CHAPTER VIII.

OF CO-OPERATION, OR THE COMBINATION OF LABOUR.

§ 1. In the enumeration of the circumstances which promote the productiveness of labour, we have left one untouched, which because of its importance, and of the many topics of discussion which it involves, requires to be treated apart. This is, co-operation, or the combined action of numbers. Of this great aid to production, a single department, known by the name of Division of Labour, has engaged a large share of the attention of political economists; most deservedly indeed, but to the exclusion of other cases and exemplifications of the same comprehensive law, Mr. Wakefield was, I believe, the first to point out, that a part of the subject had, with injurious effect, been mistaken for the whole; that a more fundamental principle lies beneath that of the division of labour, and comprehends it.

Co-operation, he observes*, is "of two distinct kinds: first, such co-operation as takes place when several persons help each other in the same employment; secondly, such co-operation as takes place when several persons help each other in different employments. These may be termed Simple Co-operation and Complex Co-operation.

"The advantage of simple co-operation is illustrated by the case of two greyhounds running together, which, it is said, will kill more hares than four greyhounds running separately. In a vast number of simple operations performed by human exertion, it is quite obvious that two men working together will do more than four, or four times four men, each of whom should work alone. In

* Note to Wakefield's edition of Adam Smith, vol. i. p. 26.

the lifting of heavy weights, for example, in the felling of trees, in the sawing of timber, in the gathering of much hay or corn during a short period of fine weather, in draining a large extent of land during the short season when such a work may be properly conducted, in the pulling of ropes on board ship, in the rowing of large boats, in some mining operations, in the erection of a scaffolding for building, and in the breaking of stones for the repair of a road, so that the whole of the road shall always be kept in good order: in all these simple operations, and thousands more, it is absolutely necessary that many persons should work together, at the same time, in the same place, and in the same way. The savages of New Holland never help each other, even in the most simple operations; and their condition is hardly superior, in some respects it is inferior, to that of the wild animals which they now and then catch. Let any one imagine that the labourers of England should suddenly desist from helping each other in simple employments, and he will see at once the prodigious advantages of simple co-operation. In a countless number of employments, the produce of labour is, up to a certain point, in proportion to such mutual assistance amongst the workmen. This is the first step in social improvement." The second is, when "one body of men having combined their labour to raise more food than they require, another body of men are induced to combine their labour for the purpose of producing more clothes than they require, and with those surplus clothes buying the surplus food of the other body of labourers; while, if both bodies together have produced more food and clothes than they both require, both bodies obtain, by means of exchange, a proper capital for setting more labourers to work in their respective occupations." To simple co-operation, is thus superadded what Mr. Wakefield terms Complex Co-operation. The one is the combination of several labourers to help each other in the same set of operations; the other is the com-

bination of several labourers to help one another by a division of operations.

There is "an important distinction between simple and complex co-operation. Of the former, one is always conscious at the time of practising it: it is obvious to the most ignorant and vulgar eye. Of the latter, but a very few of the vast numbers who practise it are in any degree conscious. The cause of this distinction is easily seen. When several men are employed in lifting the same weight, or pulling the same rope, at the same time, and in the same place, there can be no sort of doubt that they co-operate with each other; the fact is impressed on the mind by the mere sense of sight: but when several men, or bodies of men, are employed at different times and places, and in different pursuits, their co-operation with each other, though it may be quite as certain, is not so readily perceived as in the other case: in order to perceive it, a complex operation of the mind is required."

In the present state of society the breeding and feeding of sheep is the occupation of one set of people, dressing the wool to prepare it for the spinner is that of another, spinning it into thread of a third, weaving the thread into broadcloth of a fourth, dyeing the cloth of a fifth, making it into a coat of a sixth, without counting the multitude of carriers, merchants, factors, and retailers, put in requisition at the successive stages of this progress. All these persons, without knowledge of one another or previous understanding, co-operate in the production of the ultimate result, a coat. But these are far from being all who co-operate in it; for each of these persons requires food, and many other articles of consumption, and unless he could have relied that other people would produce these for him, he could not have devoted his whole time to one step in the succession of operations which produces one single commodity, a coat. Every person who took part in producing food or erecting houses for this series of producers, has, however unconsciously on his part, combined his labour with theirs. It is by a real though unexpressed concert "that the body who raise more food than they want, can exchange with the body who raise more clothes than they want; and if the two bodies were separated, either by distance or disinclination—unless the two bodies should virtually form themselves into one, for the common object of raising enough food and clothes for the whole—they could not divide into two distinct parts the whole operation of producing a sufficient quantity of food and clothes."

§ 2. The influence exercised on production by the separation of employments, is more fundamental than, from the mode in which the subject is usually treated, a reader might be induced to suppose. It is not merely that when the production of different things becomes the sole or principal occupation of different persons, a much greater quantity of each kind of article is produced. The truth is much beyond this. Without some separation of employments, very few things would be produced at all.

Suppose a set of persons, or a number of families, all employed in precisely the same manner: each family settled on a piece of its own land, on which it grows by its labour the food required for its own sustenance, and as there are no persons to buy any surplus produce where all are producers, each family has to produce within itself whatever other articles it consumes. In such circumstances, if the soil was tolerably fertile, and population did not tread too closely on the heels of subsistence, there would be, no doubt, some kind of domestic manufactures; clothing for the family might perhaps be spun and woven within it, by the labour probably of the women (a first step in the separation of employments); and a dwelling of some sort would be erected and kept in repair by their united labour. But beyond simple food (precarious too, from the variations of the seasons), coarse clothing, and very imperfect lodging, it would be scarcely

possible that the family should produce anything more. They would, in general, require their utmost exertions to accomplish so much. Their power even of extracting food from the soil would be kept within narrow limits by the quality of their tools, which would necessarily be of the most wretched description. To do almost anything in the way of producing for themselves articles of convenience or luxury, would require too much time, and, in many cases, their presence in a different place. Very few kinds of industry, therefore, would exist; and that which did exist, namely the production of necessaries, would be extremely inefficient, not solely from imperfect implements, but because, when the ground and the domestic industry fed by it had been made to supply the necessaries of a single family in tolerable abundance, there would be little motive, while the numbers of the family remained the same, to make either the land or the labour produce more.

But suppose an event to occur, which would amount to a revolution in the circumstances of this little settlement. Suppose that a company of artificers, provided with tools, and with food sufficient to maintain them for a year, arrive in the country and establish themselves in the midst of the population. These new settlers occupy themselves in producing articles of use or ornament adapted to the taste of a simple people; and before their food is exhausted they have produced these in considerable quantity, and are ready to exchange them for more food. The economical position of the landed population is now most materially altered. They have an opportunity given them of acquiring comforts and luxuries. Things which while they depended solely on their own labour they never could have obtained, because they could not have produced, are now accessible to them if they can succeed in producing an additional quantity of food and necessaries. They are thus incited to increase the productiveness of their industry. Among the conveniences for the first time made accessible to them, better tools are probably

one: and apart from this, they have a motive to labour more assiduously, and adopt contrivances for making their labour more effectual. By these means they will generally succeed in compelling their land to produce, not only food for themselves, but a surplus for the new comers, wherewith to buy from them the products of their industry. The new settlers constitute what is called a *market* for surplus agricultural produce: and their arrival has enriched the settlement not only by the manufactured articles which they produce, but by the food which would not have been produced unless they had been there to consume it.

There is no inconsistency between this doctrine, and the principle we have laid down, that a market for commodities does not constitute employment for labour*. The labour of the agriculturists was already provided with employment; they are not indebted to the demand of the new comers for being able to maintain themselves. What that demand does for them is, to call their labour into increased vigour and efficiency; to stimulate them, by new motives, to new exertions. Neither do the new comers owe their maintenance and employment to the demand of the agriculturists: with a year's subsistence in store, they could have settled side by side with the former inhabitants, and produced a similar scanty stock of food and necessaries. Nevertheless, we see of what supreme importance to the productiveness of the labour of producers, is the existence of other producers within reach, employed in a different kind of industry. The power of exchanging the products of one kind of labour for those of another, is a condition, but for which, there would almost always be a smaller quantity of labour altogether. When a new market is opened for any product of industry, and a greater quantity of the article is consequently produced, the increased production is not always obtained at the expense of some other product; it is often a new creation,

* Supra, pp. 97—102.

the result of labour which would otherwise have remained unexerted; or of assistance rendered to labour by improvements or by modes of co-operation to which recourse would not have been had if an inducement had not been offered for raising a larger produce.

§ 3. From these considerations it appears that a country will seldom have a productive agriculture, unless it has a large town population, or the only available substitute, a large export trade in agricultural produce to supply a population elsewhere. I use the phrase town population for shortness, to imply a population non-agricultural; which will generally be collected in towns or large villages, for the sake of combination of labour. The application of this truth by Mr. Wakefield to the theory of colonization, has excited much attention, and is doubtless destined to excite much more. It is one of those great practical discoveries, which, once made, appear so obvious that the merit of making them seems less than it is. Mr. Wakefield was the first to point out that the mode of planting new settlements, then commonly practised—setting down a number of families side by side, each on its piece of land, and all employing themselves in exactly the same manner,—though under favourable circumstances it may assure to those families a rude abundance of mere necessaries, can never be other than unfavourable to great production or rapid growth: and his system consists of arrangements for securing that every colony shall have from the first a town population bearing due proportion to its agricultural, and that the cultivators of the soil shall not be so widely scattered as to be deprived by distance, of the benefit of that town population as a market for their produce. The principle on which the scheme is founded, does not depend on any theory respecting the inferior productiveness of land held in large portions, and cultivated by hired labour. Supposing it true that land yields the greatest produce when divided into small properties and cultivated by peasant proprietors, a town population would be just as necessary to induce those proprietors to raise that larger produce: and if they were too far from the nearest seat of non-agricultural industry to use it as a market for disposing of their surplus and thereby supplying their other wants, neither that surplus nor any equivalent for it would, generally speaking, be produced.

It is, above all, the deficiency of town population which limits the productiveness of the industry of a country like India. The agriculture of India is conducted entirely on the system of small holdings. There is, however, a considerable amount of combination of labour. The village institutions and customs, which are the real framework of Indian society, make provision for joint action in the cases in which it is seen to be necessary; or where they fail to do so, the government (when tolerably well administered) steps in, and by an outlay from the revenue, executes by combined labour the tanks, embankments, and works of irrigation, which are indispensable. The implements and processes of agriculture are however so wretched, that the produce of the soil, in spite of great natural fertility and a climate highly favourable to vegetation, is miserably small: and the land might be made to yield food in abundance for many more than the present number of inhabitants, without departing from the system of small holdings. But to this the stimulus is wanting, which a large town population, connected with the rural districts by easy and unexpensive means of communication, would afford. That town population, again, does not grow up, because the few wants and unaspiring spirit of the cultivators (joined until lately with great insecurity of property, from military and fiscal rapacity) prevent them from attempting to become consumers of town produce. In these circumstances the best chance of an early developement of the productive resources of India, consists in the now rapid growth of its export of agricultural produce (cotton, indigo, sugar, coffee, &c.) to the markets of Europe. The producers

of these articles are consumers of food supplied by their fellow-agriculturists in India; and the market thus opened for surplus food will, if accompanied by good government, raise up by degrees more extended wants and desires, directed either towards European commodities, or towards things which will require for their production in India a larger manufacturing population.

§ 4. Thus far of the separation of employments, a form of the combination of labour without which there cannot be the first rudiments of industrial civilization. But when this separation is thoroughly established; when it has become the general practice for each producer to supply many others with one commodity, and to be supplied by others with most of the things which he consumes; reasons not less real, though less imperative, invite to a further extension of the same principle. It is found that the productive power of labour is increased by carrying the separation further and further; by breaking down more and more every process of industry into parts, so that each labourer shall confine himself to an ever smaller number of simple operations. And thus, in time, arise those remarkable cases of what is called the division of labour, with which all readers on subjects of this nature are familiar. Adam Smith's illustration from pin-making, though so well known, is so much to the point, that I will venture once more to transcribe it. "The business of making a pin is divided into about eighteen distinct operations. One man draws out the wire, another straights it, a third cuts it, a fourth points it, a fifth grinds it at the top for receiving the head; to make the head requires two or three distinct operations; to put it on, is a peculiar business, to whiten the pins is another; it is even a trade by itself to put them into the paper. . . . . I have seen a small manufactory where ten men only were employed, and where some of them, consequently, performed two or three distinct operations. But though they were very poor, and therefore but

indifferently accommodated with the necessary machinery, they could, when they exerted themselves, make among them about twelve pounds of pins in a day. There are in a pound upwards of four thousand pins of a middling size. Those ten persons, therefore, could make among them upwards of forty-eight thousand pins in a day. Each person, therefore, making a tenth part of forty-eight thousand pins, might be considered as making four thousand eight hundred pins in a day. But if they had all wrought separately and independently, and without any of them having been educated to this peculiar business, they certainly could not each of them have made twenty, perhaps not one pin in a day."

M. Say furnishes a still stronger example of the effects of division of labour—from a not very important branch of industry certainly, the manufacture of playing cards. "It is said by those engaged in the business, that each card, that is, a piece of pasteboard of the size of the hand, before being ready for sale, does not undergo fewer than seventy operations*, every one of which might be the occupation of

* "Ce ne sont point les mêmes ouvriers qui préparent le papier dont on fait les cartes, ni les couleurs dont on les empreint; et en ne fesant attention qu'au seul emploi de ces matières, nous trouverons qu'un jeu de cartes est le résultat de plusieurs opérations dont chacune occupe une série distincte d'ouvriers et d'ouvrières qui s'appliquent toujours à la même opération. Ce sont des personnes différentes, et toujours les mêmes, qui épluchent les bouchons et grosseurs qui se trouvent dans le papier et nuiraient à l'égalité d'épaisseur; les mêmes qui collent ensemble les trois feuilles de papier dont se compose le carton et qui le mettent en presse; les mêmes qui colorent le côté destiné à former le dos des cartes; les mêmes qui impriment en noir le dessin des figures; d'autres ouvriers impriment les couleurs des mêmes figures; d'autres font sécher au réchaud les cartons une fois qu'ils sont imprimés; d'autres s'occupent de les lisser dessus et dessous. C'est une occupation particulière que de les couper d'égale dimension; c'en est une autre de les assembler pour en former des jeux; une autre encore d'imprimer les enveloppes des jeux, et une autre encore de les envelopper; sans compter les fonctions des personnes chargées des ventes et des achats, de payer les ouvriers et de tenir les écritures."—SAY, *Cours d'Economique Politique Pratique*, vol. i., p. 340.

It is a remarkable proof of the economy of labour occasioned by this

a distinct class of workmen. And if there are not seventy classes of work-people in each card manufactory, it is because the division of labour is not carried so far as it might be; because the same workman is charged with two, three, or four distinct operations. The influence of this distribution of employments is immense. I have seen a card manufactory where thirty workmen produced daily fifteen thousand five hundred cards, being above five hundred cards for each labourer; and it may be presumed that if each of these workmen were obliged to perform all the operations himself, even supposing him a practised hand, he would not perhaps complete two cards in a day; and the thirty workmen, instead of fifteen thousand five hundred cards, would make only sixty."

In watchmaking, as Mr. Babbage observes, "it was stated in evidence before a Committee of the House of Commons, that there are a hundred and two distinct branches of this art, to each of which a boy may be put apprentice; and that he only learns his master's department, and is unable, after his apprenticeship has expired, without subsequent instruction, to work at any other branch. The watch-finisher, whose business it is to put together the scattered parts, is the only one, out of the hundred and two persons, who can work in any other department than his own*."

§ 5. The causes of the increased efficiency given to labour by the division of employments are some of them too familiar to require specification; but it is worth while to attempt a complete enumeration of them. By Adam Smith they are reduced to three. "First, the increase of dexterity in every particular workman; secondly, the saving of the

minute division of occupations, that an article, the production of which is the result of such a multitude of manual operations, can be sold for a trifling sum.

* *Economy of Machinery and Manufactures*, 3rd Edition, p. 201.

time which is commonly lost in passing from one species of work to another; and lastly, the invention of a great number of machines which facilitate and abridge labour, and enable one man to do the work of many."

Of these the increase of dexterity of the individual workman is the most obvious and universal. It does not follow that because a thing has been done oftener it will be done better. That depends on the intelligence of the workman, and on the degree in which his mind works along with his hands. But it will be done more easily. The organs themselves acquire greater power: the muscles employed grow stronger by frequent exercise, the sinews more pliant, and the mental powers more efficient and less sensible of fatigue. What can be done easily has at least a better chance of being done well, and is sure to be done more expeditiously. What was at first done slowly comes to be done quickly; what was at first done slowly with accuracy is at last done quickly with equal accuracy. This is as true of mental operations as of bodily. Even a child after much practice sums up a column of figures with a rapidity which resembles intuition. The act of speaking any language, of reading fluently, of playing music at sight, are cases as remarkable as they are familiar. Among bodily acts, dancing, gymnastic exercises, ease and brilliancy of execution on a musical instrument, are examples of the rapidity and facility acquired by repetition. In simpler manual operations the effect is of course still sooner produced. "The rapidity," Adam Smith observes, "with which some of the operations of certain manufactures are performed, exceeds what the human hand could, by those who had never seen them, be supposed capable of acquiring." This skill is, naturally, attained after shorter practice, in proportion as the division of labour is more minute; and will not be attained in the same degree at all, if the workman has a greater variety of operations to execute than allows of a sufficiently frequent repetition of each. The advantage is not confined to the greater efficiency ultimately attained, but in-

cludes also the diminished loss of time, and waste of material, in learning the art. "A certain quantity of material," says Mr. Babbage*, "will in all cases be consumed unprofitably, or spoiled, by every person who learns an art; and as he applies himself to each new process, he will waste some of the raw material, or of the partly-manufactured commodity. But if each man commit this waste in acquiring successively every process, the quantity of waste will be much greater than if each person confine his attention to one process." And in general each will be much sooner qualified to execute his one process, if he be not distracted while learning it, by the necessity of acquiring others.

