

Principles of Economicsby
Alfred Marshall**Chapter VI.
Industrial Training**

§ 1. Having discussed the causes which govern the growth of a numerous and vigorous population, we have next to consider the training that is required to develop its industrial efficiency.

The natural vigour that enables a man to attain great success in any one pursuit would generally have served him in good stead in almost any other. But there are exceptions. Some people, for instance, seem to be fitted from birth for an artistic career, and for no other; and occasionally a man of great practical genius is found to be almost devoid of artistic sensibility. But a race that has great nervous strength seems generally able, under favourable conditions, to develop in the course of a few generations ability of almost any kind that it holds in specially high esteem. A race that has acquired vigour in war or in the ruder forms of industry sometimes gains intellectual and artistic power of a high order very quickly; and nearly every literary and artistic epoch of classical and mediaeval times has been due to a people of great nervous strength, who have been brought into contact with noble thoughts before they have acquired much taste for artificial comforts and luxuries.

The growth of this taste in our own age has prevented us from taking full advantage of the opportunities our largely increased resources give us of consecrating the greater part of the highest abilities of the race to the highest aims. But perhaps the intellectual vigour of the age appears less than it really is, in consequence of the growth of scientific pursuits. For in art and literature success is often achieved while genius still wears the fascinating aspect of youth; but in modern science so much knowledge is required for originality, that before a student can make his mark in the world, his mind has often lost the first bloom of its freshness; and further the real value of his work is not often patent to the multitude as that of a picture or poem generally is.* In the same way the solid qualities of the modern machine-tending artisan are rated more cheaply than the lighter virtues of the mediaeval handicraftsman. This is partly because we are apt to regard as commonplace those excellences which are common in our own time; and to overlook the fact that the term "unskilled labourer" is constantly changing its meaning.

* In this connection it is worth while to notice that the full importance of an epoch-making idea is often not perceived in the generation in which it is made: it starts the thoughts of the world on a new track, but the change of direction is not obvious until the turning-point has been left some way behind. In the same way the mechanical inventions of every age are apt to be underrated relatively to those of earlier times. For a new discovery is seldom fully effective for practical purposes till many minor improvements and subsidiary discoveries have gathered themselves around it: an invention that makes an epoch is very often a generation older than the epoch which it makes. Thus it is that each generation seems to be chiefly occupied in working out the thoughts of the preceding one; while the full importance of its own thoughts is as yet not clearly seen.

§2. Very backward races are unable to keep on at any kind of work for a long time; and even the simplest form of what we regard as unskilled work is skilled work relatively to them; for they have not the requisite assiduity, and they can acquire it only by a long course of training. But where education is universal, an occupation may fairly be classed as unskilled, though it requires a

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knowledge of reading and writing. Again, in districts in which manufactures have long been domiciled, a habit of responsibility, of carefulness and promptitude in handling expensive machinery and materials becomes the common property of all; and then much of the work of tending machinery is said to be entirely mechanical and unskilled, and to call forth no human faculty that is worthy of esteem. But in fact it is probable that not one-tenth of the present populations of the world have the mental and moral faculties, the intelligence, and the self-control that are required for it: perhaps not one-half could be made to do the work well by steady training for two generations. Even of a manufacturing population only a small part are capable of doing many of the tasks that appear at first sight to be entirely monotonous. Machine-weaving, for instance, simple as it seems, is divided into higher and lower grades; and most of those who work in the lower grades have not "the stuff in them" that is required for weaving with several colours. And the differences are even great in industries that deal with hard materials, wood, metals, or ceramics.

Some kinds of manual work require long-continued practice in one set of operations, but these cases are not very common, and they are becoming rarer; for machinery is constantly taking over work that requires manual skill of this kind. It is indeed true that a general command over the use of one's fingers is a very important element of industrial efficiency; but this is the result chiefly of nervous strength, and self-mastery. It is of course developed by training, but the greater part of this may be of a general character and not special to the particular occupation; just as a good cricketer soon learns to play tennis well, so a skilled artisan can often move into other trades without any great and lasting loss of efficiency.

