself, he works in a different way than when he works for another and has no share in the result. He has an incentive to become industrious, and is willing and eager to work early and late.

49. Since labor is so important to production, in order to learn how wealth can be increased, we must discover the **law of the increase of laborers.** We have seen in the last chapter that land gives a diminishing return to new applications of labor and capital, or that subsistence

* "Political Economy," pp. 52, 53.

can not be doubled by doubling the labor and capital. In regard to the law of the increase of human labor, we find that the conditions are very different. Its power of increase is marvelously great, even if it is not always used. If each family has four children, population will double in every generation; and, as each generation can double itself, the rate of increase is in a geometrical ratio. This is a physiological fact. The power of population to increase is unlimited, but the actual growth is never what it might be. If the growth of population should receive no check, the world would in time provide only standing-room for each person. **The tendency of population to increase is far greater than the power of subsistence from land to increase.** But there are forces which oppose this tendency, and keep down the growth of numbers. The actual growth of population is like the movement of a block on a floor when acted on by two opposing forces, A and B. A presses on the block, and tends to move it to the right; while B tends, at the same moment, to push it in exactly the opposite direction. If A is stronger than B, the block will move to the right, although B is operating against A all the while; but it does not stop A, it only counteracts A's power. So it is with the tendency to increase population and its checks. The tendency, like A, is always acting, and its movement is restrained by the counteracting checks, like B, which may be either equal to or less in force than A.



50. Uncivilized, thoughtless, or ignorant people often marry without thinking whether they will be able to feed and educate their children properly. Among such reckless people, who have no thought of the future, no prudence, no forethought, children are insufficiently fed and cared for; some are even allowed to die purposely;

some die of disease and want. Among savages, many are killed in war. In this way, the tendency of population to grow is restrained by the **positive check.** Even among modern nations, and in our own great cities, the number of children among the very poor who die in the hot summer months is, it is sad to say, very large. "Insufficient food and clothing, neglect, dirt, foul air, and infectious diseases hurry off vast numbers of the children of the poorer laborers in town and country to an early grave," says Prof. Marshall, of England. It is among the hopeless poor that the reckless increase of families is the greatest, though it should be the least. It is so in Ireland.

But, among civilized, intelligent, and self-contained people, marriages are not made unless sufficient means to care for a family are at hand. They postpone marriage until they have saved a proper sum. This moral restraint, or **negative check,** is strongest as we rise in the social scale to the classes of people who are intelligent and prudent, but who have limited means. They generally succeed in giving their children a better education than they had themselves. In the United States, families of American birth are usually found in this class. Mr. Malthus (who laid down the foregoing law and its checks, and after whom it is called the Malthusian law) found in Switzerland that the difficulty of finding houses and employment caused many persons to remain unmarried. It is also a well-known statistical fact that there is a smaller number of marriages in our country when business is depressed than when it is prosperous.

51. Since the undesirable classes are those on whom a regard for the future seems to have no influence, it is particularly unfortunate that these people should furnish the greater proportion of the increase of population, while the judicious, thrifty, thoughtful, and intelligent classes, who have more thought for the future, should furnish the less proportion. It is not among the intelligent people

of the community, with limited means, who are yet provident, that it is desirable to point out any more strongly the gains from a check upon increase of numbers; it is rather among the most miserable that large families should be discouraged, because they are doing harm to the state by turning children into the streets without oversight, to run into places where they become familiar with evil, and are taught to become criminals in order to get a livelihood, or even to satisfy the cravings of hunger. It is a very serious problem to learn how to infuse into these helpless, hopeless persons a sense of self-respect, prudence, and foresight which should keep them from aimless increase of numbers. If it is believed that the number of persons who belong to the lowest stratum in society are too numerous to earn much so long as they have no trade, and can do unskilled work only, and if a still further increase in numbers would make all worse off than before, then certainly those who advise moral restraint on the growth of this class of persons, in order that they may be saved from that which produces vice and misery, can not be called "hard-hearted," or "un-Christian," or "dismal Malthusians." They are rather the true friends of the unfortunate people, who need real, not sentimental and misdirected, kindness and help. It has never been suggested that people already in existence should be cruelly treated or left to starve in order that a smaller number should exist and competition be decreased.