The second advantage enumerated by Adam Smith as arising from the division of labour, is one on which I cannot help thinking that more stress is laid by him and others than it deserves. To do full justice to his opinion, I will quote his own exposition of it. "The advantage which is gained by saving the time commonly lost in passing from one sort of work to another, is much greater than we should at first view be apt to imagine it. It is impossible to pass very quickly from one kind of work to another, that is carried on in a different place, and with quite different tools. A country weaver, who cultivates a small farm, must lose a good deal of time in passing from his loom to the field, and from the field to his loom. When the two trades can be carried on in the same workhouse, the loss of time is no doubt much less. It is even in this case, however, very considerable. A man commonly saunters a little in turning his hand from one sort of employment to another. When he first begins the new work, he is seldom very keen and hearty; his mind, as they say, does not go to it, and for some time he rather trifles than applies to good purpose. The habit of sauntering and of indolent careless application, which is naturally, or rather necessarily acquired by every

* Page 171.

country workman who is obliged to change his work and his tools every half hour, and to apply his hand in twenty different ways almost every day of his life, renders him almost always slothful and lazy, and incapable of any vigorous application even on the most pressing occasions." This is surely a most exaggerated description of the inefficiency of country labour, where it has any adequate motive to exertion. Few workmen change their work and their tools oftener than a gardener: is he usually incapable of vigorous application? Many of the higher description of artisans have to perform a great multiplicity of operations with a variety of tools. They do not execute each of these with the rapidity with which a factory workman performs his single operation; but they are, except in a merely manual sense, more skilful labourers, and in all senses whatever, more energetic.

Mr. Babbage, following in the track of Adam Smith, says, "When the human hand, or the human head, has been for some time occupied in any kind of work, it cannot instantly change its employment with full effect. The muscles of the limbs employed have acquired a flexibility during their exertion, and those not in action a stiffness during rest, which renders every change slow and unequal in the commencement. Long habit also produces in the muscles exercised a capacity for enduring fatigue to a much greater degree than they could support under other circumstances. A similar result seems to take place in any change of mental exertion; the attention bestowed on the new subject not being so perfect at first as it becomes after some exercise. The employment of different tools in the successive processes is another cause of the loss of time in changing from one operation to another. If these tools are simple, and the change is not frequent, the loss of time is not considerable; but in many processes of the arts the tools are of great delicacy, requiring accurate adjustment every time they are used; and in many cases the time employed in adjusting bears a large proportion to that employed in

using the tool. The sliding-rest, the dividing and the drilling-engine are of this kind; and hence, in manufactories of sufficient extent, it is found to be good economy to keep one machine constantly employed in one kind of work: one lathe, for example, having a screw motion to its sliding-rest along the whole length of its bed, is kept constantly making cylinders; another, having a motion for equalizing the velocity of the work at the point at which it passes the tool, is kept for facing surfaces; whilst a third is constantly employed in cutting wheels."

I am very far from implying that these different considerations are of no weight; but I think there are counter-considerations which are overlooked. If one kind of muscular or mental labour is different from another, for that very reason it is to some extent a rest from that other; and if the greatest vigour is not at once obtained in the second occupation, neither could the first have been indefinitely prolonged without some relaxation of energy. It is a matter of common experience that a change of occupation will often afford relief where complete repose would otherwise be necessary, and that a person can work many more hours without fatigue at a succession of occupations, than if confined during the whole time to one. Different occupations employ different muscles, or different faculties of the mind, some of which rest and are refreshed while others work. Bodily labour itself rests from mental, and conversely. Even the variety itself has an invigorating effect on what for want of a more philosophical appellation we must term the animal spirits; so important to the efficiency of all work not mechanical, and not unimportant even to that. The comparative weight due to these considerations is different with different individuals: some are more fitted than others for persistency in one occupation, and less fit for change; they require longer to get the steam up (to use a metaphor now common): the irksomeness of setting to work lasts longer, and it requires more time to bring their faculties into full play, and therefore

when this is once done, they do not like to leave off, but go on long without intermission, even to the injury of their health. Temperament has something to do with these differences. There are people whose faculties seem by nature to come slowly into action, and to accomplish little until they have been a long time employed. Others, again, get into action rapidly, but cannot without exhaustion continue long. In this, however, as in most other things, though natural differences are something, habit is much more. The habit of passing rapidly from one occupation to another may be acquired, like other habits, by early cultivation; and when it is acquired, there is none of the sauntering which Adam Smith speaks of, after each change; no want of energy and interest, but the workman comes to each part of his occupation with a freshness and a spirit which he does not retain if he persists in any one part (unless in case of unusual excitement) beyond the length of time to which he is accustomed. Women are usually (at least in their present social circumstances) of far greater versatility than men; and the present topic is an instance among multitudes, how little the ideas and experience of women have yet counted for, in forming the opinions of mankind. There are few women who would not reject the idea that work is made vigorous by being protracted, and is inefficient for some time after changing to a new thing. Even in this case, habit, I believe, much more than nature, is the cause of the difference. The occupations of nine out of every ten men are special, those of nine out of every ten women general, embracing a multitude of details, each of which requires very little time. Women are in the constant practice of passing quickly from one manual, and still more from one mental operation to another, which therefore rarely costs them either effort or loss of time, while a man's occupation generally consists in working steadily for a long time at one thing, or one very limited class of things. But the situations are sometimes reversed, and with them the characters. Women are not found less efficient than

men for the uniformity of factory work, or they would not so generally be employed for it; and a man who has cultivated the habit of turning his hand to many things, far from being the slothful and lazy person described by Adam Smith, is usually remarkably lively and active. It is true however that change of occupation may be too frequent even for the most versatile. Incessant variety is even more fatiguing than perpetual sameness.

The third advantage attributed by Adam Smith to the division of labour is, to a certain extent, real. Inventions tending to save labour in a particular operation, are more likely to occur to any one, in proportion as his thoughts are intensely directed to that occupation, and continually employed upon it. A person is not so likely to make practical improvements in one department of things, whose attention is very much diverted to others. But, in this, much more depends on general intelligence and habitual activity of mind, than on exclusiveness of occupation, and if that exclusiveness is carried to a degree unfavourable to the cultivation of intelligence, there will be more lost, in this kind of advantage, than gained. We may add, that whatever may be the cause of making inventions, when they are once made the increased efficiency of labour is owing to the invention itself, and not to the division of labour.

The greatest advantage (next to the dexterity of the workmen) derived from the minute division of labour which takes place in modern manufacturing industry, is probably one not mentioned by Adam Smith, but to which attention has been drawn by Mr. Babbage; the more economical distribution of labour, by classing the workpeople according to their capacity. Different parts of the same series of operations require unequal degrees of skill and bodily strength: and those who have skill enough for the most difficult, or strength enough for the hardest parts of the labour, are made much more useful by being employed solely in them; the operations of which inferior workmen are capable, being

left to those who are fit for no others. Production is most efficient when the precise quantity of skill and strength, which is required for each part of the process, is employed in it, and no more. The operation of pin-making requires, it seems, in its different parts, such different degrees of skill, that the wages earned by the persons employed vary from fourpence halfpenny a day to six shillings; and if the workman who is paid at that highest rate had to perform the whole process, he would be working a part of his time with a waste per day equivalent to the difference between six shillings and fourpence halfpenny. Without reference to the loss sustained in quantity of work done, and supposing even that he could make a pound of pins in the same time in which ten workmen combining their labour can make ten pounds, Mr. Babbage computes that they would cost, in making, three times and three-quarters as much as they now do by means of the division of labour. In needle-making, he adds, the difference would be still greater, for in that, the scale of remuneration for different parts of the process varies from sixpence to twenty shillings a day.

To the advantage which consists in extracting the greatest possible amount of utility from skill, may be added the analogous one, of extracting the utmost possible utility from tools. "If any man," says an able writer*, "had all the tools which many different occupations require, at least three-fourths of them would constantly be idle and useless. It were clearly then better, were any society to exist where each man had all these tools, and alternately carried on each of these occupations, that the members of it should, if possible, divide them amongst them, each restricting himself to some particular employment. The advantages of the change to the whole community, and therefore to every individual in it, are great. In the first place, the various

* *Statement of some New Principles on the subject of Political Economy.* By John Rae, (Boston, U. S.) p. 164.

implements, being in constant employment, yield a better return for what has been laid out in procuring them. In consequence their owners can afford to have them of better quality and more complete construction. The result of both events is, that a larger provision is made for the future wants of the whole society."

§ 6. The division of labour, as all writers on the subject have remarked, is limited by the extent of the market. If, by the separation of pinmaking into ten distinct employments, forty-eight thousand pins can be made in a day, this separation will only be advisable if the number of accessible consumers is such as to require, every day, something like forty-eight thousand pins. If there is only a demand for twenty-four thousand, the division of labour can only be advantageously carried to the extent which will every day produce that smaller number. This, therefore, is a further mode in which an accession of demand for a commodity tends to increase the efficiency of the labour employed in its production. The extent of the market may be limited by several causes: too small a population; the population too scattered and distant to be easily accessible; deficiency of roads and water carriage; or, finally, the population too poor, that is, their collective labour too little effective, to admit of their being large consumers. Indolence, want of skill, and want of combination of labour, among those who would otherwise be buyers of a commodity, limit, therefore, the practicable amount of combination of labour among its producers. In an early stage of civilization, when the demand of any particular locality was necessarily small, industry only flourished among those who by their command of the sea coast or of a navigable river, could have the whole world, or all that part of it which lay on coasts or navigable rivers, as a market for their productions. The increase of the general riches of the world, when accompanied with freedom of commercial intercourse, improvements in navigation, and inland

communication by roads, canals, or railways, tends to give increased productiveness to the labour of every nation in particular, by enabling each locality to supply with its special products so much larger a market, that a great extension of the division of labour in their production is an ordinary consequence.

The division of labour is also limited, in many cases, by the nature of the employment. Agriculture, for example, is not susceptible of so great a division of occupations as many branches of manufactures, because its different operations cannot possibly be simultaneous. One man cannot be always ploughing, another sowing, and another reaping. A workman who only practised one agricultural operation would be idle eleven months of the year. The same person may perform them all in succession, and have, in almost every climate, a considerable amount of unoccupied time. The combination of labour, of which agricultural industry is susceptible, is chiefly that which Mr. Wakefield terms Simple Co-operation; many persons employed together in the same work. To execute a great agricultural improvement, it is often necessary that many labourers should work together; but in general, except the few whose business is superintendence, they all work in the same manner. A canal or a railway embankment cannot be made without a combination of many labourers; but they are all excavators, except the engineer and his clerks.

CHAPTER IX.

OF PRODUCTION ON A LARGE, AND PRODUCTION ON A SMALL SCALE.

§ 1. From the importance of combination of labour, it is an obvious conclusion, that there are many cases in which production is made much more effective by being conducted on a large scale. Whenever it is essential to the greatest efficiency of labour that many labourers should combine, even though only in the way of Simple Co-operation, the scale of the enterprise must be such as to bring many labourers together, and the capital must be large enough to maintain them. Still more needful is this when the nature of the employment allows, and the extent of the possible market encourages, a considerable division of labour. The larger the enterprise, the further the division of labour may be carried. This is one of the principal causes of large manufactories. Even when no additional subdivision of the work would follow an enlargement of the operations, there will be good economy in enlarging them to the point at which every person to whom it is convenient to assign a special occupation, will have full employment in that occupation. This point is well illustrated by Mr. Babbage*.

"If machines be kept working through the twenty-four hours," (which is evidently the only economical mode of employing them,) "it is necessary that some person shall attend to admit the workmen at the time they relieve each other; and whether the porter or other servant so employed admit one person or twenty, his rest will be equally disturbed. It will also be necessary occasionally to adjust or

* Page 214 et seqq.

repair the machine; and this can be done much better by a workman accustomed to machine-making, than by the person who uses it. Now, since the good performance and the duration of machines depend, to a very great extent, upon correcting every shake or imperfection in their parts as soon as they appear, the prompt attention of a workman resident on the spot will considerably reduce the expenditure arising from the wear and tear of the machinery. But in the case of a single lace-frame, or a single loom, this would be too expensive a plan. Here then arises another circumstance which tends to enlarge the extent of a factory. It ought to consist of such a number of machines as shall occupy the whole time of one workman in keeping them in order: if extended beyond that number, the same principle of economy would point out the necessity of doubling or tripling the number of machines, in order to employ the whole time of two or three skilful workmen.

"Where one portion of the workman's labour consists in the exertion of mere physical force, as in weaving, and in many similar arts, it will soon occur to the manufacturer, that if that part were executed by a steam-engine, the same man might in the case of weaving, attend to two or more looms at once; and, since we already suppose that one or more operative engineers have been employed, the number of looms may be so arranged that their time shall be fully occupied in keeping the steam-engine and the looms in order.

"Pursuing the same principles, the manufactory becomes gradually so enlarged, that the expense of lighting during the night amounts to a considerable sum; and as there are already attached to the establishment persons who are up all night, and can therefore constantly attend to it, and also engineers to make and keep in repair any machinery, the addition of an apparatus for making gas to light the factory leads to a new extension, at the same time that it contributes, by diminishing the expense of lighting, and

the risk of accidents from fire, to reduce the cost of manufacturing.

"Long before a factory has reached this extent, it will have been found necessary to establish an accountant's department, with clerks to pay the workmen, and to see that they arrive at their stated times; and this department must be in communication with the agents who purchase the raw produce, and with those who sell the manufactured article." It will cost these clerks and accountants little more time and trouble to pay a large number of workmen than a small number; to check the accounts of large transactions, than of small. If the business doubled itself, it would probably be necessary to increase, but certainly not to double, the number either of accountants, or of buying and selling agents. Every increase of business would enable the whole to be carried on with a proportionally smaller amount of labour.

As a general rule, the expenses of a business do not increase by any means proportionally to the quantity of business. Let us take as an example, a set of operations which we are accustomed to see carried on by one great establishment, that of the Post Office. Suppose that the business, let us say only of the London letter-post, instead of being centralized in a single concern, were divided among five or six competing companies. Each of these would be obliged to maintain almost as large an establishment as is now sufficient for the whole. Since each must arrange for receiving and delivering letters in all parts of the town, each must send letter-carriers into every street, and almost every alley, and this too as many times in the day as is now done by the Post Office, if the service is to be as well performed. Each must have an office for receiving letters in every neighbourhood, with all subsidiary arrangements for collecting the letters from the different offices and re-distributing them. I say nothing of the much greater number of superior officers who would be required to check and control the subordinates, implying not only a greater

cost in salaries for such responsible officers, but the necessity, perhaps, of being satisfied in many instances with an inferior standard of qualification, and so failing in the object.

Whether or not the advantages obtained by operating on a large scale, preponderate in any particular case over the more watchful attention, and greater regard to minor gains and losses, usually found in small establishments, can be ascertained, in a state of free competition, by an unfailing test. Wherever there are large and small establishments in the same business, that one of the two which in existing circumstances carries on the production at greatest advantage, will be able to undersell the other. The power of permanently underselling can only be derived from increased effectiveness of labour; and this, when obtained by a more extended division of employment, or by a classification tending to a better economy of skill, always implies a greater produce from the same labour, and not merely the same produce from less labour: it increases not the surplus only, but the gros produce of industry. If an increased quantity of the particular article is not required, and a part of the labourers in consequence lose their employment, the capital which maintained and employed them is also set at liberty; and the general produce of the country is increased, by some other application of their labour.

Another of the causes of large manufactories, however, is the introduction of processes requiring expensive machinery. Expensive machinery supposes a large capital; and is not resorted to except with the intention of producing, and the hope of selling, as much of the article as comes up to the full powers of the machine. For both these reasons, wherever costly machinery are used, the large system of production is inevitable. But the power of underselling is not in this case so unerring a test as in the former, of the beneficial effect on the total production of the community. The power of underselling does not depend on the absolute increase of produce, but on its bearing an increased proportion to the

expenses: which, as was shown in a former chapter*, it may do, consistently with even a diminution of the gross annual produce. By the adoption of machinery, a circulating capital, which was perpetually consumed and reproduced, has been converted into a fixed capital, requiring only a small annual expense to keep it up: and a much smaller produce will suffice for merely covering that expense, and replacing the remaining circulating capital of the producer. The machinery therefore might answer perfectly well to the manufacturer, and enable him to undersell his competitors, although the effect on the production of the country might be not an increase, but a diminution. It is true, the article will be sold cheaper, and therefore, of that single article, there will probably be not a smaller, but a greater quantity sold; since the loss to the community collectively has fallen upon the work-people, and they are not the principal customers, if customers at all, of most branches of manufacture. But though that particular branch of industry may extend itself, it will be by replenishing its diminished circulating capital from that of the community generally; and if the labourers employed in that department escape loss of employment, it is because the loss will spread itself over the labouring people at large. If any of them are reduced to the condition of unproductive labourers, supported by voluntary or legal charity, the gross produce of the country is to that extent permanently diminished, until the ordinary progress of accumulation makes it up: but if the condition of the labouring classes enables them to bear a temporary reduction of wages, and the superseded labourers become absorbed in other employments, their labour is still productive, and the breach in the gross produce of the community is repaired, though not the detriment to the labourers. I have restated this exposition, which has already been made in a former place, to impress more strongly the truth, that a mode of production

* Supra, chap. vi. p. 112.

does not of necessity increase the productive effect of the collective labour of a community, because it enables a particular commodity to be sold cheaper. The one consequence generally accompanies the other, but not necessarily. I will not here repeat the reasons I formerly gave, nor anticipate those which will be given more fully hereafter, for deeming the exception to be rather a case abstractedly possible, than one which is frequently realized in fact.