Manual skill that is so specialized that it is quite incapable of being transferred from one occupation to another is becoming steadily a less and less important factor in production. Putting aside for the present the faculties of artistic perception and artistic creation, we may say that what makes one occupation higher than another, what makes the workers of one town or country more efficient than those of another, is chiefly a superiority in general sagacity and energy which are not specialized to any one occupation.

To be able to bear in mind many things at a time, to have everything ready when wanted, to act promptly and show resource when anything goes wrong, to accommodate oneself quickly to changes in detail of the work done, to be steady and trustworthy, to have always a reserve of force which will come out in emergency, these are the qualities which make a great industrial people. They are not peculiar to any occupation, but are wanted in all; and if they cannot always be easily transferred from one trade to other kindred trades, the chief reason is that they require to be supplemented by some knowledge of materials and familiarity with special processes.

We may then use the term general *ability* to denote those faculties and that general knowledge and intelligence which are in varying degrees the common property of all the higher grades of industry: while that manual dexterity and that acquaintance with particular materials and processes which are required for the special purposes of individual trades may be classed as *specialized ability*.

§3. General ability depends largely on the surroundings of childhood and youth. In this the first and far the most powerful influence is that of the mother.* Next comes the influence of the father, of other children, and in some cases of servants.** As years pass on the child of the working man learns a great deal from what he sees and hears going on around him; and when we inquire into the advantages for starting in life which children of the well-to-do classes have over those of artisans, and which these in their turn have over the children of unskilled labourers, we shall have to consider these influences of home more in detail. But at present we may pass to consider the more general

influences of school education.

* According to Galton the statement that all great men have had great mothers goes too far: but that shows only that the mother's influence does not outweigh all others; not that it is not greater than any one of them. He says that the mother's influence is most easily traceable among theologians and men of science, because an earnest mother leads her child to feel deeply about great things; and a thoughtful mother does not repress, but encourages that childish curiosity which is the raw material of scientific habits of thought.

**There are many fine natures among domestic servants. But those who live in very rich houses are apt to get self-indulgent habits, to overestimate the importance of wealth, and generally to put the lower aims of life above the higher in a way that is not common with independent working people. The company in which the children of some of our best houses spend much of their time, is less ennobling than that of the average cottage. Yet in these very houses, no servant who is not specially qualified, is allowed to take charge of a young retriever or a young horse.

Little need be said of general education; though the influence even of that on industrial efficiency is greater than it appears. It is true that the children of the working classes must very often leave school, when they have but learnt the elements of reading, writing, arithmetic and drawing; and it is sometimes argued that part of the little time spent on these subjects would be better given to practical work. But the advance made at school is important not so much on its own account, as for the power of future advance which a school education gives. For a truly liberal general education adapts the mind to use its best faculties in business and to use business itself as a means of increasing culture; though it does not concern itself with the details of particular trades: that is left for technical education.*

*The absence of a careful general education for the children of the working classes, has been hardly less detrimental to industrial progress than the narrow range of the old grammar-school education of the middle classes. Till recently indeed it was the only one by which the average schoolmaster could induce his pupils to use their minds in anything higher than the absorption of knowledge. It was therefore rightly called liberal, because it was the best that was to be had. But it failed in its aim of familiarizing the citizen with the great thoughts of antiquity; it was generally forgotten as soon as school-time was over; and it raised an injurious antagonism between business and culture. Now however the advance of knowledge is enabling us to use science and art to supplement the curriculum of the grammar-school, and to give to those who can afford it an education that develops their best faculties, and starts them on the track of thoughts which will most stimulate the higher activities of their minds in after-life. The time spent on learning to spell is almost wasted: if spelling and pronunciation are brought into harmony in the English language as in most others, about a year will be added to the affective school education without any additional cost.