52. When the standard of living is raised, it usually results in an increase of population. By **standard of living** I mean the average amount of necessaries, decencies, and comforts enjoyed by each class; the kind of rooms they live in, the amount and quality of food and clothing, and the little comforts, like carpets and pictures, that they can enjoy. If wages are high, laborers will always have more than the mere necessaries. This is especially true of the majority of laborers in the United States,

and consequently population in this country increases very fast. In 1800 we had only 5,000,000 of people, and now we have about 77,000,000. Chart I. shows by the movement of the center of population how rapidly the wave of increasing numbers has moved westward. In one hundred years our numbers have increased over fifteen times, an unprecedented occurrence. In France, where wages are much lower, there is scarcely any increase at all. Soon, when our unoccupied land is all gone, it will not be possible for us to increase in numbers so fast, and yet remain, each of us, as well off as we are now. Even now we are beginning to object to the coming of Chinese and Italians and Hungarians, because they make it more difficult to get work. The "standard of living" of these newcomers is less than our laborers have been accustomed to, and these latter do not want to lower the standard which has hitherto prevailed in the United States. But it will probably

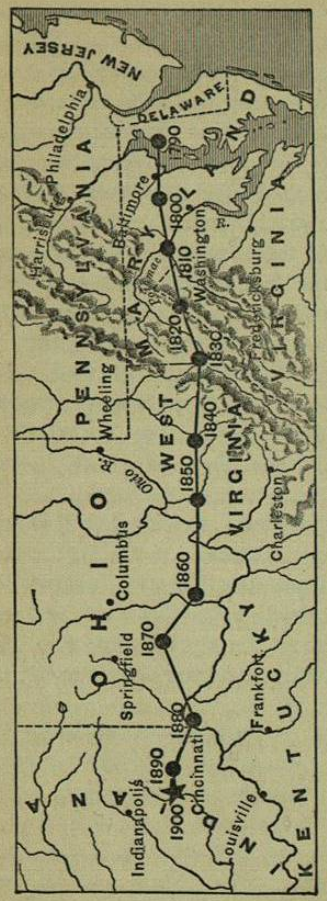


CHART I. — *Westward Movement of Center of Population.*

be lowered by the natural increase of our present population, even if we pass laws to keep some foreigners out.

53. All laborers are not equally employed in a way to produce the most wealth. Some persons labor but do not produce any wealth, and so they are called **unproductive laborers. Those who produce wealth are called productive laborers.** In order to decide whether a man is a productive laborer or not, first settle whether what he is making is wealth or not. A farmer is a productive laborer when he raises corn, because corn is wealth. The corn may be accidentally burned up, but the farmer who produced it was, all the same, a productive laborer, because the corn was wealth as long as it existed. The tailor who makes a coat is a productive laborer, because a coat is wealth. It makes no difference in this distinction whether the coat, after it is made, is worn by a laborer or an idler; of course, if used by a laborer, while it is wearing out, other wealth is reproduced in its place; or if the coat is worn out by an idler, the tailor who made it produced wealth. The tailor and the idler should not be confused. Often we can not decide certainly whether a laborer is productive or unproductive. A policeman is necessary to protect property, and so enable wealth to be produced. In this sense he is a productive laborer. But, if he does not do his duty, and wealth is destroyed through his negligence, he is not a productive laborer. So a clergyman may not directly produce anything; but if, as a fact, he ever turns a man from bad habits to good, so that the man becomes a productive laborer, the clergyman aids in production. Sometimes he is productive and sometimes not.

54. Exercises.—1. When men first contrived a sailboat, were they able to accomplish more work by using Nature's forces? Explain how. When steam was first used to draw a train of cars, was the same kind of gain attained?

2. Give a list of the kinds of labor done in some factory you know about. Which of them are performed by persons whom you would include in the laboring class?

3. The president of a New York mutual life-insurance company is paid (as is reported) thirty thousand dollars a year. Is he a laborer? Does he employ his mental and moral faculties to do something for which he gets that which satisfies his own wants?

4. Is the errand-boy in this insurance company any less a laborer because he uses his feet while the president uses his head and conscience? Is only he a laborer who does physical work?

5. Does this errand-boy use his body only? Do the moral qualities, like honesty, or the mental qualities, like brightness, help him?

6. Have you ever seen a ship in a good wind sailing slowly but majestically up stream against the tide? Because she makes headway against the tide, is that any reason why there is no tide? So, if population always increases, is that any reason why there are no checks operating to keep down numbers? Does that show that there would be no greater increase if there were no checks? Would the ship go faster if the tide were not against her?

7. Why does population increase so rapidly in the United States? Why is it that the checks which keep population down do not have much force?

8. In Mexico the laborers are very lazy, shiftless, and ignorant, and their wages are about fifty cents a day. If their wages were doubled, is it likely that they would use the increased wages to give their children better clothing and education? or would it probably result in a greater number of the same kind of laborers? Would it not be necessary to raise their character as well as their wages, in order to attain a better standard?

9. Is the man who makes a piano a productive laborer?

Is the person who plays on the piano also a productive laborer?

10. Is an artist a productive laborer? A photographer?

11. Is a member of Congress a productive laborer? If we agree that a Congress is necessary to our enjoyment of a government under which wealth can be peacefully produced, is a member of Congress always a productive laborer? Is he always doing that which produces wealth?

12. Does the diagram in section 49 also serve to illustrate the working of two opposing forces in regard to the production from land? (See section 42.)