A considerable part of the saving of labour effected by substituting the large system of production for the small, is the saving in the labour of the capitalists themselves. If a hundred producers with small capitals carry on separately the same business, the superintendence of each concern will probably require the whole attention of the person conducting it, sufficiently at least to hinder his time or thoughts from being disposable for anything else: while a single manufacturer, possessing a capital equal to the sum of theirs, with ten or a dozen clerks, could conduct the whole of their amount of business, and have leisure too for other occupations. The small capitalist, it is true, generally combines with the business of direction some portion of the details, which the other leaves to his subordinates: the small farmer follows his own plough, the small tradesman serves in his own shop, the small weaver plies his own loom. But in this very union of functions there is in a great proportion of cases a want of economy. The principal in the concern is either wasting, in the routine of a business, qualities suitable for the direction of it, or he is only fit for the former, and then the latter will be ill done. I must observe however that I do not attach, to this saving of labour, the importance often ascribed to it. There is undoubtedly much more labour expended in the superintendance of many small capitals than in that of one large capital. For this labour however the small producers have generally a full compensation, in the feeling of being their own masters, and not servants of an employer. It may be said, that if they value this independence they will submit to pay a price for

it, and to sell at the reduced rates occasioned by the competition of the great dealer or manufacturer. But they cannot always do this and continue to gain a living. They thus gradually disappear from society. After having consumed their little capital in prolonging the unsuccessful struggle, they either sink into the condition of hired labourers, or become dependent on others for support.

§ 2. Production on a large scale is greatly promoted by the practice of forming a large capital by the combination of many small contributions; or in other words, by the formation of joint stock companies. The advantages of the joint stock principle are numerous and important.

In the first place, many undertakings require an amount of capital beyond the means of the richest individual or private partnership. No individual could have made a railway from London to Liverpool; it is doubtful if any individual could even work the traffic on it, now when it is made. The government indeed could have done both; and in countries where the practice of co-operation is only in the earlier stages of its growth, the government can alone be looked to for any of those works for which a great combination of means is requisite; because it can obtain those means by compulsory taxation, and is already accustomed to the conduct of large operations. For reasons, however, which are tolerably well known, and of which we shall treat fully hereafter, government agency for the conduct of industrial operations is generally one of the least eligible of resources, when any other is available.

Next, there are undertakings which individuals are not absolutely incapable of performing, but which they cannot perform on the scale and with the continuity which are ever more and more required by the exigencies of a society in an advancing state. Individuals are quite capable of despatching ships from England to any or every part of the world, to carry passengers and letters; the thing was done before joint stock

companies for the purpose were heard of. But when from the increase of population and transactions as well as of means of payment, the public will no longer content themselves with occasional opportunities, but require the certainty that packets shall start regularly, for some places once or even twice a day, for others once a week, for others that a steam ship of great size and expensive construction shall depart on fixed days twice in each month, it is evident that to afford an assurance of keeping up with punctuality such a circle of costly operations, requires a much larger capital and a much larger staff of qualified subordinates than can be commanded by an individual capitalist. There are other cases, again, in which though the business might be perfectly well transacted with small or moderate capitals, the guarantee of a great subscribed stock is necessary or desirable as a security to the public for the fulfilment of pecuniary engagements. This is especially the case when the nature of the business requires that numbers of persons should be willing to trust the concern with their money: as in the business of banking, and that of insurance: to both of which the joint stock principle is eminently adapted. It is an instance of the folly and jobbery of the rulers of mankind, that until very lately the joint stock principle, as a general resort, was in this country interdicted by law to these two modes of business; to banking altogether, and to insurance in the department of sea risks; in order to bestow a lucrative monopoly on particular establishments which the government was pleased exceptionally to license, namely the Bank of England, and two insurance companies, the London and the Royal Exchange.

These are some of the advantages of joint stock over individual management. But if we look to the other side of the question, we shall find that individual management has also very great advantages over joint stock. The chief of these is the much keener interest of the managers in the success of the undertaking.

The administration of a joint stock association is, in the main, administration by hired servants. Even the committee, or board of directors, who are supposed to superintend the management, and who do really appoint and remove the managers, have no pecuniary interest in the good working of the concern beyond the shares they individually hold, which are always a very small part of the capital of the association, and in general but a small part of the fortunes of the directors themselves; and the part they take in the management usually divides their time with many other occupations, of as great or greater importance to their own interest; the business being the principal concern of no one except those who are hired to carry it on. But experience shows, and proverbs, the expression of popular experience, attest, how inferior is the quality of hired service, compared with the ministration of those personally interested in the work, and how indispensable, when hired service must be employed, is "the master's eye" to watch over it.

The successful conduct of an industrial enterprise requires two quite distinct qualifications: fidelity, and zeal. The fidelity of the hired managers of a concern it is possible to secure. When their work admits of being reduced to a definite set of rules, the violation of these is a matter on which conscience cannot easily blind itself, and on which responsibility may be enforced by the loss of employment. But to carry on a great business successfully, requires a hundred things which, as they cannot be defined beforehand, it is impossible to convert into distinct and positive obligations. First and principally, it requires that the directing mind should be incessantly occupied with the subject; should be continually laying schemes by which greater profit may be obtained, or expense saved. This intensity of interest in the subject it is seldom to be expected that any one should feel, who is conducting a business as the hired servant and for the profit of another. There are experiments in human nature which are quite conclusive on the point.

Look at the whole class of rulers, and ministers of state. The work they are entrusted with, is among the most interesting and exciting of all occupations; the personal share which they themselves reap of the national benefits or misfortunes which befal the state under their rule, is far from trifling, and the rewards and punishments which they may expect from public estimation are of the plain and palpable kind which are most keenly felt and most widely appreciated. Yet how rare a thing is it to find a statesman in whom mental indolence is not stronger than all these inducements. How infinitesimal is the proportion who trouble themselves to form, or even to attend to, plans of public improvement, unless it is made still more troublesome to them to remain inactive; or who have any other real desire than that of rubbing on, so as to escape general blame. On a smaller scale, all who have ever employed hired labour have had ample experience of the efforts made to give as little labour in exchange for the wages, as is compatible with not being turned off. The universal neglect by domestic servants of their employer's interests, wherever these are not protected by some fixed rule, is matter of common remark, unless where long continuance in the same service, and reciprocal good offices, have produced either personal attachment, or some feeling of a common interest.

Another of the disadvantages of joint stock concerns, which is in some degree common to all concerns on a large scale, is disregard of small gains and small savings. In the management of a great capital and great transactions, especially when the managers have not much interest in it of their own, small sums are apt to be counted for next to nothing: they never seem worth the care and trouble which it costs to attend to them, and the credit of liberality and openhandedness is cheaply bought by a disregard of such trifling considerations. But small profits and small expenses, often repeated, amount to great gains and losses: and of this a large capitalist is often a sufficiently good calculator to be

practically aware; and to arrange his business on a *system*, which if enforced by a sufficiently vigilant superintendence, precludes the possibility of the habitual waste, otherwise incident to a great business. But the managers of a joint stock concern seldom devote themselves sufficiently to the work, to enforce unremittingly, even if introduced, through every detail of the business, a really economical system.

From considerations of this nature, Adam Smith was led to enunciate as a principle, that joint stock companies could never be expected to maintain themselves without an exclusive privilege, except in branches of business which like banking, insurance, and some others, admit of being, in a considerable degree, reduced to fixed rules. This however is one of those over-statements of a true principle, often met with in Adam Smith. In his days there were few instances of joint stock companies which had been permanently successful without a monopoly, except the class of cases which he referred to; but since his time there have been many; and the regular increase both of the spirit of combination and of the ability to combine, will doubtless produce many more. Adam Smith fixed his observation too exclusively on the superior energy and more unremitting attention brought to a business in which the whole stake and the whole gain belong to the persons conducting it; and he overlooked various countervailing considerations which go a great way towards neutralizing even that great point of superiority.

Of these one of the most important is that which relates to the intellectual and active qualifications of the directing head. The stimulus of individual interest secures the greatest amount of exertion, but that exertion is of little avail if the intelligence exerted is of an inferior order, which it must necessarily be in the majority of concerns carried on by the persons chiefly interested in them. Where the concern is large, and can afford a remuneration sufficient to attract a class of candidates superior to the common average, it is possible to select for the general management, and for all the

skilled employments of a subordinate kind, persons of a degree of acquirement and cultivated intelligence which more than compensates for their inferior interest in the result. Their greater perspicacity enables them, with even a part of their minds, to see probabilities of advantage which never occur to the ordinary run of men by the continued exertion of the whole of theirs; and their habitual rectitude of perception and of judgment guards them against blunders, the apprehension of which would prevent the others from hazarding their interests in any attempt out of the ordinary routine.

It must further be remarked, that it is not a necessary consequence of joint stock management, that the persons employed, whether in superior or in subordinate offices, should be paid wholly by fixed salaries. There are modes of connecting more or less intimately the interest of the employés with the pecuniary success of the concern. There is a long series of intermediate positions, between working wholly on one's own account, and working by the day, week, or year for an invariable payment. Even in the case of ordinary unskilled labour, there is such a thing as task-work, or working by the piece: and the superior efficiency of this is so well known, that judicious employers always resort to it when the work admits of being put out in definite portions, without the necessity of too troublesome a surveillance to guard against inferiority in the execution. In the case of the managers of joint stock companies, and of the superintending and controlling officers in many private establishments, it is a common enough practice to connect their pecuniary interest with the interest of their employers, by giving them part of their remuneration in the form of a percentage on the profits. The personal interest thus given to hired servants is not comparable in intensity to that of the owner of the capital; but it is sufficient to be a very material stimulus to zeal and carefulness, and, when added to the advantage of superior intelligence, often raises the quality of the service much above that which the generality of masters are capable

of rendering to themselves. The ulterior extensions of which this principle of remuneration is susceptible, being of great social as well as economical importance, will be more particularly adverted to in a subsequent stage of the present enquiry.

As I have already remarked of large establishments generally, when compared with small ones, whenever competition is free its results will show whether individual or joint stock agency is best adapted to the particular case, since that which is most efficient and most economical will always in the end succeed in underselling the other.

§ 3. The possibility of substituting the large system of production for the small, depends, of course, in the first place, on the extent of the market. The large system can only be advantageous when a large amount of business is to be done: it implies, therefore, either a populous and flourishing community, or a great opening for exportation. Again, this as well as every other change in the system of production is greatly favoured by a progressive condition of capital. It is chiefly when the capital of a country is receiving a great annual increase, that there is a large amount of capital seeking for investment: and a new enterprise is much sooner and more easily entered upon by new capital, than by withdrawing capital from existing employments. The change is also much facilitated by the existence of large capitals in few hands. It is true that the same amount of capital can be raised by bringing together many small sums. But this (besides that it is not equally well suited to all branches of industry), supposes a much greater degree of commercial confidence and enterprise diffused through the community, and belongs altogether to a more advanced stage of industrial progress.

In the countries in which there are the largest markets, the widest diffusion of commercial confidence and enterprise, the greatest annual increase of capital, and the greatest

number of large capitals owned by individuals, there is a tendency to substitute more and more, in one branch of industry after another, large establishments for small ones. In England, the great type of all these characteristics, there is not only a perpetual growth of large manufacturing establishments, but also, wherever a sufficient number of purchasers are assembled, of shops and warehouses for conducting retail business on a large scale. These are almost always able to undersell the smaller tradesmen, partly, it is understood, by means of division of labour, and the economy occasioned by limiting the employment of skilled agency to cases where skill is required; and partly, no doubt, by the saving of labour arising from the great scale of the transactions, as it costs no more time, and not much more exertion of mind, to make a large purchase, for example, than a small one, and very much less than to make a number of small ones.

With a view merely to production, and to the greatest efficiency of labour, this change is wholly beneficial. In some cases it is attended with drawbacks, rather social than economical, the nature of which has been already hinted at. But whatever disadvantages may be supposed to attend on the change from a small to a large system of production, they are not applicable to the change from a large to a still larger. When, in any employment, the régime of independent small producers has either never been possible, or has been superseded, and the system of many workmen under one management has become fully established, from that time any further enlargement in the scale of production is generally an unqualified benefit. It is obvious, for example, how great an economy of labour would be obtained if London were supplied by a single gas or water company instead of the existing plurality. While there are even as many as two, this implies double establishments of all sorts, when one only, with a small increase, could probably perform the whole operation equally well; double sets

of machinery and works, when the whole of the gas or water required could generally be produced by one set only; even double sets of pipes, if the companies did not prevent this needless expense by agreeing upon a division of the territory. Were there only one establishment, it could make lower charges, consistently with obtaining the rate of profit now realized. But would it do so? Even if it did not, the community in the aggregate would still be a gainer; since the shareholders are part of the community, and they would obtain higher profits, while the consumers paid only the same. It is, however, an error to suppose that the prices are really kept down by the competition of these companies. Where competitors are so few, they always agree not to compete. They may run a race of cheapness to ruin a new candidate, but as soon as he has established his footing they come to terms with him. When, therefore, a business of real public importance can only be carried on advantageously upon so large a scale as to render the liberty of competition almost illusory, it is an unthrifty dispensation of the public resources that several costly sets of arrangements should be kept up for the purpose of rendering to the community this one service. It is much better to treat it at once as a public function, and if it be not such as the government itself could beneficially undertake, it should be made over entire to the company or association which will perform it on the best terms for the public. In the case of railways, for example, no one can desire to see the enormous waste of capital and land (not to speak of increased nuisance) involved in the construction of a second railway to connect the same places already united by an existing one; while the two would not do the work better than it could be done by one, and after a short time they would certainly be amalgamated. Only one line ought to be permitted, but the control over that line never ought to be parted with by the state, unless on a temporary concession, as in France; and the vested right which Parliament has allowed to be acquired by the existing companies, like all other proprietary rights which are opposed to public utility, is morally valid only as a claim to compensation.

§ 4. The question between the large and the small system of production as applied to agriculture—between large and small farming, the *grande* and the *petite culture*—stands, in many respects, on different grounds from the general question between great and small industrial establishments. In its social aspect, and as an element in the Distribution of Wealth, this question will occupy us hereafter: but even as a question of production, the superiority of the large system in agriculture is by no means so clearly established as in manufactures.

I have already remarked, that the operations of agriculture are little susceptible of benefit from the division of labour. There is but little separation of employments even on the largest farm. The same persons may not in general attend to the live stock, to the marketing, and to the cultivation of the soil; but much beyond that primary and simple classification, the subdivision is not carried. The combination of labour of which agriculture is susceptible, is chiefly that which Mr. Wakefield terms Simple Co-operation; several persons helping one another in the same work, at the same time and place. But I confess it seems to me that this able writer attributes more importance to that kind of co-operation, in reference to agriculture properly so called, than it deserves. None of the common farming operations require much of it. There is no particular advantage in setting a number of people to work together in ploughing or digging or sowing the same field, or even in mowing or reaping it unless time presses. A single family can generally supply all the combination of labour necessary for these purposes. And in the works in which an union of many efforts is really needed, there is seldom found any impracticability in obtaining it where farms are small.

The waste of productive power by subdivision of the land often amounts to a great evil, but this applies chiefly to a subdivision so minute, that the cultivators have not enough land to occupy their time. Up to that point, the same principles which recommend large factories, are applicable to agriculture. For the greatest productive efficiency, it is generally desirable (though even this proposition must be received with qualifications) that no family who have any land, should have less than they could cultivate, or than will fully employ their cattle and tools. These, however, are not the dimensions of large farms, but of what are reckoned in England very small ones. The large farmer has some advantage in the article of buildings. It does not cost so much to house a great number of cattle in one building, as to lodge them equally well in several buildings. There is also some advantage in implements. A small farmer is not so likely to possess expensive instruments. But the principal agricultural implements, even when of the best construction, are not expensive. It may not answer to a small farmer to own a threshing machine, for the small quantity of corn he has to thresh; but there is no reason why such a machine should not in every neighbourhood be owned in common, or provided by some person to whom the others pay a consideration for its use. The large farmer can make some saving in cost of carriage. There is nearly as much trouble in carrying a small portion of produce to market, as a much greater produce; in bringing home a small, as a much larger quantity of manure, and articles of daily consumption. There is also the greater cheapness of buying things in large quantities. These various advantages must count for something, but it does not seem that they ought to count for very much. In England, for some generations, there has been little experience of small farms: but in Ireland the experience has been ample, not merely under the worst but under the best management: and the highest Irish authorities may be cited in opposition to the opinion which on this subject commonly

prevails in England. Mr. Blacker, for example, one of the most experienced agriculturists and successful improvers in the North of Ireland, whose experience lies chiefly in the best cultivated, which are also the most minutely divided parts of the country, is of opinion, that tenants holding farms not exceeding from five to eight or ten acres, can live comfortably and pay as high a rent as any large farmer whatever. "I am firmly persuaded," (he says*,) "that the small farmer who holds his own plough and digs his own ground, if he follows a proper rotation of crops, and feeds his cattle in the house, can undersell the large farmer, or in other words can pay a rent which the other cannot afford; and in this I am confirmed by the opinion of many practical men who have well considered the subject. . . The English farmer of 700 to 800 acres is a kind of man approaching to what is known by the name of a gentleman farmer. He must have his horse to ride, and his gig, and perhaps an overseer to attend to his labourers; he certainly cannot superintend himself the labour going on in a farm of 800 acres." After a few other remarks, he adds, "Besides all these drawbacks, which the small farmer knows little about, there is the great expense of carting out the manure from the homestead to such a great distance, and again carting home the crop. A single horse will consume the produce of more land, than would feed a small farmer and his wife and two children. And what is more than all, the large farmer says to his labourers, *go* to your work; but when the small farmer has occasion to hire them, he says *come;* the intelligent reader will, I dare say, understand the difference."