§4. Technical education has in like manner raised its aims in recent years. It used to mean little more than imparting that manual dexterity and that elementary knowledge of machinery and processes which an intelligent lad quickly picks up for himself when his work has begun; though if he has learnt it beforehand, he can perhaps earn a few shillings more at starting than if he had been quite ignorant. But such so-called education does not develop faculties; it rather hinders them from being developed. A lad, who has picked up the knowledge for himself, has educated himself by so doing; and he is likely to make better progress in the future than one who has been taught in a school of this old-fashioned kind. Technical education is however outgrowing its mistakes; and is aiming, firstly, at giving a general command over the use of eyes and fingers (though there are signs that this work is being taken over by general education, to which it properly belongs); and secondly at imparting artistic skill and knowledge, and methods of investigation, which are useful in particular occupations, but are seldom properly acquired in the course of practical work. It is however to be remembered that every advance in the

accuracy and versatility of automatic machinery narrows the range of manual work in which command over hand and eye is at a high premium; and that those faculties which are trained by general education in its best forms are ever rising in importance.*

* As Nasmyth says; if a lad, having dropped two peas at random on a table, can readily put a third pea midway in a line between them, he is on the way to become a good mechanic. Command over eye and hand is gained in the ordinary English games, no less than in the playful work of the Kindergarten. Drawing has always been on the borderline between work and play.

According to the best English opinions, technical education for the higher ranks of industry should keep the aim of developing the faculties almost as constantly before it as general education does. It should rest on the same basis as a thorough general education, but should go on to work out in detail special branches of knowledge for the benefit of particular trades.** Our aim should be to add the scientific training in which the countries of Western Europe are ahead of us to that daring and restless energy and those practical instincts, which seldom flourish unless the best years of youth are spent in the workshop; recollecting always that whatever a youth learns for himself by direct experience in well-conducted works, teaches him more and stimulates his mental activity more than if it were taught him by a master in a technical school with model instruments.***

** One of the weakest points of technical education is that it does not educate the sense of proportion and the desire for simplicity of detail. The English, and to an even greater extent, the Americans, have acquired in actual business the faculty of rejecting intricacies in machinery and processes, which are not worth what they cost, and practical instinct of this kind often enables them to succeed in competition with Continental rivals who are much better educated.

*** A good plan is that of spending the six winter months of several years after leaving school in learning science in College, and the six summer months as articulated pupils in large workshops. The present writer introduced this plan about forty years ago at University College, Bristol (now the University of Bristol). But it has practical difficulties which can be overcome only by the cordial and generous co-operation of the heads of large firms with the College authorities. Another excellent plan is that adopted in the school attached to the works of Messrs Mather and Platt at Manchester. "The drawings made in the school are of work actually in progress in the shops. One day the teacher gives the necessary explanations and calculations, and the next day the scholars see, as it were on the anvil, the very thing which has been the subject of his lecture."

The old apprenticeship system is not exactly suited to modern conditions and it has fallen into disuse; but a substitute for it is wanted. Within the last few years many of the ablest manufacturers have begun to set the fashion of making their sons work through every stage in succession of the business they will ultimately have to control; but this splendid education can be had only by a few. So many and various are the branches of any great modern industry that it would be impossible for the employers to undertake, as they used to do, that every youth committed to their care should learn all; and indeed a lad of ordinary ability would be bewildered by the attempt. But it does not seem impracticable to revive the apprenticeship system in a modified form.*

*The employer binds himself to see that the apprentice is thoroughly taught in the workshop all the subdivisions of one great division of his trade, instead of letting him learn only one of these subdivisions, as too often happens now. The apprentice's training would then often be as broad as if he had been taught the whole of the trade as it existed a few generations ago; and it might be supplemented by a theoretical knowledge of all branches of the trade, acquired in a technical school. Something resembling the old apprenticeship system has recently come into vogue for young Englishmen who desire to learn the business of farming under the peculiar conditions of a new country: and there are some signs that the plan may be extended to the business of farming in this country, for which it is in many respects admirably adapted. But there remains a great deal of

education suitable to the farmer and to the farm-labourer which can best be given in agricultural colleges and dairy schools.