One of the objections most urged against small farms is, that they do not and cannot maintain, proportionally to their extent, so great a number of cattle as large farms, and that this occasions such a deficiency of manure, that a soil

* Prize Essay on the Management of Landed Property in Ireland, by William Blacker, Esq., (1837) p. 23.

much subdivided must always be impoverished. It will be found, however, that subdivision only produces this effect, when it throws the land into the hands of cultivators so poor as not to possess the amount of live stock suitable to the size of their farms. A small farm and a badly stocked farm are not synonymous. To make the comparison fairly, we must suppose the same amount of capital which is possessed by the large farmers to be disseminated among the small ones. When this condition, or even any approach to it, exists, and when stall feeding is practised (and stall feeding now begins to be considered good economy even on large farms) experience, far from bearing out the assertion that small farming is unfavourable to the multiplication of cattle, conclusively establishes the very reverse. The abundance of cattle, and copious use of manure, on the small farms of Flanders, are the most striking features in that Flemish agriculture which is the admiration of all competent judges, whether in England or on the Continent*.

* "The number of beasts fed on a farm of which the whole is arable land," (says the elaborate and intelligent treatise on Flemish Husbandry, from personal observation and the best sources, published in the Library of the Society for the Diffusion of Useful Knowledge), "is surprising to those who are not acquainted with the mode in which the food is prepared for the cattle. A beast for every three acres of land is a common proportion, and in very small occupations where much spade husbandry is used, the proportion is still greater. After comparing the accounts given in a variety of places and situations of the average quantity of milk which a cow gives when fed in the stall, the result is that it greatly exceeds that of our best dairy farms, and the quantity of butter made from a given quantity of milk is also greater. It appears astonishing that the occupier of only ten or twelve acres of light arable land should be able to maintain four or five cows, but the fact is notorious in the Waes country." (pp. 59, 60.)

This subject is treated very intelligently by M. Passy, a distinguished politician and high economical authority, whose treatise "Des Systêmes de Culture et de leur Influence sur l'Economie Sociale" is one of the most impartial discussions, as between the two systems, which has yet appeared in France.

"Sans nul doute, c'est l'Angleterre qui, à superficie égale, nourrit le plus d'animaux; la Hollande et quelques parties de la Lombardie pourraient

The disadvantage, when disadvantage there is, of small, or rather of peasant farming, as compared with capitalist farming, must chiefly consist in inferiority of skill and

seules lui disputer cet avantage; mais est-ce là un résultat des formes de l'exploitation, et des circonstances de climat et de situation locale ne concourent-elles pas à le produire? C'est à notre avis, ce qui ne saurait être contesté. En effet, quoiqu'on en ait dit, partout où la grande et la petite culture se rencontrent sur les mêmes points, c'est celle-ci qui, bien qu'elle ne puisse entretenir autant de moutons, possède, tout compensé, le plus grand nombre d'animaux producteurs d'engrais. Voici, par exemple, ce qui ressort des informations fournies par la Belgique.

"Les deux provinces où règne la plus petite culture sont celles d'Anvers et de la Flandre orientale, et elles possèdent en moyenne, par 100 hectares de terres cultivées, 74 bêtes bovines et 14 moutons. Les deux provinces où se trouvent les grandes fermes sont celles de Namur et du Hainaut, et elles n'ont en moyenne, pour 100 hectares de terres cultivées, que 30 bêtes bovines et 45 moutons. Or, en comptant, suivant l'usage, 10 moutons comme l'équivalent d'une tête de gros bétail, nous rencontrons d'un côté, 76 animaux servant a maintenir la fécondité du sol; de l'autre, moins de 35, différence à coup sûr énorme. (D'après les documents statistiques publiés par le Ministre de l'Intérieur, 3me publication officielle.) Il est à remarquer, au surplus, que le nombre des animaux n'est pas dans la partie de la Belgique dont le sol est divisé en très-petites fermes beaucoup moindre qu'en Angleterre. En l'évaluant dans cette dernière contrée à raison seulement du territoire en culture, il y existe, par centaine d'hectares, 65 bêtes à corne et près de 260 moutons, c.-à-d. l'équivalent de 91 des premiers, ou seulement 15 de plus que dans l'autre. Et encore est-il juste d'observer qu'en Belgique presque rien n'est perdu des engrais donnés par des animaux nourris à peu près toute l'année à l'étable, tandis qu'en Angleterre la pâture en plein air affaiblit considérablement les quantités qu'il devient possible de mettre entièrement à profit.

"Dans le département du Nord aussi, ce sont les arrondissements dont les fermes ont la moindre contenance qui entretiennent le plus d'animaux. Tandis que les arrondissements de Lille et de Hazebrouck, outre un plus grand nombre de chevaux, nourrissent, l'un l'équivalent de 52 têtes de gros bétail, l'autre l'équivalent de 46; les arrondissements où les exploitations sont les plus grandes, ceux de Dunkerque et d'Avesnes, ne contiennent, le premier, que l'équivalent de 44 bêtes bovines, l'autre, que celui de 40. (D'après la Statistique de la France publiée par le Ministre du Commerce: *Agriculture*, t. i.)

"Pareilles recherches étendues sur d'autres points de la France offriraient des résultats analogues. S'il est vrai que dans la banlieue des villes, la

knowledge: but it is not true, as a general fact, that such inferiority exists. Countries of small farms and peasant farming, Flanders and Italy, had a good agriculture

petite culture s'abstienne de garder des animaux, au produit desquels elle supplée facilement par des achats d'engrais, il ne se peut que le genre de travail qui exige le plus de la tèrre ne soit pas celui qui en entretienne le plus activement la fertilité. Assurément il n'est pas donné aux petites fermes de posséder de nombreux troupeaux de moutons, et c'est un inconvénient; mais, en revanche, elles nourrissent plus de bêtes bovines que les grandes. C'est là une nécessité à laquelle elles ne sauraient se soustraire dans aucun des pays où les besoins de la consommation les ont appelées à fleurir; elles périraient si elles ne réussissaient pas à y satisfaire.

"Voici, au surplus, sur ce point des détails dont l'exactitude nous paraît pleinement attestée par l'excellence du travail où nous les avons puisés. Ces détails, contenus dans la statistique de la commune de Vensat (Puy de Dôme), publiée récemment par M. le docteur Jusseraud, maire de la commune, sont d'autant plus précieux, qu'ils mettent dans tout leur jour la nature des changements que le développement de la petite culture a, dans le pays dont il s'agit, apportés au nombre et à l'espèce des animaux dont le produit en engrais soutient et accroît la fertilité des terres. Dans la commune de Vensat, qui comprend 1612 hectares divisés en 4600 parcelles appartenant à 591 propriétaires, le territoire exploité se compose de 1466 hectares. Or, en 1790, 17 fermes en occupaient les deux tiers, et 20 autres tout le reste. Depuis lors, les cultures se sont morcelées, et maintenant leur petitesse est extrême. Quelle a été l'influence du changement sur la quantité des animaux? Une augmentation considérable. En 1790, la commune ne possédait qu'environ 300 bêtes à cornes, et de 1800 à 2000 bêtes à laine; aujourd'hui elle compte 676 des premières, et 533 seulement des secondes. Ainsi pour remplacer 1300 moutons elle a acquis 376 bœufs et vaches, et tout compensé, la somme des engrais s'est accrue dans la proportion de 490 à 729, ou de plus de 48 pour cent. Et encore est-il à remarquer que, plus forts et mieux nourris à présent, les animaux contribuent bien davantage à entretenir la fertilité des terres.

"Voilà ce que les faits nous apprennent sur ce point: il n'est donc pas vrai que la petite culture ne nourrisse pas autant d'animaux que les autres; loin de là, à conditions locales pareilles, c'est elle qui en possède le plus, et il ne devait pas être difficile de le présumer; car, du moment où c'est elle qui demande le plus aux terres, il faut bien qu'elle leur donne des soins d'autant plus réparateurs qu'elle en exige davantage. Que l'on prenne un à un les autres reproches; qu'on les examine à la clarté de faits bien appréciés, on s'appercevra bientôt qu'ils ne sauraient être mieux fondés, et qu'ils n'ont été formulés que parce qu'on a comparé l'état des cultures dans des contrées où les causes de la prospérité agricole n'agissaient pas avec la même énergie." (pp. 116-120.)

many generations before England, and theirs is still, as a whole, probably the best agriculture in the world. The empirical skill which is the effect of daily and close observation, peasant farmers often possess in an eminent degree. The traditional knowledge, for example, of the culture of the vine, possessed by the peasantry of the countries where the best wines are produced, is extraordinary. There is no doubt an absence of science, or at least of theory; and to some extent a deficiency of the spirit of improvement, so far as relates to the introduction of new processes. There is also a want of means to make experiments, which can seldom be made with advantage except by rich proprietors or capitalists. As for those systematic improvements which operate on a large tract of country at once (such as great works of draining or irrigation) or which for any other reason do really require large numbers of workmen combining their labour, these are not in general to be expected from small farmers, or even small proprietors, though combination among them for such purposes is by no means unexampled, and will become more common as their intelligence is more developed.

Against these disadvantages is to be placed, where the tenure of land is of the requisite kind, an ardour of industry absolutely unexampled in any other condition of agriculture. This is a subject on which the testimony of competent witnesses is unanimous. The working of the *petite culture* cannot be fairly judged where the small cultivator is merely a tenant, and not even a tenant on fixed conditions, but (as in Ireland) at a nominal rent greater than can be paid, and therefore practically at a varying rent always amounting to the utmost that can be paid. To understand the subject, it must be studied where the cultivator is the proprietor, or at least a *métayer* with a permanent tenure; where the labour he exerts to increase the produce and value of the land avails wholly, or at least partly, to his own benefit and that of his descendants. In another division of our subject, we shall discuss at some length the important subject of tenures

of land, and I defer till then any citation of evidence on the marvellous industry of peasant proprietors. It may suffice here to appeal to the immense amount of gross produce, which, even without a permanent tenure, English labourers generally obtain from their little allotments; a produce beyond comparison greater than a large farmer extracts, or would find it his interest to extract, from the same piece of land.

And this I take to be the true reason why large cultivation is generally most advantageous as a mere investment for profit. Land occupied by a large farmer is not farmed so highly. There is not nearly so much labour expended on it. This is not on account of any economy arising from combination of labour, but because, by employing less, a greater return is obtained in proportion to the outlay. It does not answer to any one to pay others for exerting all the labour which the peasant, or even the allotment holder, gladly undergoes when the fruits are to be wholly reaped by himself. This labour however is not unproductive; it all adds to the gross produce. With anything like equality of skill and knowledge, the large farmer does not obtain nearly so much from the soil as the small proprietor, or the small farmer with adequate motives to exertion: but though his returns are less, the labour is less in a still greater degree, and as whatever labour *he* employs must be paid for, it does not suit his purpose to employ more.

But although the gross produce of the land is greatest, *ceteris paribus*, under small cultivation, and although, therefore, a country is able on that system to support a larger aggregate population, it is generally assumed by English writers that what is termed the net produce, that is, the surplus after feeding the cultivators, must be smaller; that therefore, the population disposable for all other purposes, for manufactures, for commerce and navigation, for national defence, for the promotion of knowledge, for the liberal professions, for the various functions of government, for the arts

and literature, all of which are entirely dependent on this surplus for their existence as occupations, must be less numerous; and that the nation, therefore, (waiving all question as to the condition of the actual cultivators) must be inferior in the principal elements of national power, and in many of those of general well-being. This, however, has been taken for granted much too readily. Undoubtedly the non-agricultural population will bear a less ratio to the agricultural, under small than under large cultivation. But that it will be less numerous absolutely, is by no means a consequence. If the total population, agricultural and non-agricultural, is greater, the non-agricultural portion may be more numerous in itself, and may yet be a smaller proportion of the whole. If the gross produce is larger, the net produce may be larger, and yet bear a smaller ratio to the gross produce. Yet even Mr. Wakefield sometimes appears to confound these distinct ideas. In France it is computed that two-thirds of the whole population are agricultural. In England, at most, one-third. Hence Mr. Wakefield infers, that "as in France only three people are supported by the labour of two cultivators, while in England the labour of two cultivators supports six people, English agriculture is twice as productive as French agriculture," owing to the superior efficiency of large farming, through combination of labour. But in the first place, the facts themselves are overstated. The labour of two persons in England does not quite support six people, for there is not a little food imported from foreign countries and from Ireland. In France, too, the labour of two cultivators does much more than supply the food of three persons. It provides the three persons, and occasionally foreigners, with flax, hemp, and to a certain extent with silk, oils, tobacco, and latterly sugar, which in England are wholly obtained from abroad; nearly all the timber used in France is of home growth, nearly all which is used in England is imported; the principal fuel of France is procured and brought to market by persons reckoned among agriculturists,

in England by persons not so reckoned. I do not take into calculation hides and wool, these products being common to both countries, nor wine or brandy produced for home consumption, since England has a corresponding production of beer and spirits; but England has no material export of either article, and a great importation of the last, while France supplies wines and spirits to the whole world. I say nothing of fruits, eggs, and such minor exportable articles of agricultural produce. But, not to lay undue stress on these abatements, we will take the statement as it stands. Suppose that two persons, in England, do *bonâ fide* produce the food of six, while in France, for the same purpose, the labour of four is requisite. Does it follow that England must have a larger surplus for the support of a non-agricultural population? No; but merely that she can devote two-thirds of her whole produce to the purpose, instead of one-third. Suppose the produce to be twice as great, and the one-third will amount to as much as the two-thirds. The fact might be, that owing to the greater quantity of labour employed on the French system, the same land would produce food for twelve persons which on the English system would only produce it for six: and if this were so, which would be quite consistent with the conditions of the hypothesis, then although the food for twelve was produced by the labour of eight, while the six were fed by the labour of only two, there would be the same number of hands disposable for other employment in the one country as in the other. I am not contending that the fact is so. I know that the gross produce per acre in France averages much less than in England, and that, in proportion to the extent and fertility of the two countries, England has in the sense we are now speaking of, much the largest disposable population. But the disproportion certainly is not nearly so great, as Mr. Wakefield's simple criterion would represent it. As well might it be said that agricultural labour in the United States, where, by the last census, four families in every five appeared to be engaged in agriculture, must be still more inefficient than in France.

The inferiority of French cultivation (which, taking the country as a whole, must be allowed to be real, though much exaggerated,) is probably more owing to the lower general average of industrial skill and energy in that country, than to any special cause: and even if partly the effect of minute subdivision, it does not prove that small farming is disadvantageous, but only (what is undoubtedly the fact,) that farms in France are very frequently *too* small, and, what is worse, broken up into an almost incredible number of patches or *parcelles*, most inconveniently dispersed and parted from one another.

As a question, not of gross, but of net produce, the comparative merits of the *grande* and the *petite culture*, especially when the small farmer is also the proprietor, cannot be looked upon as decided. It is a question on which good judges at present differ. The current of English opinion is in favour of large farms: on the Continent the weight of authority seems to be on the other side. Professor Rau, of Heidelberg, the author of one of the most comprehensive and elaborate of extant treatises on political economy, and who has that large acquaintance with facts and authorities on his own subject, which generally characterizes his countrymen, lays it down as a settled truth, that small or moderate-sized farms yield not only a larger gross, but a larger net produce: though, he adds, it is desirable there should be some great proprietors, to lead the way in new improvements*. The most apparently impartial and discriminating judgment that I have met with is that of M. Passy, who (always speaking with reference to *net* produce,) gives his verdict in favour of large farms for grain and forage; but, for the kinds of culture which require much labour and attention, places the advantage wholly on the side of small cultivation; including in this description, not only the vine

* See pp. 352 and 335 of a French translation published at Brussels in 1839, by M. Fred. de Kemmeter, of Ghent.

and the olive, where a considerable amount of care and labour must be bestowed on each individual plant, but also roots, leguminous plants, and those which furnish the materials of manufactures. The small size, and consequent multiplication, of farms, according to all authorities, are extremely favourable to the abundance of many minor products of agriculture*.

It is evident that every labourer who extracts from the land more than his own food, and that of any family he may have, increases the means of supporting a non-agricultural population. Even if his surplus is no more than enough to buy clothes for him, the labourers who make the clothes are a non-agricultural population, enabled to exist by food which he produces. Every agricultural family, therefore, which produces its own necessaries, adds to the net produce of agriculture; and so does every person born on the land, who by employing himself on it, adds more to its gross produce than the mere food which he eats. It is questionable whether, even in the most subdivided districts of Europe which are cultivated by the proprietors, the multiplication of hands on the soil has approached, or tends to approach, within a great distance of this limit. In France, although the sub-division is confessedly too great, there is proof positive that it is far from having reached the point at which it would begin to diminish the power of supporting a non-agricultural population. This is demonstrated by the great increase of the towns: which have of late increased in a much greater ratio than the population generally, showing (unless the condition of the town labourers is becoming rapidly deteriorated, which there is no reason to believe,) that even by the unfair and inapplicable test of proportions, the productiveness of agriculture must be

* "Dans le département du Nord," says M. Passy, "une ferme de 20 hectares recueille en veaux, laitage, œufs, et volailles, parfois pour un millier de francs dans l'année; et, les frais défalqués, c'est l'équivalent d'une addition au produit net de 15 à 20 francs par hectare." *Des Systêmes de Culture*, p. 114.

on the increase. This, too, concurrently with the amplest evidence that in the more improved districts of France, and in some which until lately were among the unimproved, there is a considerably increased consumption of country produce by the country population itself.

In the present chapter we do not enter on the question of great and small cultivation in any other respect than as a question of production, and of the efficiency of labour. We shall return to it hereafter as affecting the distribution of the produce, and the physical and social well being of the cultivators themselves; in which aspects it deserves, and requires, a still more particular examination.

CHAPTER X.

OF THE LAW OF THE INCREASE OF LABOUR.

§ 1. We have now successively considered each of the agents or conditions of production, and of the means by which the efficacy of these various agents is promoted. In order to come to an end of the questions which relate exclusively to production, one more, of primary importance, remains.

Production is not a fixed but an increasing thing. When not kept back by bad institutions, or a low state of the arts of life, the produce of industry has usually tended to increase; stimulated not only by the desire of the producers to augment their means of consumption, but by the increasing number of the consumers. Nothing in political economy can be of more importance than to ascertain the law of this increase of production; the conditions to which it is subject; whether it has practically any limits, and what these are. There is also no subject in political economy which is popularly less understood, or on which the errors committed are of a character to produce, and do produce, greater mischief.

We have seen that the essential requisites of production are three—labour, capital, and natural agents; the term capital including all external and physical requisites which are products of labour, the term natural agents all those which are not. But among natural agents we need not take into account those which, existing in unlimited quantity, being incapable of appropriation, and never altering in their qualities, are always ready to lend an equal degree of assistance to production, whatever may be its extent; as air and the light of the sun. Being now about to consider the impediments to production, not the facilities for it, we need advert

to no other natural agents than those which are liable to be deficient either in quantity or in productive power. These may be all represented by the term land. Land in the narrowest acceptation, as the source of agricultural produce, is the chief of them; and if we extend the term to mines and fisheries—to what is found in the earth itself, or in the waters which partly cover it, as well as to what is grown or fed on its surface, it embraces everything with which we need at present concern ourselves.

We may say, then, without a greater stretch of language than under the necessary explanations is permissible, that the requisites of production are Labour, Capital, and Land. The increase of production, therefore, depends on the properties of these elements. It is a result of the increase either of the elements themselves, or of their productiveness. The law of increase of production must be a consequence of the laws of these elements; the limits to the increase of production must be the limits, whatever they are, set by those laws. We proceed to consider the three elements successively, with reference to this effect; or in other words the law of the increase of production, viewed in respect of its dependence, first on Labour, secondly on Capital, and lastly on Land.

§ 2. The increase of labour is the increase of mankind; of population. On this subject the discussions excited by Mr. Malthus' Essay, have made the truth, although by no means universally admitted, yet so fully known, that a briefer examination of the question than would otherwise have been necessary will probably on the present occasion suffice.

The power of multiplication inherent in all organic life may be regarded as infinite. There is no one species of vegetable or animal, which, if the earth were entirely abandoned to it, and to the things on which it feeds, would not in a small number of years overspread every region of the globe, of which the climate was compatible with its existence.

The degree of possible rapidity is different in different orders of beings; but in all it is sufficient, for the earth to be very speedily filled up. There are species of vegetables of which a single plant will produce in one year the germs of a thousand; if only two come to maturity, in fourteen years the two will have multiplied to sixteen thousand and more. Many animals have the power of quadrupling their numbers in a single year; if they only do as much in half a century, ten thousand will have swelled within two centuries to upwards of two millions and a half. The capacity of increase is necessarily in a geometrical progression: the numerical ratio alone is different.

To this property of organized beings, the human species forms no exception. Its power of increase is indefinite, and the actual multiplication would be extraordinarily rapid, if that power were exercised to the utmost. It never is exercised to the utmost, and yet, in the most favourable circumstances known to exist, which are those of a fertile region colonized from an industrious and civilized community, population has continued, for several generations, independently of fresh immigration, to double itself in not much more than twenty years. That there is a capacity of multiplication in the human species beyond even this, is evident if we consider how great is the ordinary number of children to a family where the climate is good and early marriages usual; and how small a proportion of them die before the age of maturity, in the present state of hygienic knowledge, where the locality is healthy, and the family adequately provided with the means of living. It is a very low estimate of the capacity of increase, if we only assume, that in a good sanitary condition of the people, each generation may be double the number of the generation which preceded it.

Twenty or thirty years ago, these propositions might still have required considerable enforcement and illustration; but the evidence of them is so ample and incontestable, that they have made their way against all kinds of opposition, and may

now be regarded as axiomatic; although the extreme reluctance felt to admitting them, every now and then gives birth to some ephemeral theory, speedily forgotten, of a different law of increase in different circumstances, through a providential adaptation of the fecundity of the human species to the exigencies of society. The obstacle to a just understanding of the subject does not arise from these theories, but from too confused a notion of the causes which, at most times and places, keep the actual increase of mankind so far behind the capacity.

§ 3. Those causes, nevertheless, are in no way mysterious. What prevents the population of hares and rabbits from overstocking the earth? Not want of fecundity, but causes very different: many enemies, and insufficient subsistence; not enough to eat, and liability to being eaten. In the human race, which is not generally subject to the latter inconvenience, the equivalents for it are war and disease. If the multiplication of mankind proceeded, like that of the other animals, from a blind instinct, it would be limited in the same manner with theirs; the births would be as numerous as the physical constitution of the species admitted of, and the population would be kept down by deaths. But the conduct of human creatures is everywhere more or less influenced by foresight of consequences, and by some impulses superior to mere animal instincts; and they do not, therefore, propagate like swine, but are capable, though in very unequal degrees, of being withheld by prudence, or by the social affections, from giving existence to beings born only to misery and premature death. In proportion as mankind rise above the condition of the beasts, population is restrained by the fear of want, rather than by want itself. Even where there is no question of starvation, most persons are similarly acted upon by the apprehension of losing what have come to be regarded as the decencies of their situation in life. Hitherto no other motives than these two have been

found strong enough, in the generality of mankind, to counteract the tendency to increase. It has been the practice of a great majority of the middle and the poorer classes, whenever free from external control, to marry as early, and in most countries to have as many children, as was consistent with maintaining themselves in the condition of life which they were born to, or were accustomed to consider as theirs. Among the middle classes, in many individual instances, there is an additional restraint exercised from the desire of doing more than maintaining their circumstances—of improving them; but such a desire is rarely found, or rarely has that effect, in the labouring classes. If they can bring up a family as they were themselves brought up, even the prudent among them are usually satisfied. Too often they do not think even of that, but rely on fortune, or on the resources to be found in legal or voluntary charity.

In a very backward state of society, like that of Europe in the middle ages, and many parts of Asia at present, population is kept down by actual starvation. The starvation does not take place in ordinary years, but in seasons of scarcity, which in those states of society are much more frequent and more extreme than Europe is now accustomed to. In these seasons actual want, or the maladies consequent on it, carry off numbers of the population, which in a succession of favourable years again expands, to be again cruelly decimated. In a more improved state, few, even among the poorest of the people, are limited to absolute necessaries, and to a bare sufficiency of those: and the increase is kept within bounds, not by excess of deaths, but by limitation of births. The limitation is brought about in various ways. In some countries, it is the result of prudent or conscientious self-restraint. There is a condition to which the labouring people are habituated; they perceive that by having too numerous families, they must sink below that condition, or fail to transmit it to their children; and this they do not choose to submit to. The countries in which, so far as is

known, a great degree of voluntary prudence has been longest practised on this subject, are Norway and parts of Switzerland. Concerning both, there happens to be unusually authentic information; many facts were carefully brought together by Mr. Malthus, and much additional evidence has been obtained since his time. In both these countries the increase of population is very slow; and, what checks it, is not multitude of deaths but fewness of births. Both the births and the deaths are remarkably few in proportion to the population; the average duration of life is the longest in Europe; the population contains fewer children, and a greater proportional number of persons in the vigour of life, than is known to be the case in any other part of the world. The paucity of births tends directly to prolong life, by keeping the people in comfortable circumstances; and the same prudence is doubtless exercised in avoiding causes of disease, as in keeping clear of the principal cause of poverty. It is worthy of remark that the two countries thus honourably distinguished, are countries of small landed proprietors.

There are other cases in which the prudence and forethought, which perhaps might not be exercised by the people themselves, are exercised by the state for their benefit; marriage not being permitted until the contracting parties can show that they have the prospect of a comfortable support. Under these laws, of which I shall speak more fully hereafter, the condition of the people is reported to be good, and the illegitimate births not so numerous as might be expected. There are places, again, in which the restraining cause seems to be not so much individual prudence, as some general and perhaps even accidental habit of the country. In the rural districts of England, during the last century, the growth of population was very effectually repressed by the difficulty of obtaining a cottage to live in. It was the custom for unmarried labourers to lodge and board with their employers; it was the custom for married labourers to have a cottage: and the rule of the English poor laws by which a parish was

charged with the support of its unemployed poor, rendered landowners averse to promote marriage. About the end of the century, the great demand for men in war and manufactures, made it be thought a patriotic thing to encourage population; and about the same time the growing inclination of farmers to live like rich people, favoured as it was by a long period of high prices, made them desirous of keeping inferiors at a greater distance, and, pecuniary motives arising from abuses of the poor laws being superadded, they gradually drove their labourers into cottages, which the landlords now no longer refused permission to build. In some countries an old standing custom that a girl should not marry until she had spun and woven for herself an ample *trousseau*, is said to have acted as a substantial check to population. In England at present, the influence of prudence in keeping down multiplication is seen by the diminished number of marriages in the manufacturing districts in years when trade is bad.

But whatever be the causes by which population is anywhere limited to a comparatively slow rate of increase, there is always an immense residuary power behind, ready to start into activity as soon as the pressure which restrained it is taken off. It is but rarely that improvements in the condition of the labouring classes do anything more than give a temporary margin, speedily filled up by an increase of their numbers. The use they commonly choose to make of any advantageous change in their circumstances, is to take it out in the form which, by augmenting the population, deprives the succeeding generation of the benefit. Unless their idea and their habitual standard of comfortable living can be raised, nothing permanent can be done for them; the most promising schemes end only in having a more numerous, but not a happier people. By their habitual standard, I mean that down to which they will multiply, but not lower. Every advance they make in education, civilization, and social improvement, tends to raise this standard; and there is no doubt that it is gradually,

though slowly, rising in the more advanced countries of Western Europe. Subsistence and employment in England have never increased more rapidly than in the last sixteen years, but the census of 1841 shewed a smaller proportional increase of population than that of 1831: and the produce of French agriculture and industry is increasing in a progressive ratio, while the population exhibits, in every quinquennial census, a smaller proportion of births to the population.

The subject however of population, in its connexion with the condition of the labouring classes, will be considered in another place: in the present, we have to do with it solely as one of the elements of Production: and in that character we could not dispense with pointing out the unlimited extent of its natural powers of increase, and the causes owing to which so small a portion of that unlimited power is for the most part actually exercised. After this brief indication, we shall proceed to the other elements.

CHAPTER XI.

OF THE LAW OF THE INCREASE OF CAPITAL.

§ 1. THE requisites of production being labour, capital, and land, it has been seen from the preceding chapter that the impediments to the increase of production do not arise from the first of these elements. On the side of labour there is no obstacle to an increase of production, indefinite in extent and of unslackening rapidity. Population has the power of increasing in an uniform and rapid geometrical ratio. If the only essential condition of production were labour, the produce might, and naturally would, increase in the same ratio; and there would be no limit, until the numbers of mankind were brought to a stand from actual want of space.

But production has other requisites, and of these, the one which we shall next consider is Capital. There cannot be more people in any country, or in the world, than can be supported from the produce of past labour until that of present labour comes in. There will be no greater number of productive labourers in any country, or in the world, than can be supported from that portion of the produce of past labour, which is spared from the enjoyments of its possessor for purposes of reproduction, and is termed Capital. We have next, therefore, to inquire into the conditions of the increase of capital; the causes by which the rapidity of its increase is determined, and the necessary limitations of that increase.

Since all capital is the product of saving, that is, of abstinence from present consumption for the sake of a future good, the increase of capital must depend upon two things; the amount of the fund from which saving can be made, and the strength of the dispositions which prompt to it.

The fund from which saving can be made, is the surplus of the produce of labour, after supplying the necessaries of life to all concerned in the production (including those employed in replacing the materials, and keeping the fixed capital in repair). More than this surplus cannot be saved under any circumstances. As much as this, though it never is saved, always might be. This surplus is the fund from which the enjoyments, as distinguished from the necessaries of the producers, are provided; it is the fund from which all are subsisted, who are not themselves engaged in production; and from which all additions are made to capital. It is the real net produce of the country. The phrase, net produce, is often taken in a more limited sense, to denote only the profits of the capitalist and the rent of the landlord, under the idea that nothing can be included in the net produce of capital, but what is returned to the owner of the capital after replacing his expenses. But this is too narrow an acceptation of the term. The capital of the employer forms the revenue of the labourers, and if this exceeds the necessaries of life, it gives them a surplus, which they may either expend in enjoyments or save. For every purpose for which there can be occasion to speak of the net produce of industry, this surplus ought to be included in it. When this is included, and not otherwise, the net produce of the country is the measure of its effective power; of what it can spare for any purpose of public utility, or private indulgence; the portion of its produce of which it can dispose at pleasure; which can be drawn upon to attain any ends, or gratify any wishes, either of the government or of individuals; which it can either spend for its satisfaction, or save for future advantage.

The amount of this fund, this net produce, this excess of production above the physical necessaries of the producers, is one of the elements that determine the amount of saving. The greater the produce of labour after supporting the labourers, the more there is which *can* be saved. The same thing also partly contributes to determine, how much *will* be saved.

A part of the motive to saving consists in the prospect of deriving an income from savings; in the fact that capital, employed in production, is capable of not only reproducing itself but yielding an increase. The greater the profit that can be made from capital, the stronger is the motive to its accumulation. That indeed which forms the inducement to save, is not the whole of the fund which supplies the means of saving, not the whole net produce of the land, capital, and labour of the country, but only a part of it, the part which forms the remuneration of the capitalist, and is called profit of stock. It will however be readily enough understood, even previously to the explanations which will be given hereafter, that when the general productiveness of labour and capital is great, the returns to the capitalist are likely to be large, and that some proportion, though not an uniform one, will commonly obtain between the two.

§ 2. But the disposition to save does not wholly depend on the external inducement to it; on the amount of profit to be made from savings. With the same pecuniary inducement, the inclination is very different, in different persons and in different communities. The effective desire of accumulation is of unequal strength, not only according to the varieties of individual character, but to the general state of society and civilization. Like all other moral attributes, it is one in which the human race exhibits great differences, conformably to the diversity of its circumstances and the stage of its progress.

On topics which if they were to be fully investigated would exceed the bounds that can be allotted to them in this treatise, it is satisfactory to be able to refer to other works in which the necessary developements have been presented more at length. On the subject of Population this valuable service has been rendered by the celebrated Essay of Mr. Malthus: and on the point which now occupies us I can refer with equal confidence to another, though a less known

work, "New Principles of Political Economy," by Mr. Rae*. In no other book known to me is so much light thrown, both from principle and history, on the causes which determine the accumulation of capital.

All accumulation involves the sacrifice of a present, for the sake of a future good. But the expediency of such a sacrifice varies very much in different states of circumstances; and men's willingness to make it, varies still more.

In weighing the future against the present, the uncertainty of all things future is a leading element; and that uncertainty is of very different degrees. "All circumstances," therefore, "increasing the probability of the provision we make for futurity being enjoyed by ourselves or others, tend" justly and reasonably "to give strength to the effective desire of accumulation. Thus a healthy climate or occupation, by increasing the probability of life, has a tendency to add to this desire. When engaged in safe occupations, and living in healthy countries, men are much more apt to be frugal, than in unhealthy or hazardous occupations,

* This treatise is an example, such as not unfrequently presents itself, how much more depends on accident, than on the qualities of a book, in determining its reception. Had it appeared at a suitable time, and been favoured by circumstances, it would have had every requisite for great success. The author, a Scotchman settled in the United States, unites much knowledge, an original vein of thought, a considerable turn for philosophic generalities, and a manner of exposition and illustration calculated to make ideas tell not only for what they are worth, but for more than they are worth, and which, sometimes, I think, has that effect in the writer's own mind. The principal fault of the book is the position of antagonism in which, with the controversial spirit apt to be found in those who have new thoughts on old subjects, he has placed himself towards Adam Smith. I call this a fault, (though I think many of the criticisms just, and some of them far-seeing), because there is much less of real difference in opinion than might be supposed from Mr. Rae's animadversions; and because what he has found vulnerable in his great predecessor is chiefly the "human *too much*" in his premises; the portion of them that is over and above what was either required or is actually used in the establishment of his conclusions.

and in climates pernicious to human life. Sailors and soldiers are prodigals. In the West Indies, New Orleans, the East Indies, the expenditure of the inhabitants is profuse. The same people, coming to reside in the healthy parts of Europe, and not getting into the vortex of extravagant fashion, live economically. War and pestilence have always waste and luxury among the other evils that follow in their train. For similar reasons, whatever gives security to the affairs of the community, is favourable to the strength of this principle. In this respect the general prevalence of law and order, and the prospect of the continuance of peace and tranquillity, have considerable influence*." The more perfect the security, the greater will be the effective strength of the desire of accumulation. Where property is less safe, or the vicissitudes ruinous to fortunes are more frequent and severe, fewer persons will save at all, and of those who do, many will require the inducement of a higher rate of profit on capital, to make them prefer a doubtful future to the temptations of present enjoyment.