Meanwhile many great agencies for the technical education of adults are being rapidly developed, such as public exhibitions, trade associations and congresses, and trade journals. Each of them has its own work to do. In agriculture and some other trades the greatest aid to progress is perhaps found in public shows. But those industries, which are more advanced and in the hands of persons of studious habits, owe more to the diffusion of practical and scientific knowledge by trade journals; which, aided by changes in the methods of industry and also in its social conditions, are breaking up trade secrets and helping men of small means in competition with their richer rivals.

The great epoch-making inventions in industry came till recently almost exclusively from England. But now other nations are joining in the race. The excellence of the common schools of the Americans, the variety of their lives, the interchange of ideas between different races among them, and the peculiar conditions of their agriculture have developed a restless spirit of inquiry; while technical education is now being pushed on with great vigour. On the other hand, the diffusion of scientific knowledge among the middle and even the working classes of Germany, combined with their familiarity with modern languages and their habits of traveling in pursuit of instruction, has enabled them to keep up with English and American mechanics and to take the lead in many of the applications of chemistry to business.*

* The heads of almost every progressive firm on the Continent have carefully studied processes and machinery in foreign lands. The English are great travelers; but partly perhaps on account of their ignorance of other languages they seem hardly to set enough store on the technical education that can be gained by the wise use of travel.

§5. It is true that there are many kinds of work which can be done as efficiently by an uneducated as by an educated workman: and that the higher branches of education are of little direct use except to employers and foremen and a comparatively small number of artisans. But a good education confers great indirect benefits even on the ordinary workman. It stimulates his mental activity; it fosters in him a habit of wise inquisitiveness; it makes him more intelligent, more ready, more trustworthy in his ordinary work; it raises the tone of his life in working hours and out of working hours; it is thus an important means towards the production of material wealth; at the same time that, regarded as an end in itself, it is inferior to none of those which the production of material wealth can be made to subserve.

We must however look in another direction for a part, perhaps the greater part, of the immediate economic gain which the nation may derive from an improvement in the general and technical education of the mass of the people. We must look not so much at those who stay in the rank and file of the working classes, as at those who rise from a humble birth to join the higher ranks of skilled artisans, to become foremen or employers, to advance the boundaries of science, or possibly to add to the national wealth in art and literature.

The laws which govern the birth of genius are inscrutable. It is probable that the percentage of children of the working classes who are endowed with natural abilities of the highest order is not so great as that of the children of people who have attained or have inherited a higher position in society. But since the manual labour classes are four or five times as numerous as all other classes put together, it is not unlikely that more than half the best natural genius that is born into the country belongs to them; and of this a great part is fruitless for want of opportunity. There is no extravagance more prejudicial to the growth of national wealth than that wasteful negligence which allows genius that happens to be born of lowly parentage to expend itself in lowly work. No change would conduce so much to a rapid increase of material wealth as an improvement in our schools, and especially those of the middle grades, provided it be combined with an extensive system of scholarships,

which will enable the clever son of a working man to rise gradually from school to school till he has the best theoretical and practical education which the age can give.

To the abilities of children of the working classes may be ascribed the greater part of the success of the free towns in the Middle Ages and of Scotland in recent times. Even within England itself there is a lesson of the same kind to be learnt: progress is most rapid in those parts of the country in which the greatest proportion of the leaders of industry are the sons of working men. For instance, the beginning of the manufacturing era found social distinctions more closely marked and more firmly established in the South than in the North of England. In the South something of a spirit of caste has held back the working men and the sons of working men from rising to posts of command; and the old established families have been wanting in that elasticity and freshness of mind which no social advantages can supply, and which comes only from natural gifts. This spirit of caste, and this deficiency of new blood among the leaders of industry, have mutually sustained one another; and there are not a few towns in the South of England whose decadence within living memory can be traced in a great measure to this cause.