These are considerations which affect the expediency, in the eye of reason, of consulting future interests at the expense of present. But men's inclination to make this sacrifice does not solely depend upon its expediency. The disposition to save, is often far short of what reason would dictate: and at other times, is liable to be in excess of it.

Deficient strength of the desire of accumulation may arise from improvidence, or from want of interest in others. Improvidence may be connected with intellectual as well as moral causes. Individuals and communities of a very low state of intelligence are always improvident. A certain measure of intellectual developement seems necessary to enable absent things, and especially things future, to act with any force on the imagination and will. The effect of want of interest in others in diminishing accumulation, will

* Rae, p. 123.

be admitted, if we consider how much saving at present takes place, which has for its object the interest of others rather than of ourselves; the education of children, their advancement in life, the future interests of other personal connexions, the desire of promoting by the bestowal of money or time, objects of public or private usefulness. If mankind were generally in the state of mind to which some approach was seen in the declining period of the Roman empire—caring nothing for their heirs, as well as nothing for friends, the public, or any object which survived them—they would seldom deny themselves any indulgence for the sake of saving, beyond what was necessary for their own future years; which they would place in life annuities, or in some other form which would make its existence and their lives terminate together.

§ 3. From various degrees of these deficiencies, intellectual and moral, there is in different portions of the human race a greater diversity than is usually adverted to, in the strength of the effective desire of accumulation. A backward state of general civilization is often more the effect of deficiency in this particular than in many others which attract more attention. In the circumstances, for example, of a hunting tribe, "man may be said to be necessarily improvident, and regardless of futurity, because, in this state the future presents nothing which can be with certainty either foreseen or governed. . . . . Besides a want of the motives exciting to provide for the needs of futurity through means of the abilities of the present, there is a want of the habits of perception and action, leading to a constant connexion in the mind of those distant points, and of the series of events serving to unite them. Even therefore if motives be awakened capable of producing the exertion necessary to effect this connexion, there remains the task of training the mind to think and act so as to establish it."

For instance: "Upon the banks of the St. Lawrence

there are several little Indian villages. They are surrounded, in general, by a good deal of land from which the wood seems to have been long extirpated, and have, besides, attached to them, extensive tracts of forest. The cleared land is rarely, I may almost say never, cultivated, nor are any inroads made in the forest for such a purpose. The soil is, nevertheless, fertile, and were it not, manure lies in heaps by their houses. Were every family to inclose half an acre of ground, till it, and plant in it potatoes and maize, it would yield a sufficiency to support them one-half the year. They suffer, too, every now and then, extreme want, insomuch that, joined to occasional intemperance, it is rapidly reducing their numbers. This, to us, so strange apathy proceeds not, in any great degree, from repugnance to labour; on the contrary, they apply very diligently to it when its reward is immediate. Thus, besides their peculiar occupations of hunting and fishing, in which they are ever ready to engage, they are much employed in the navigation of the St. Lawrence, and may be seen labouring at the oar, or setting with the pole, in the large boats used for the purpose, and always furnish the greater part of the additional hands necessary to conduct rafts through some of the rapids. Nor is the obstacle aversion to agricultural labour. This is no doubt a prejudice of theirs; but mere prejudices always yield, principles of action cannot be created. When the returns from agricultural labour are speedy and great, they are also agriculturists. Thus, some of the little islands on Lake St. Francis, near the Indian village of St. Regis, are favourable to the growth of maize, a plant yielding a return of a hundredfold, and forming, even when half ripe, a pleasant and substantial repast. Patches of the best land on these islands are, therefore, every year, cultivated by them, for this purpose. As their situation renders them inaccessible to cattle, no fence is required; were this additional outlay necessary, I suspect they would be neglected, like the commons adjoining their village. These had apparently, at one time, been under crop.

The cattle of the neighbouring settlers would now, however, destroy any crop not securely fenced, and this additional necessary outlay consequently bars their culture. It removes them to an order of instruments of slower return than that which corresponds to the strength of the effective desire of accumulation in this little society.

"It is here deserving of notice, that what instruments of this kind they do form, are completely formed. The small spots of corn they cultivate are thoroughly weeded and hoed. A little neglect in this part would indeed reduce the crop very much; of this experience has made them perfectly aware, and they act accordingly. It is evidently not the necessary labour that is the obstacle to more extended culture, but the distant return from that labour. I am assured, indeed, that among some of the more remote tribes, the labour thus expended much exceeds that given by the whites. The same portions of ground being cropped without remission, and manure not being used, they would scarcely yield any return, were not the soil most carefully broken and pulverized both with the hoe and the hand. In such a situation a white man would clear a fresh piece of ground. It would perhaps scarce repay his labour the first year, and he would have to look for his reward in succeeding years. On the Indian, succeeding years are too distant to make sufficient impression, though, to obtain what labour may bring about in the course of a few months, he toils even more assiduously than the white man*."

This view of things is confirmed by the experience of the Jesuits, in their interesting efforts to civilize the Indians of Paraguay. They gained the confidence of these savages in a most extraordinary degree. They acquired influence over them sufficient to make them change their whole manner of life. They obtained their absolute submission and obedience. They established peace. They taught them all the operations

* Rae, p. 136.

of European agriculture, and many of the more difficult arts. There were everywhere to be seen, according to Charlevoix, "workshops of gilders, painters, sculptors, goldsmiths, watch-makers, carpenters, joiners, dyers," &c. These occupations were not practised for the personal gain of the artificers: the produce was at the absolute disposal of the missionaries, who ruled the people by a voluntary despotism. The obstacles arising from aversion to labour were therefore very completely overcome. The real difficulty was the improvidence of the people; their inability to think for the future; and the necessity accordingly of the most unremitting and minute superintendance on the part of their instructors. "Thus at first, if these gave up to them the care of the oxen with which they ploughed, their indolent thoughtlessness would probably leave them at evening still yoked to the implement. Worse than this, instances occurred where they cut them up for supper, thinking, when reprehended, that they sufficiently excused themselves by saying, they were hungry. . . These fathers, says Ulloa, have to visit the houses, to examine what is really wanted: for, without this care, the Indians would never look after anything. They must be present too, when animals are slaughtered, not only that the meat may be equally divided, but that nothing may be lost." "But notwithstanding all this care and superintendance," says Charlevoix, "and all the precautions which are taken to prevent any want of the necessaries of life, the missionaries are sometimes much embarrassed. It often happens that they," (the Indians,) "do not reserve to themselves a sufficiency of grain, even for seed. As for their other provisions, were they not well looked after, they would soon be without wherewithal to support life*."

As an example intermediate, in the strength of the effective desire of accumulation, between the state of things thus depicted and that of modern Europe, the case of the

* Rae, p. 140.

Chinese deserves attention. From various circumstances in their personal habits and social condition it might be anticipated that they would possess a degree of prudence and self-control greater than other Asiatics, but inferior to most European nations; and the following evidence is adduced of the fact.

"Durability is one of the chief qualities, marking a high degree of the effective desire of accumulation. The testimony of travellers ascribes to the instruments formed by the Chinese, a very inferior durability to similar instruments constructed by Europeans. The houses, we are told, unless of the higher ranks, are in general of unburnt bricks, of clay, or of hurdles plastered with earth; the roofs, of reeds fastened to laths. We can scarcely conceive more unsubstantial or temporary fabrics. Their partitions are of paper, requiring to be renewed every year. A similar observation may be made concerning their implements of husbandry, and other utensils. They are almost entirely of wood, the metals entering but very sparingly into their construction; consequently they soon wear out, and require frequent renewals. A greater degree of strength in the effective desire of accumulation, would cause them to be constructed of materials requiring a greater present expenditure, but being far more durable. From the same cause, much land, that in other countries would be cultivated, lies waste. All travellers take notice of large tracts of land, chiefly swamps, which continue in a state of nature. To bring a swamp into tillage is generally a process, to complete which, requires several years. It must be previously drained, the surface long exposed to the sun, and many operations performed, before it can be made capable of bearing a crop. Though yielding, probably, a very considerable return for the labour bestowed on it, that return is not made until a long time has elapsed. The cultivation of such land implies a greater strength of the effective desire of accumulation than exists in the empire.

"The produce of the harvest is, as we have remarked, always an instrument of some order or another; it is a provision for future want, and regulated by the same laws as those to which other means of attaining a similar end conform. It is there chiefly rice, of which there are two harvests, the one in June, the other in October. The period then of eight months between October and June, is that for which provision is made each year, and the different estimate they make of to-day and this day eight months will appear in the self-denial they practise now, in order to guard against want then. The amount of this self-denial would seem to be small. The father Parennin, indeed, (who seems to have been one of the most intelligent of the Jesuits, and spent a long life among the Chinese of all classes,) asserts, that it is their great deficiency in forethought and frugality in this respect, which is the cause of the scarcities and famines that frequently occur."

That it is defect of providence, not defect of industry, that limits production among the Chinese, is still more obvious than in the case of the semi-agriculturized Indians. "Where the returns are quick, where the instruments formed require but little time to bring the events for which they were formed to an issue," it is well known that "the great progress which has been made in the knowledge of the arts suited to the nature of the country and the wants of its inhabitants" makes industry energetic and effective. "The warmth of the climate, the natural fertility of the country, the knowledge which the inhabitants have acquired of the arts of agriculture, and the discovery and gradual adaptation to every soil of the most useful vegetable productions, enable them very speedily to draw from almost any part of the surface, what is there esteemed an equivalent to much more than the labour bestowed in tilling and cropping it. They have commonly double, sometimes treble harvests. These, when they consist of a grain so productive as rice, the usual crop, can scarce fail to yield to their skill, from almost any portion of soil that can

be at once brought into culture, very ample returns. Accordingly there is no spot that labour can immediately bring under cultivation, that is not made to yield to it. Hills, even mountains, are ascended and formed into terraces; and water, in that country the great productive agent, is led to every part by drains, or carried up to it by the ingenious and simple hydraulic machines which have been in use from time immemorial among this singular people. They effect this the more easily, from the soil, even in these situations, being very deep and covered with much vegetable mould. But what yet more than this marks the readiness with which labour is forced to form the most difficult materials into instruments, where these instruments soon bring to an issue the events for which they are formed, is the frequent occurrence on many of their lakes and rivers, of structures resembling the floating gardens of the Peruvians, rafts covered with vegetable soil and cultivated. Labour in this way draws from the materials on which it acts very speedy returns. Nothing can exceed the luxuriance of vegetation when the quickening powers of a genial sun are ministered to by a rich soil and abundant moisture. It is otherwise, as we have seen, in cases where the returns, though copious, is distant. European travellers are surprised at meeting these little floating farms by the side of swamps which only require draining to render them tillable. It seems to them strange that labour should not rather be bestowed on the solid earth, where its fruits might endure, than on structures that must decay and perish in a few years. The people they are among think not so much of future years as of the present time. The effective desire of accumulation is of very different strength in the one, from what it is in the other. The views of the European extend to a distant futurity, and he is surprised at the Chinese, condemned, through improvidence, and want of sufficient prospective care, to incessant toil, and as he thinks, insufferable wretchedness. The views of the Chinese are confined to narrower bounds; he is content, as we say, to live from

day to day, and has learnt to conceive even a life of toil a blessing*."

When a country has carried production as far as in the existing state of knowledge it can be carried with an amount of return corresponding to the average strength of the effective desire of accumulation in that country, it has reached what is called the stationary state; the state in which no further addition will be made to capital, unless there takes place either some improvement in the arts of production, or an increase in the strength of the desire to accumulate. In the stationary state, although capital does not on the whole increase, some persons grow richer and others poorer. Those whose degree of providence is below the usual standard, become impoverished, their capital perishes, and makes room for the savings of those whose effective desire of accumulation exceeds the average. These become the natural purchasers of the lands, manufactories, and other instruments of production owned by their less provident countrymen.

What the causes are which make the return to capital greater in one country than in another, and which, in certain circumstances, make it impossible for any additional capital to find investment unless at diminished returns, will appear clearly hereafter. In China, if that country has really attained, as it is supposed to have done, the stationary state, accumulation has stopped when the returns to capital are still as high as is indicated by a rate of interest legally twelve per cent, and practically varying (it is said) between eighteen and thirty-six. It is to be presumed therefore that no greater amount of capital than the country already possesses, can find employment at this high rate of profit, and that any lower rate does not hold out to a Chinese, sufficient temptation to induce him to abstain from present enjoyment. What a contrast with Holland, where, during the most flourishing period of its history, the government was able habitually to

* Rae, pp. 151—5.

borrow at two per cent, and private individuals, on good security, at three. Since China is not a country like Burmah, or the native states of India, where an enormous interest is but an indispensable compensation for the risk incurred from the bad faith or poverty of the state, and of almost all private borrowers; the fact, if fact it be, that the increase of capital has come to a stand while the returns to it are still so large, denotes a much less degree of the effective desire of accumulation, in other words a much lower estimate of the future relatively to the present, than that of most European nations.

§ 4. We have hitherto spoken of countries in which the average strength of the desire to accumulate is short of that which, under circumstances of any tolerable security, reason and sober calculation would approve. We have now to speak of others in which it decidedly surpasses that standard. In the more prosperous countries of Europe, although in them also are to be found abundance of prodigals, and in some of them (and in none more than in England) the ordinary degree of economy and providence among those who live by manual labour cannot be considered high, still in a very numerous portion of the community, the professional, manufacturing, and trading classes, being those who, generally speaking, unite more of the means with more of the motives for saving than any other class, the spirit of accumulation is so strong, that the signs of rapidly increasing wealth meet every eye: and the great amount of capital seeking investment excites astonishment, whenever peculiar circumstances turning much of it into some one channel, such as railway construction or foreign speculative adventure, bring the largeness of the total amount into evidence.

There are many circumstances which, in England, give a peculiar force to the accumulating propensity. The long exemption of the country from the ravages of war, and the far earlier period than elsewhere at which property was

secure from military violence or arbitrary spoliation, have produced a long-standing and hereditary confidence in the safety of funds when trusted out of the owner's hands, which in most other countries is of much more recent origin, and less firmly established. The geographical causes which have made industry rather than war the natural source of power and importance to Great Britain, have turned an unusual proportion of the most enterprising and energetic characters into the direction of manufactures and commerce; into supplying their wants and gratifying their ambition by producing and saving, rather than by appropriating what has been produced and saved. Much also depended on the better political institutions of this country, which by the scope they have allowed to individual freedom of action, have encouraged personal activity and self-reliance, while by the liberty they confer of association and combination, they facilitate industrial enterprise on a large scale. The same institutions in another of their aspects, give a most direct and potent stimulus to the desire of acquiring wealth. The earlier decline of feudalism having removed or much weakened invidious distinctions between the originally trading classes and those who had been accustomed to despise them; and a polity having grown up which made wealth the real source of political influence, its acquisition was invested with a fictitious value, independent of its intrinsic utility. It became synonymous with power; and since power with the common herd of mankind *gives* power, wealth became the chief source of personal consideration, and the measure and stamp of success in life. To get out of one rank in society into the next above it, is the great aim of English bourgeois life, and the acquisition of wealth the means. And inasmuch as to be rich without industry, constitutes a step in the social scale above those who are rich by means of industry, it becomes the object of ambition to save not merely as much as will afford a large income while in business, but enough to retire from business, and live in affluence on

realized gains. These causes are, in England, greatly aided by that extreme indifference of the people to personal enjoyment, which is a characteristic of all countries over which puritanism has passed. But if accumulation is, on one hand, rendered easier by the absence of a taste for pleasure, it is, on the other, made more difficult by the presence of a very real taste for expense. So strong is the association between personal consequence and the signs of wealth, that the silly desire for the appearance of a large expenditure has the force of a passion among large classes of a nation which derives less pleasure than perhaps any other in the world from what it spends. Owing to this circumstance, the effective desire of accumulation has never reached so high a pitch in England as it did in Holland, where, there being no rich idle class to set the example of a reckless expenditure, and the mercantile classes, who possessed the substantial power on which social influence always waits, being left to establish their own scale of living and standard of propriety, their habits remained frugal and unostentatious.

In England and Holland, then, for a long time past, and now in most other countries in Europe (which are rapidly following England in the same race,) the desire of accumulation does not require, to make it effective, the copious returns which it requires in Asia, but is sufficiently called into action by a rate of profit so low, that instead of slackening, accumulation seems now to proceed more rapidly than ever; and the second requisite of increased production, increase of capital, shews no tendency to become deficient. So far as that element is concerned, production is susceptible of an increase without any assignable bounds.

The progress of accumulation would no doubt be considerably checked, if the returns to capital were to be reduced still lower than at present. But why should any possible increase of capital have that effect? This question carries the mind forward to the remaining one of the three requisites

of production. The limitation to production, not consisting in any necessary limit to the increase of the other two elements, labour and capital, must turn upon the properties of the only element which is inherently, and in itself, limited in quantity. It must depend upon the properties of land.

CHAPTER XII.

OF THE LAW OF THE INCREASE OF PRODUCTION FROM LAND.

§ 1. LAND differs from the other elements of production, labour and capital, in not being susceptible of indefinite increase. Its extent is limited, and the extent of the more productive kinds of it more limited still. It is also evident that the quantity of produce capable of being raised on any given piece of land is not indefinite. This limited quantity of land, and limited productiveness of it, are the real limits to the increase of production.

That they are the ultimate limits, must always have been clearly seen. But since the final barrier has never in any instance been reached; since there is no country in which all the land, capable of yielding food, is so highly cultivated that a larger produce could not (even without supposing any fresh advance in agricultural knowledge) be obtained from it, and since a large portion of the earth's surface still remains entirely uncultivated; it is commonly thought, and is very natural at first to suppose, that for the present all limitation of production or population from this source is at an indefinite distance, and that ages must elapse before any practical necessity arises for taking the limiting principle into serious consideration.

I apprehend this to be not only an error, but the most serious one, to be found in the whole field of political economy. The question is more important and fundamental than any other; it involves the whole subject of the causes of poverty, in a rich and industrious community; and unless this one matter be thoroughly understood it is to no purpose proceeding any further in our inquiry.

§ 2. The limitation to production from the properties of the soil, is not like the obstacle opposed by a wall, which stands immoveable in one particular spot, and offers no hindrance to motion short of stopping it entirely. We may rather compare it to a highly elastic and extensible band, which is hardly ever so violently stretched that it could not possibly be stretched any more, yet the pressure of which is felt long before the final limit is reached, and felt more severely the nearer that limit is approached.

After a certain, and not very advanced, stage in the progress of agriculture; as soon, in fact, as men have applied themselves 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 labour, the produce is not increased in an equal degree; doubling the labour does not double 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 labour to the land.

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. The most fundamental errors which still prevail on our subject, result from not perceiving this law at work underneath the more superficial agencies on which attention fixes itself; but mistaking those agencies for the ultimate causes of effects of which they may influence the form and mode, but of which it alone determines the essence.

When, for the purpose of raising an increase of produce, recourse is had to inferior land, it is evident that, so far, the produce does not increase in the same proportion with the labour. The very meaning of inferior land, is land which with equal labour returns a smaller amount of produce. Land may be inferior either in fertility or in situation. The one requires a greater proportional amount of labour for

growing the produce, the other for carrying it to market. If the land A yields a thousand quarters of wheat, to a given outlay in wages, manure, &c., and in order to raise another thousand recourse must be had to the land B, which is either less fertile or more distant from the market, the two thousand quarters will cost more than twice as much labour as the original thousand, and the produce of agriculture will be increased in a less ratio than the labour employed in procuring it.

Instead of cultivating the land B, it would be possible, by higher cultivation, to make the land A produce more. It might be ploughed or harrowed twice instead of once, or three times instead of twice; it might be dug instead of being ploughed; after ploughing, it might be gone over with a hoe instead of a harrow, and the soil more completely pulverized; it might be oftener or more thoroughly weeded; the implements used might be of higher finish, and more elaborate construction; a greater quantity or more expensive kinds of manure might be applied, or when applied, they might be more carefully mixed and incorporated with the soil. These are some of the modes by which the same land may be made to yield a greater produce; and when a greater produce must be had, some of these are among the means usually employed for obtaining it. But, that it is obtained at a more than proportional increase of expense, is evident from the fact that inferior lands are cultivated. Inferior lands, or lands at a greater distance from the market, of course yield an inferior return, and an increasing demand cannot be supplied from them unless at an augmentation of cost, and therefore of price. If the additional demand could continue to be supplied from the superior lands, by applying additional labour and capital, at no greater proportional cost than that at which they yield the quantity first demanded of them, the owners or farmers of those lands could undersell all others, and engross the whole market. Lands of a lower degree of fertility or in a more remote situation, might indeed be cul-

tivated by their proprietors, for the sake of subsistence or independence; but it never could be the interest of any one to farm them for profit. That a profit can be made from them, sufficient to attract capital to such an investment, is a proof that cultivation on the more eligible lands has reached a point, beyond which any greater application of labour and capital would yield, at the best, no greater return than can be obtained at the same expense from less fertile or less favourably situated lands.

The careful cultivation of a well farmed district of England or Scotland is a symptom and an effect of the more unfavourable terms which the land has begun to exact for any increase of its fruits. Such elaborate cultivation costs much more in proportion, and requires a higher price to render it profitable, than farming on a more superficial system; and would not be adopted if access could be had to land of equal fertility, previously unoccupied. Where there is the choice of raising the increasing supply which society requires, from fresh land of as good quality as that already cultivated, no attempt is made to extract from land anything approaching to what it will yield on what are esteemed the best European modes of cultivating. The land is tasked up to the point at which the greatest return is obtained in proportion to the labour employed, but no further: any additional labour is carried elsewhere. "It is long," says one of latest travellers in the United States*, "before an English eye becomes reconciled to the lightness of the crops and the careless farming (as we should call it) which is apparent. One forgets that where land is so plentiful and labour so dear as it is here, a totally different principle must be pursued to that which prevails in populous countries, and that the consequence will of course be a want of tidiness, as it were, and finish, about everything which requires labour."

* Letters from America, by John Robert Godley, vol. i. p. 42. See also Lyell's Travels in America, vol. ii. p. 83.

Of the two causes mentioned, the plentifulness of land seems to me the true explanation, rather than the dearness of labour; for, however dear labour may be, when food is wanted, labour will always be applied to producing it in preference to anything else. But this labour is more effective for its end by being applied to fresh soil, than if it were employed in bringing the soil already occupied into higher cultivation. Only when no soils remain to be broken up but such as either from distance or inferior quality require a considerable rise of price to render their cultivation profitable, can it become advantageous to apply the high farming of Europe to any American lands; except, perhaps, in the immediate vicinity of towns, where saving in cost of carriage may compensate for great inferiority in the return from the soil itself. As American farming is to English, so is the ordinary English to that of Flanders, Tuscany, or the Terra di Lavoro: where by the application of a far greater quantity of labour there is obtained a considerably larger gross produce, but on such terms as would never be advantageous to a mere speculator for profit, unless made so by much higher prices of agricultural produce.

The principle which has now been stated must be received, no doubt, with certain explanations and limitations. Even after the land is so highly cultivated that the mere application of additional labour, or of an additional amount of ordinary dressing, would yield no return proportioned to the expense, it may still happen that the application of a much greater additional labour and capital to improving the soil itself, by draining or permanent manures, would be as liberally remunerated by the produce, as any portion of the labour and capital already employed. It would sometimes be much more amply remunerated. This could not be, if capital always sought and found the most advantageous employment; but if the most advantageous employment has to wait longest for its remuneration, it is only in a rather advanced stage of industrial developement that the preference will be given to

it; and even in that advanced stage, the laws or usages connected with property in land and the tenure of farms, are often such as to prevent the disposable capital of the country from flowing freely into the channel of agricultural improvement: and hence the increased supply, required by increasing population, is sometimes raised at an augmenting cost by higher cultivation, when the means of producing it without increase of cost are known and accessible. There can be no doubt that if capital were forthcoming to execute, within the next year, all known and recognized improvements in the land of the United Kingdom which would pay (as the phrase is) at the existing prices, that is, which would increase the produce in as great or a greater ratio than the expense; the result would be such (especially if we include Ireland in the supposition) that inferior land would not for a long time require to be brought under tillage: probably a considerable part of the less productive lands now cultivated, which are not particularly favoured by situation, would go out of culture; or (as the improvements in question are not so much applicable to good land, but operate rather by converting bad land into good) the contraction of cultivation might principally take place by a less high dressing and less elaborate tilling of land generally; a falling back to something nearer the character of American farming; such only of the poor lands being altogether abandoned as were not found susceptible of improvement. And thus the aggregate produce of the whole cultivated land would bear a larger proportion than before to the labour expended on it; and the general law of diminishing return from land would have undergone, to that extent, a temporary supersession. No one however can suppose that even in these circumstances, the whole produce required for the country could be raised exclusively from the best lands, together with those possessing advantages of situation to place them on a par with the best. Much would undoubtedly continue to be produced under less advantageous conditions, and with a smaller proportional return, than

that obtained from the best soils and situations. And in proportion as the further increase of population required a still greater addition to the supply, the general law would resume its course, and the further augmentation would be obtained at a more than proportionate expense of labour and capital.

§ 3. That the produce of land increases, *cæteris paribus*, in a diminishing ratio to the increase in the labour employed, is, as we have said, (allowing for occasional and temporary exceptions) the universal law of agricultural industry. This principle however has been denied, and experience confidently appealed to, in proof that the returns from land are not less but greater, in an advanced, than in an early, stage of cultivation—when much capital, than when little, is applied to agriculture. So much so indeed, that (it is affirmed) the worst land now in cultivation produces as much food per acre, and even as much to a given amount of labour, as our ancestors contrived to extract from the richest soils in England.

It is very possible that this may be true; and even if not true to the letter, to a great extent it certainly is so. Unquestionably a much smaller proportion of the population is now occupied in producing food for the whole, than in the early times of our history. This, however, does not prove that the law of which we have been speaking does not exist, but only that there is some antagonizing principle at work, capable for a time of making head against the law. Such an agency there is, in habitual antagonism to the law of diminishing return from land; and to the consideration of this we shall now proceed. It is no other than the progress of civilization. I use this general and somewhat vague expression, because the things to be included are so various, that hardly any term of a more restricted signification would comprehend them all.

Of these the most obvious is the progress of agricultural knowledge, skill, and invention. Improved processes of

agriculture are of two kinds: some enable the land to yield a greater absolute produce, without an equivalent increase of labour; others have not the power of increasing the produce, but have that of diminishing the labour and expense by which it is obtained. Among the first are to be reckoned the disuse of fallows, by means of the rotation of crops; and the introduction of new articles of cultivation capable of entering advantageously into the rotation. The change made in British agriculture towards the close of the last century by the introduction of turnip-husbandry, is spoken of as amounting to a revolution. These improvements operate not only by enabling the land to produce a crop every year instead of remaining idle one year in every two or three to renovate its powers, but also by direct increase of its productiveness; since the great addition made to the number of cattle by the increase of their food, affords more abundant manure to fertilize the corn lands. Next in order comes the introduction of new articles of food containing a greater amount of sustenance, like the potatoe, or more productive species or varieties of the same plant, such as the Swedish turnip. In the same class of improvements must be placed a better knowledge of the properties of manures, and of the most effectual modes of applying them; the introduction of new and more powerful fertilizing agents, such as guano, and the conversion to the same purpose, of substances previously wasted; inventions like subsoil ploughing or tile draining, by which the produce of some kinds of land is so greatly multiplied; improvements in the breed or feeding of labouring cattle; augmented stock of the animals which consume and convert into human food what would otherwise be wasted; and the like. The other sort of improvements, those which diminish labour, but without increasing the capacity of the land to produce, are such as the improved construction of tools; the introduction of new instruments which spare manual labour, as the winnowing and threshing machines; a more skilful and economical application of muscular exertion, such as the introduction, so slowly accomplished in England, of Scotch ploughing with two horses abreast and one man, instead of three or four horses in a team, and two men; &c. These improvements do not add to the productiveness of the land; but they are equally calculated with the former to counteract the tendency in the cost of production of agricultural produce, to rise with the progress of population and demand.

Analogous in effect to this second class of agricultural improvements, are improved means of communication. Good roads are equivalent to good tools. It is of no consequence whether the economy of labour takes place in extracting the produce from the soil, or in conveying it to the place where it is to be consumed. Not to say in addition, that the labour of cultivation itself is diminished by whatever lessens the cost of bringing manure from a distance, or facilitates the many operations of transport from place to place which occur within the bounds of the farm. Railways and canals are virtually a diminution of the cost of production of all things sent to market by them; and literally so of all those, the appliances and aids for producing which, they serve to transmit. By their means land can be cultivated, which would not otherwise have remunerated the cultivators without a rise of price. Improvements in navigation have, with respect to food or materials brought from beyond sea, a corresponding effect.

From similar considerations it appears that many purely mechanical improvements, which have (apparently at least) no peculiar connexion with agriculture, nevertheless enable a given amount of food to be obtained with a smaller expenditure of labour. A great improvement in the process of smelting iron, would tend to cheapen agricultural implements, diminish the cost of railroads, of waggons and carts, ships, and perhaps buildings and many other things to which iron is not at present applied, because it is too costly; and would thence diminish the cost of production of food. The same

effect would follow from any improvement in those processes of what may be termed manufacture, to which the material of food is subjected after it is separated from the ground. The first application of wind or water-power to grind corn, tended to cheapen bread as much as a very important discovery in agriculture would have done; and any great improvement in the construction of corn-mills would have, in proportion, a similar influence. The effects of cheapening locomotion have been already considered. There are also engineering inventions which facilitate all great operations on the earth's surface. An improvement in the art of taking levels is of importance to draining, not to mention canal and railway making. The fens of Holland and of some parts of England are drained by pumps worked by the wind or by steam. Where works of irrigation, or where tanks or embankments are necessary, mechanical skill is a great resource for cheapening production.

Those manufacturing improvements which cannot be made instrumental to facilitate, in any of its stages, the actual production of food, and therefore do not help to counteract or retard the diminution of the proportional return to labour from the soil, have however another effect which is practically equivalent. What they do not prevent, they yet, in some degree, compensate for.

The materials of manufactures being all drawn from the land, and many of them from agriculture, which supplies in particular the entire material of clothing; the general law of production from the land, the law of diminishing return, must in the last resort be applicable to manufacturing as well as to agricultural industry. As population increases, and the power of the land to yield increased produce is strained harder and harder, any additional supply of material, as well as of food, must be obtained by a more than proportionally increasing expenditure of labour. But the cost of the material forming generally a very small portion of the entire cost of the manufacture, the agricultural labour concerned in the

production of manufactured goods is but a small fraction of the whole labour worked up in the commodity. All the rest of the labour tends constantly and strongly towards diminution, as the amount of production increases. Manufactures are vastly more susceptible than agriculture, of mechanical improvements, and contrivances for saving labour: and it has already been seen how greatly the division of labour, and its skilful and economical distribution, depend upon the extent of the market, and upon the possibility of production in large masses. In manufactures, accordingly, the causes tending to increase the productiveness of industry, preponderate greatly over the one cause which tends to diminish it: and the increase of production, called forth by the progress of society, takes place not at an increasing, but at a continually diminishing proportional cost. This fact has manifested itself in the progressive fall of the prices and values of almost every kind of manufactured goods during two centuries past; a fall accelerated by the mechanical inventions of the last sixty or seventy years, and susceptible of being prolonged and extended beyond any limit which it would be safe to specify.

Now it is quite conceivable that the efficiency of agricultural labour might be undergoing, with the increase of produce, a gradual diminution; that the price of food, in consequence, might be progressively rising, and an ever-growing proportion of the population might be needed to raise food for the whole; while yet the productive power of labour in all other branches of industry might be so rapidly augmenting, that the required amount of labour could be spared from manufactures, and nevertheless a greater produce be obtained, and the aggregate wants of the community be on the whole better supplied than before. The benefit might even extend to the poorest class. The increased cheapness of clothing and lodging might make up to them for the augmented cost of their food.

There is, thus, no possible improvement in the arts of production which does not in one or another mode exercise

an antagonist influence to the law of diminishing return to agricultural labour. Nor is it only industrial improvements which have this effect. Improvements in government, and almost every kind of moral and social advancement, operate in the same manner. Suppose a country in the condition of France before the Revolution: taxation imposed exclusively on the industrious classes, and on such a principle as to be an actual penalty on production; and no redress obtainable for any injury to property or person, when inflicted by people of rank or court influence. Was not the hurricane which swept away this system of things, even if we look no further than to its effect in augmenting the productiveness of labour, equivalent to many industrial inventions? The removal of a fiscal burthen on agriculture, such as the tithe, has the same effect as if the labour necessary for obtaining the existing produce were suddenly reduced one-tenth. The abolition of corn laws, or of any other restrictions which prevent commodities from being produced where their cost of production is lowest, amounts to a vast improvement in production. When fertile land previously reserved as hunting-ground, or for any other purpose of amusement, is set free for culture, the aggregate productiveness of agricultural industry is increased. It is well known what has been the effect in England of badly administered poor laws, and the still worse effect in Ireland of a bad system of tenancy, in rendering agricultural labour slack and ineffective. No improvements operate more directly upon the productiveness of labour than those in the tenure of farms, and in the laws relating to landed property. The breaking up of entails, the cheapening of the transfer of property, and whatever else promotes the natural tendency of land in a system of freedom, to pass out of hands which can make little of it into those which can make more; the substitution of long leases for tenancy at will, and of any tolerable system of tenancy whatever for the wretched cottier system; above all, the acquisition of a fixed interest in the soil by the cultivators of it; all these things are as real, and

some of them as great, improvements in production, as the invention of the spinning-jenny or the steam-engine.