§6. Education in art stands on a somewhat different footing from education in hard thinking: for while the latter nearly always strengthens the character, the former not unfrequently fails to do this. Nevertheless the development of the artistic faculties of the people is in itself an aim of the very highest importance, and is becoming a chief factor of industrial efficiency.

We are here concerned almost exclusively with those branches of art which appeal to the eye. For though literature and music contribute as much and more to the fulness of life, yet their development does not directly affect, and does not depend upon, the methods of business, the processes of manufacture and the skill of artisans.

The artisan of Europe in the Middle Ages, and of eastern countries now, has perhaps obtained credit for more originality than he has really possessed. Eastern carpets, for instance, are full of grand conceptions: but if we examine a great many examples of the art of any one place, selected perhaps from the work of several centuries, we often find very little variety in their fundamental ideas. But in the modern era of rapid changes—some caused by fashion and some by the beneficial movements of industrial and social progress—everyone feels free to make a new departure, everyone has to rely in the main on his own resources: there is no slowly matured public criticism to guide him.*

*In fact every designer in a primitive age is governed by precedent: only very daring people depart from it; even they do not depart far, and their innovations are subjected to the test of experience, which, in the long run, is infallible. For though the crudest and most ridiculous fashions in art and in literature will be accepted by the people for a time at the bidding of their social superiors, nothing but true artistic excellence has enabled a ballad or a melody, a style of dress or a pattern of furniture to retain its popularity among a whole nation for many generations together. These innovations, then, which were inconsistent with the true spirit of art were suppressed, and those that were on the right track were retained, and became the starting-point for further progress; and thus traditional instincts played a great part in preserving the purity of the industrial arts in Oriental countries, and to a less extent in mediaeval Europe.

This is however not the only, perhaps not the chief disadvantage under which artistic design labours in our own age. There is no good reason for believing that the children of ordinary workmen in the Middle Ages had more power of artistic origination than those of ordinary village carpenters or blacksmiths of today; but if one among ten thousand happened to have genius, it found vent in his work and was stimulated by the competition of the guilds and in other ways. But the modern artisan is apt to be occupied in the management of machinery; and though the faculties which he develops may be

more solid and may help more in the long run towards the highest progress of the human race, than did the taste and fancy of his mediaeval predecessor, yet they do not contribute directly towards the progress of art. And if he should find in himself a higher order of ability than among his fellows, he will probably endeavour to take a leading part in the management of a trades-union or some other society, or to collect together a little store of capital and to rise out of that trade in which he was educated. These are not ignoble aims; but his ambition would perhaps have been nobler and more fruitful of good to the world, if he had stayed in his old trade and striven to create works of beauty which should live after he had gone.

It must however be admitted that he would have great difficulties in doing this. The shortness of the time which we allow ourselves for changes in the arts of decoration is scarcely a greater evil than the width of the area of the world over which they are spread; for that causes a further distraction of the hasty and hurried efforts of the designer, by compelling him to be always watching the world movements of the supply of and demand for art products. This is a task for which the artisan, who works with his own hands, is not well fitted; and in consequence now-a-days the ordinary artisan finds it best to follow and not to lead. Even the supreme skill of the Lyons weaver shows itself now almost exclusively in an inherited power of delicate manipulation, and fine perception of colour, that enable him to carry out perfectly the ideas of professional designers.

Increasing wealth is enabling people to buy things of all kinds to suit the fancy, with but a secondary regard to their powers of wearing; so that in all kinds of clothing and furniture it is every day more true that it is the pattern which sells the things. The influence of the late William Morris and others, combined with the lead which many English designers have derived from Oriental and especially Persian and Indian masters of colour is acknowledged by Frenchmen themselves to have attained the first rank for certain classes of English fabrics and decorative products. But in other directions France is supreme. Some English manufacturers who hold their own against the world would, it is said, be driven out of the market if they had to depend on English patterns. This is partly due to the fact that Paris having the lead in fashions, as the result of an inherited quick and subtle taste in women's dress, a Parisian design is likely to be in harmony with the coming fashions and to sell better than a design of equal intrinsic worth from elsewhere.*