We may say the same of improvements in education. The intelligence of the workman is a most important element in the productiveness of labour. So low, in some of the most civilized countries, is the present standard of that intelligence, that there is hardly any source from which a more indefinite amount of improvement may be looked for in productive power, than by endowing with brains those who now have only hands. The carefulness, economy, and general trustworthiness of labourers are as important as their intelligence. Friendly relations, and a community of interest and feeling between labourers and employers, are eminently so: I should rather say, would be; for I know not where any such sentiment of friendly alliance now exists. Nor is it only in the labouring class that improvement of mind and character operates with beneficial effect even on industry. In the rich and idle classes, increased mental energy, more solid instruction, and stronger feelings of conscience, public spirit, or philanthropy, would qualify them to originate and promote the most valuable improvements, both in the economical resources of their country, and in its institutions and customs. To look no further than the most obvious phenomena; the backwardness of French agriculture in the precise points in which benefit might be expected from the influence of an educated class, is partly accounted for by the exclusive devotion of the richer landed proprietors to town interests and town pleasures. There is scarcely any possible amelioration of human affairs which would not, among its other benefits, have a favourable operation, direct or indirect, upon the productiveness of industry. The intensity of devotion to industrial occupations would indeed in many cases be moderated by a more liberal and genial mental culture, but the labour actually bestowed on those occupations would almost always be rendered more effective.

Before pointing out the principal inferences to be drawn

from the nature of the two antagonist forces by which the productiveness of agricultural industry is determined, we must observe that what we have said of agriculture, is true, with little variation, of the other occupations which it represents; of all the arts which extract materials from the globe. Mining industry, for example, usually yields an increase of produce at a more than proportional increase of expense. It does worse, for even its customary annual produce requires to be extracted by a greater and greater expenditure of labour and capital. As a mine does not reproduce the coal or the ore taken from it, not only are all mines at last exhausted, but even when they as yet show no signs of exhaustion, they must be worked at an ever increasing cost; shafts must be sunk deeper, galleries driven farther, greater power applied to keep them clear of water; the produce must be lifted from a greater depth, or conveyed a greater distance. The law of diminishing return applies therefore to mining, in a still more unqualified sense than to agriculture; but the antagonizing agency, that of improvements in production, also applies in a still greater degree. Mining operations are more susceptible of mechanical improvements, than agricultural: the first great application of the steam-engine was to mining; and there are unlimited possibilities of improvement in the chemical processes by which the metals are extracted. There is another contingency, of no unfrequent occurrence, which avails to counterbalance the progress of all existing mines towards exhaustion: this is, the discovery of new ones, equal or superior in richness.

To resume; all natural agents which are limited in quantity, are not only limited in their ultimate productive power, but, long before that power is stretched to the utmost, they yield to any additional demands on progressively harder terms. This law may however be suspended, or temporarily controlled, by whatever adds to the general power of mankind over nature; and especially by any extension of their knowledge, and their consequent command, of the properties and powers of natural agents.

CHAPTER XIII.

CONSEQUENCES OF THE FOREGOING LAWS.

§ 1. FROM the preceding exposition it appears that the limit to the increase of production is twofold: from deficiency of capital, or of land. Production comes to a pause, either because the effective desire of accumulation is not sufficient to give rise to any further increase of capital, or because, however disposed the possessors of surplus income may be to save a portion of it, the limited land at the disposal of the community does not permit additional capital to be employed with such a return, as would be an equivalent to them for their abstinence.

In countries where the principle of accumulation is as weak as it is in the various nations of Asia; where people will neither save, nor work to obtain the means of saving, unless under the inducement of enormously high profits, nor even then if it is necessary to wait a considerable time for them; where either productions remain scanty, or drudgery great, because there is neither capital forthcoming nor forethought sufficient for the adoption of the contrivances by which natural agents are made to do the work of human labour; the desideratum for such a country, economically considered, is an increase of industry, and of the effective desire of accumulation. The means are, first, a better government: more complete security of property; moderate taxes, and freedom from arbitrary exaction under the name of taxes; a more permanent and more advantageous tenure of land, securing to the cultivator as far as possible the undivided benefits of the industry, skill, and economy he may exert. Secondly, improvement of the public intelligence; the decay of usages or superstitions which interfere with the

effective employment of industry; and the growth of mental activity, making the people alive to new objects of desire. Thirdly, the introduction of foreign arts, which raise the returns derivable from additional capital, to a rate corresponding to the low strength of the desire of accumulation: and the importation of foreign capital, which renders the increase of production no longer exclusively dependent on the thrift or providence of the inhabitants themselves, while it places before them a stimulating example, and by instilling new ideas and breaking the chains of habit, if not by improving the actual condition of the population, tends to create in them new wants, increased ambition, and greater thought for the future. These considerations apply more or less to all the Asiatic populations, and to the less civilized and industrious parts of Europe, as Russia, Hungary, Spain, and Ireland.

§ 2. But there are other countries, and England is at the head of them, in which neither the spirit of industry nor the effective desire of accumulation need any encouragement; where the people will toil hard for a small remuneration, and save much for a small profit; where, although the general thriftiness of the labouring class is much below what is desirable, the spirit of accumulation in the more prosperous part of the community requires abatement rather than increase. In these countries there would never be any deficiency of capital, if its increase were never checked or brought to a stand by too great a diminution of its returns. It is the tendency of the returns to a progressive diminution, which causes the increase of production to be often attended with a deterioration in the condition of the producers; and this tendency, which would in time put an end to increase of production altogether, is a result of the necessary and inherent conditions of production from the land.

In all countries which have passed a very 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. An increased production, in default of unoccupied tracts of fertile land, or of fresh improvements tending to cheapen commodities, can never be obtained but by increasing the labour in more than the same proportion. The population must either work harder, or eat less, or obtain their usual food by sacrificing a part of their other customary comforts. Whenever this necessity is postponed, it is because the improvements which facilitate production continue progressive; because the contrivances of mankind for making their labour more effective, keep up an equal struggle with nature, and extort fresh resources from her reluctant powers as fast as human necessities occupy and engross the old.

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, are the cause of the penalty attached to over-population. 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. If all instruments of production were held in joint property by the whole people, and the produce divided with perfect equality among them, and if in a society thus constituted, industry were as energetic and the produce as ample as at present, there would be enough to make all the existing population extremely comfortable; but when that population had doubled itself, as, with the existing habits of the people, under such an encouragement, it undoubtedly would, in little more than

twenty years, what would then be their condition? Unless the arts of production were in the same time improved in so unexampled a degree as to double the productive power of labour—the inferior soils which must be resorted to, and the more laborious and scantily remunerative cultivation which must be employed on the superior soils, to procure food for so much larger a population, would, by an insuperable necessity, render every individual in the community poorer than before. If the population continued to increase at the same rate, a time would soon arrive when no one would have more than mere necessaries, and, soon after, a time when no one would have a sufficiency of those, and the further increase of population would be arrested by death.

Whether, at the present or any other time, the produce of industry, proportionally to the labour employed, is increasing or diminishing, and the average condition of the people improving or deteriorating, depends upon whether population is advancing faster than improvement, or improvement than population. After a degree of density has been attained, sufficient to allow the principal benefits of combination of labour, all further increase tends in itself to mischief, so far as regards the average condition of the people; but the progress of improvement has a counteracting operation, and allows of increased numbers without any deterioration, and even consistently with a higher average of comfort. Improvement must here be understood in a wide sense, including not only new industrial inventions, or an extended use of those already known, but improvements in institutions, education, opinions, and human affairs generally, provided they tend as almost all improvements do, to give new motives or new facilities to production. If the productive powers of the country increase as rapidly as advancing numbers call for an augmentation of produce, it is not necessary to obtain that augmentation by the cultivation of soils more sterile than the worst already under culture, or by applying additional labour to the old soils at a diminished

advantage; or at all events, this loss of power is compensated by the increased efficiency with which, in the progress of improvement, labour is employed in manufactures. In one way or the other, the increased population is provided for, and all are as well off as before. But if the growth of human power over nature is suspended or slackened, and population does not slacken its increase; if, with only the existing command over natural agencies, those agencies are called upon for an increased produce; that greater produce will not be afforded to the increased population, without either demanding on the average a greater effort from each, or on the average reducing each to a smaller ration out of the aggregate produce.

As a matter of fact, at some periods the progress of population has been the most rapid of the two, at others that of improvement. In England during a long interval preceding the French Revolution, population increased slowly; but the progress of improvement, at least in agriculture, would seem to have been still slower, since although nothing occurred to lower the value of the precious metals, the price of corn rose considerably, and England, from an exporting, became an importing country. This evidence, however, is not quite conclusive, inasmuch as the extraordinary number of abundant seasons during the first half of the century, not continuing during the last, was a cause of increased price in the latter period, extrinsic to the ordinary progress of society. Whether during the same period improvements in manufactures, or diminished cost of imported commodities, made amends for the diminished productiveness of labour on the land, is uncertain. But ever since the great mechanical inventions of Watt, Arkwright, and their contemporaries, the return to labour has probably increased as fast as the population; and would even have outstripped it, if that very augmentation of return had not called forth an additional portion of the inherent power of multiplication in the human

species. During the fifteen or twenty years last elapsed, so rapid has been the extension of improved processes of agriculture, that even the land yields a greater produce in proportion to the labour employed; the average price of corn is decidedly lower, and the country more nearly feeds its own population without foreign aid, than it did in 1828. But though improvement may during a certain space of time keep up with, or even surpass, the actual increase of population, it assuredly never comes up to the rate of increase of which population is capable: and nothing could have prevented a general deterioration in the condition of the human race, were it not that population has in fact been restrained. Had it been restrained still more, and the same improvements taken place, there would have been a larger dividend than there now is, for the nation or the species at large. The new ground wrung from nature by the improvement would not have been all used up in the support of mere numbers. Though the gross produce would not have been so great, there would have been a greater produce per head of the population.

§ 3. When the growth of numbers outstrips the progress of improvement, and a country is driven to obtain the means of subsistence on terms more and more unfavourable, by the inability of its land to meet additional demands except on more onerous conditions; there are two expedients by which it may hope to mitigate that disagreeable necessity, even though no change should take place in the habits of the people with respect to their rate of increase. One of these expedients is the importation of food from abroad. The other is emigration.

The admission of cheaper food from a foreign country, is equivalent to an agricultural invention by which food could be raised at a similarly diminished cost at home. It equally increases the productive power of labour. The return was, before, so much food for so much labour employed in the

growth of food: the return is now, a greater quantity of food, for the same labour employed in producing cottons or hardware, or some other commodity to be given in exchange for food. The one improvement, like the other, throws back the decline of the productive power of labour by a certain distance: but in the one case as in the other, it immediately resumes its course; the tide which has receded, instantly begins to re-advance. It might seem, indeed, that when a country draws its supply of food from so wide a surface as the whole habitable globe, so little impression can be produced on that great expanse by any increase of mouths in one small corner of it, that the inhabitants of the country may double and treble their numbers, without feeling the effect in any increased tension of the springs of production, or any enhancement of the price of food throughout the world. But in this calculation several things are overlooked.

In the first place, the foreign regions from which corn can be imported do not comprise the whole globe, but those parts of it almost alone, which are in the immediate neighbourhood of coasts or navigable rivers. The coast is the part of most countries which is earliest and most thickly peopled, and has seldom any food to spare. The chief source of supply, therefore, is the strip of country along the banks of some navigable river, as the Nile, the Vistula, or the Mississippi; and of such there is not, in the productive regions of the earth, so great a multitude, as to suffice during an indefinite time for a rapidly growing demand, without an increasing strain on the productive powers of the soil. To obtain auxiliary supplies of corn from the interior in any abundance, would, in the existing state of the communications, be hopeless. By improved roads, and ultimately by canals and railways, the obstacle will be so reduced as not to be insuperable: but this is a slow progress; in all the food-exporting countries except America, a very slow progress; and one which cannot keep pace with population, unless the increase of the last is very effectually restrained.

In the next place, even if the supply were drawn from the whole instead of a small part of the surface of the exporting countries, the quantity of food would still be limited which could be obtained from them without an increase of the proportional cost. The countries which export food may be divided into two classes; those in which the effective desire of accumulation is strong, and those in which it is weak. In Australia and the United States of America the effective desire of accumulation is strong; capital increases fast, and the production of food might be very rapidly extended. But in such countries population also increases with extraordinary rapidity. Their agriculture has to provide for their own expanding numbers, as well as for those of the importing countries. They must therefore, from the nature of the case, be rapidly driven, if not to less fertile, at least, what is equivalent, to remoter and less accessible lands, and to modes of cultivation like those of old countries, less productive in proportion to the labour and expense.

But the countries which have at the same time cheap food and great industrial prosperity are few, being only those in which the arts of civilized life have been transferred full grown to a rich and uncultivated soil. Among old countries those which are able to export food, are able only because their industry is in a very backward state; because capital, and hence population, have never increased sufficiently to make food rise to a higher price. Such countries are Russia, Poland, and Hungary. In those regions the effective desire of accumulation is weak, the arts of production most imperfect, capital scanty, and its increase, especially from domestic sources, slow. When an increased demand arose for food to be exported to England, it would only be very gradually that food could be produced to meet it. The capital needed could not be obtained by transfer from other employments, for such do not exist. The cottons or hardware which would be received from England in exchange for corn, the Russians and Poles do not now produce in the

country: they go without them. Something might in time be expected from the increased exertions to which producers would be stimulated by the market opened for their produce; but to such increase of exertion, the institutions of countries whose agricultural population consists of serfs, are the reverse of favourable, and even in this age of movement these institutions do not rapidly change. If a greater outlay of capital is relied on as the source from which the produce is to be increased, the means must either be obtained by the slow process of saving, under the impulse given by new commodities and more extended intercourse (and in that case the population would most likely increase as fast), or must be brought in from foreign countries. If England is to obtain a rapidly increasing supply of corn from Russia or Poland, English capital must go there to produce it. This, however, is attended with so many difficulties, as are equivalent to great positive disadvantages. It is opposed by difference of language, differences of manners, and a thousand obstacles arising from the institutions and social relations of the country: and after all it would inevitably so stimulate population on the spot, that nearly all the increase of food produced by its means, would be consumed without leaving the country: so that if it were not the almost only mode of introducing foreign arts and ideas, and giving an effectual spur to the backward civilization of those countries, little reliance could be placed on it for increasing the exports, and supplying other countries with a progressive and indefinite increase of food. But to improve the civilization of a country is a slow process, and gives time for so great an increase of population both in the country itself, and in those supplied from it, that its effect in keeping down the price of food against the increase of demand, is not likely to be more decisive on the scale of all Europe, than on the smaller one of a particular nation.

The law, therefore, of diminishing return to industry whenever population makes a more rapid progress than improvement, is not solely applicable to countries which are

fed from their own soil, but in substance applies quite as much to those which are willing to draw their food from any accessible quarter that can afford it cheapest. If, indeed, the release of the corn trade from restriction had produced, or should still produce, a sudden cheapening of food, this, like any other sudden improvement in the arts of life, would throw the natural tendency of affairs a stage or two further back, but without at all altering its course. There would be more for everybody in the first instance; but this *more*, would begin immediately and continue always to grow less, so long as population went on increasing, unaccompanied by other events of a countervailing tendency.

Whether the repeal of the corn laws is likely, even temporarily, to give any considerable increase of margin for population to fill up, it would be premature as yet to attempt to decide. All the elements of the question have been thrown into temporary disorder by the consequences of bad harvests and of the potatoe failure. But as far as can be foreseen, there seems little reason to expect an importation of the customary articles of food either so great in itself, or capable of such rapid increase, as to interfere much with the operation of the general law. One contingency indeed there is, connected with freedom of importation, which may produce temporary effects greater than were ever contemplated either by the bitterest enemies or the most ardent adherents of free-trade in food. Maize, or Indian corn, is a product capable of being supplied in quantity sufficient to feed the whole country, at a cost, allowing for difference of nutritive quality, cheaper even than the potatoe. If maize should ever substitute itself for wheat as the staple food of the poor, the productive power of labour in obtaining food would be so enormously increased, and the expense of maintaining a family so diminished, that it would require perhaps some generations for population, even if it started forward at an American pace, to overtake this great accession to the facilities of its support.

§ 4. Besides the importation of corn, there is another resource, which can be invoked by a nation whose increasing numbers press hard, not against their capital, but against the productive capacity of their land: I mean Emigration, especially in the form of Colonization. Of this remedy the efficacy as far as it goes is real, since it consists in seeking elsewhere those unoccupied tracts of fertile land, which if they existed at home would enable the demand of an increasing population to be met without any falling off in the productiveness of labour. Accordingly, when the region to be colonized is near at hand, and the habits and tastes of the people sufficiently migratory, this remedy is completely effectual. The migration from the older parts of the American Confederation to the new territories, which is to all intents and purposes colonization, is what enables population to go on unchecked throughout the Union without having yet dimininished the return to industry or increased the difficulty of earning a subsistence. If Australia or the interior of Canada were as near to Great Britain as Wisconsin and Iowa to New York; if the superfluous people could remove to it without crossing the sea, and were of as adventurous and restless a character, and as little addicted to staying at home, as their kinsfolk of New England, those unpeopled continents would render the same service to the United Kingdom which the old states of America derive from the new. But, these things being as they are—although a judiciously conducted emigration is a most important resource for suddenly lightening the pressure of population by a single effort—there is no probability that even under the most enlightened arrangements a permanent stream of emigration could be kept up, sufficient to take off, as in America, all that portion of the annual increase (when proceeding at its greatest rapidity) which being in excess of the progress made during the same short period in the arts of life, tends to render living more difficult for every averagely-situated individual in the community. And unless this can be done, emigration cannot even

temporarily dispense with the necessity of checks to population. Further than this we have not to speak of it in this place. The general subject of colonization as a practical question, its importance to this country, and the principles on which it should be conducted, will be touched incidentally in many passages of this work, and treated of in a chapter devoted to the purpose.

BOOK II.

DISTRIBUTION.