*French designers find it best to live in Paris: if they stay for long out of contact with the central movements of fashion they seem to fall behindhand. Most of them have been educated as artists, but have failed of their highest ambition. It is only in exceptional cases, as for instance for the Sèvres china that those who have succeeded as artists find it worth their while to design. Englishmen can, however, hold their own in designing for Oriental markets, and there is evidence that the English are at least equal to the French in originality though they are inferior in quickness in seeing how to group forms and colours so as to obtain an effective result. (See the *Report on Technical Education*, Vol. pp. 256, 261, 324, 325 and Vol. III. pp. 151, 152, 202, 203, 211 and passim.) It is probable that the profession of the modern designer has not yet risen to the best position which it is capable of holding. For it has been to a disproportionate extent under the influence of one nation; and that nation is one whose works in the highest branches of art have seldom borne to be transplanted. They have indeed often been applauded and imitated at the time by other nations, but they have as yet seldom struck a key-note for the best work of later generations.

Technical education, then, though it cannot add much directly to the supply of genius in art, any more than it can in science or in business, can yet save much natural artistic genius from running to waste; and it is called on to do this all the more because the training that was given by the older forms of handicraft can never be revived on a large scale.**

**The painters themselves have put on record in the portrait-galleries the fact that in mediaeval times, and even later, their art attracted a larger share of the best intellect than it does now; when the ambition of youth is tempted by the excitement of modern business, when its seal for imperishable achievements finds a field in the discoveries of modern science, and, lastly, when a great deal of excellent talent is insensibly diverted from high aims by the ready pay to be got by hastily writing half-thoughts for periodical literature.

§7. We may then conclude that the wisdom of expending public and private funds on education is not to be measured by its direct fruits alone. It will be profitable as a mere investment, to give the masses of the people much greater opportunities than they can generally avail themselves of. For by this means many, who would have died unknown, are enabled to get the start needed for bringing out their latent abilities. And the economic value of one great industrial genius is sufficient to cover the expenses of the education of a whole town; for one new idea, such as Bessemer's chief invention, adds as much to England's productive power as the labour of a hundred thousand men. Less direct, but not less in importance, is the aid given to production by medical discoveries such as those of Jenner or Pasteur, which increase our health and working power; and again by scientific work such as that of mathematics or biology, even though many generations may pass away before it bears visible fruit in greater material wellbeing. All that is spent during many years in opening the means of higher education to the masses would be well paid for if it called out one more Newton or Darwin, Shakespeare or Beethoven.

There are few practical problems in which the economist has a more direct interest than those relating to the principles on which the expense of the education of children should be divided between the State and the parents. But we must now consider the conditions that determine the power and the will of the parents to bear their share of the expense, whatever it may be.

Most parents are willing enough to do for their children what their own parents did for them; and perhaps even to go a little beyond it if they find themselves among neighbours who happen to have a rather higher standard. But to do more than this requires, in addition to the moral qualities of unselfishness and a warmth of affection that are perhaps not rare, a certain habit of mind which is as yet not very common. It requires the habit of distinctly realizing the future, of regarding a distant event as of nearly the same importance as if it were close at hand (discounting the future at a low rate of interest); this habit is at once a chief product and a chief cause of civilization, and is seldom fully developed except among the middle and upper classes of the more cultivated nations.

§8. Parents generally bring up their children to occupations in their own grade, and therefore the total supply of labour in any grade in one generation is in a great measure determined by the numbers in that grade in the preceding generation, yet within the grade itself there is greater mobility. If the advantages of any one occupation in it rise above the average, there is a quick influx of youth from other occupations within the grade. The vertical movement from one grade to another is seldom very rapid or on a very large scale; but, when the advantages of a grade have risen relatively to the difficulty of the work required of it many small streams of labour, both youthful and adult will begin to flow towards it; and though none of their may be very large, they will together have a sufficient volume to satisfy before long the increased demand for labour in that grade.

We must defer to a later stage a fuller discussion of the obstacles which the conditions of any place and time oppose to the free mobility of labour, and also of the inducement which they offer to anyone to change his occupation or to bring up his son to an occupation different from his own. But we have seen

enough to conclude that, other things being equal, an increase in the earnings that are to be got by labour increases its rate of growth; or, in other words, a rise in it; demand price increases the supply of it. If the state of knowledge, and of ethical, social and domestic habits be given; then the vigour of the people as a whole if not then numbers, and both the numbers and vigour of any trade in particular, may be said to have a supply price in this sense that there is a certain level of the demand price which will keep them stationary; that a higher price would cause them to increase, and that a lower price would cause them to decrease. Thus economic causes play a part in governing the growth of population as a whole as well as the supply of labour in any particular grade. But their influence on the numbers of the population as a whole is largely indirect; and is exerted by way of the ethical, social and domestic habits of life. For these habits are themselves influenced by economic causes deeply, though slowly, and in ways some of which are difficult to trace, and impossible to predict.*

*Mill was so much impressed by the difficulties that beset a parent in the attempt to bring up his son to an occupation widely different in character from his own, that he said (*Principles*, II. XIV. 2): "So complete, indeed, has hitherto been the separation, so strongly marked the line of demarcation, between the different grades of labourers, as to be almost equivalent to an hereditary distinction of caste; each employment being chiefly recruited from the children of those already employed in it, or in employments of the same rank with it in social estimation, or from the children of persons who, if originally of a lower rank, have succeeded in raising themselves by their exertions: The liberal professions are mostly supplied by the sons of either the professional or the idle classes: the more highly skilled manual employments are filled up from the sons of skilled artisans or the class of tradesmen who rank with them: the lower classes of skilled employments are in a similar case; and unskilled labourers, with occasional exceptions, remain from father to son in their pristine condition. Consequently the wages of each class have hitherto been regulated by the increase of its own population, rather than that of the general population of the country." But he goes on, "The changes, however, now so rapidly taking place in usages and ideas are undermining all these distinctions."

His prescience has been vindicated by the progress of change since he wrote. The broad lines of division which he pointed out have been almost obliterated by the rapid action of those causes which, as we saw earlier in the chapter, are reducing the amount of skill and ability required in some occupations and increasing it in others. We cannot any longer regard different occupations as distributed among four great planes; but we may perhaps think of them as resembling a long flight of steps of unequal breadth, some of them being so broad as to act as landing stages. Or even better still we might picture to ourselves two flights of stairs, one representing the "hard-handed industries" and the other "the soft-handed industries"; because the vertical division between these two is in fact as broad and as clearly marked as the horizontal division between any two grades.

Mill's classification had lost a great part of its value when Cairnes adopted it (*Leading Principles*, p. 72). A classification more suited to our existing conditions is offered by Giddings (*Political Science Quarterly*, Vol. II. pp. 89-71). It is open to the objection that it draws broad lines of division where nature has made no broad lines; but it is perhaps as good as any division of industry into four grades can be. His divisions are (i) *automatic manual labour*, including common labourers and machine tenders; (ii) *responsible manual labour*, including those who can be entrusted with some responsibility and labour of self-direction; (iii) *automatic brain workers*, such as book-keepers, and (iv) *responsible brain workers*, including the superintendents and directors.

The conditions and methods of the large and incessant movement of the population upwards and downwards from grade to grade are studied more fully below, VI. iv. v. and vu.

The growing demand for boys to run errands, and to do other work that has no educational value, has increased the danger that parents may send their sons into avenues that have no outlook for good employment in later years: and something is being done by public agency, and more by the devotion and energy of men and women in unofficial association, in giving out notes of warning against such "blind alley" occupations, and assisting lads to prepare themselves for skilled work. These efforts may be of great national value. But care must be taken that this guidance and help is as accessible to the higher strains of the working class population when in need of it as to the lower; lest the race should degenerate.

